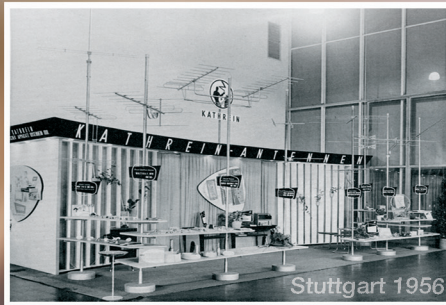
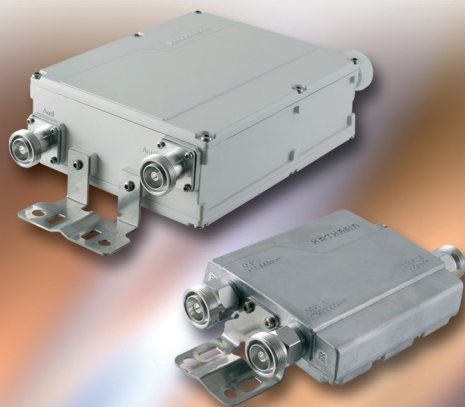


790 - 6000 MHz

Catalogue 2011

# Base Station Antennas, Filters, Combiners and Amplifiers for Mobile Communications



**KATHREIN**

Antennen · Electronic

**Photo on title page:** We are represented at many trade shows to advise you about our wide product portfolio.  
Further information: [www.kathrein.de](http://www.kathrein.de)

## Catalogue Issue 01/2011

All data published in previous catalog issues hereby becomes invalid.  
We reserve the right to make alterations in accordance with the requirements of our customers,  
therefore for binding datas please check valid data sheets!

### Please note:

**As a result of more stringent legal regulations and judgements regarding product liability, we are obliged to point out certain risks that may arise when products are used under extraordinary operating conditions.**

The mechanical design is based on the environmental conditions as stipulated in ETS 300 019-1-4 and thereby respects the static mechanical load imposed on an antenna by wind at maximum velocity.

Extraordinary operating conditions, such as heavy icing or exceptional dynamic stress (e.g. strain caused by oscillating support structures), may result in the breakage of an antenna or even cause it to fall to the ground.

These facts must be considered during the site planning process.

**The details given in our data sheets have to be followed carefully when installing the antennas and accessories.**

**In addition, please use our information brochure about mounting configurations.**

**The installation team must be properly qualified and also be familiar with the relevant national safety regulations.**

## Calculation of Wind Loading on Kathrein Base Station Antennas

In 1998 the co-ordinating committee of the Standardisation Group for Building Standards decided that during the harmonisation process of European standards, the DIN-Standards shall be modified and republished based on the European Pre-Standards.

As a result of this harmonisation process the new edition of DIN 1055 Part 4 was finally published in 2005. This standard defines the worst case loading example created by natural wind forces on bearing structures and their individual elements. The standard thereby defines the principles for calculating the maximum loading and for confirming the bearing capacity of structures in general.

One of the major changes in the calculation of the wind load under DIN 1055-4 is the definition of the value  $c_{f0}$ . Due to these changes in the calculation formula within the standard, the calculated wind load of some Base Station Antennas is higher than previously specified on earlier data sheets.

During 2009 Kathrein will migrate to calculating and specifying all wind loads in accordance with DIN 1055-4 (similar to the European Standard EN 1991-1-4) on the online data sheets. If the wind load has been calculated under the updated standard then this will be explicitly mentioned on the data sheet.

The physical dimensions of our products have not been modified unless otherwise specified, nor has the actual wind loading surface area of the antennas increased in any way.



### “Quality leads the way”

As the world's oldest and largest antenna manufacturer, we live up to claim “Quality leads the way” on a daily basis. One of the fundamental principles is to always be on the lookout for the best solution for our customers.

Our quality assurance system and our environmental management system apply to the entire company and are certified by TÜV according to EN ISO 9001 and EN ISO 14001.



The catalogue is splitted into two parts.

Part 1: Antennas

Part 2: Filters, Combiners and Amplifiers

	Pages
Antennas	7 – 202
Filters, Combiners, Amplifiers	203 – 316

A current list of Kathrein's International Representatives  
can be found on our homepage

[www.kathrein.de](http://www.kathrein.de)

### **Please contact for**

#### **Sales queries, orders, catalogues or CD-ROM:**

Fax: +49 80 31 184-820

E-Mail: [central.sales@kathrein.de](mailto:central.sales@kathrein.de)

#### **Technical Information:**

Fax: +49 80 31 184-973

E-Mail: [mobilcom@kathrein.de](mailto:mobilcom@kathrein.de)



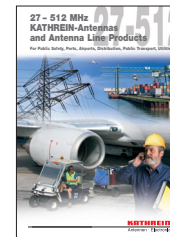
# List of available Catalogues for Mobile Communication Antennas and Accessories

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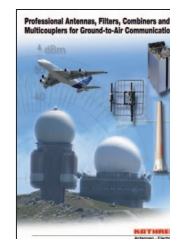
**790 – 6000 MHz Base Station Antennas,  
Filters, Combiners and Amplifiers  
for Mobile Communications**



**27 – 512 MHz KATHREIN-Antennas  
and Antenna Line Products**



**Professional Antennas, Filters, Combiners and  
Multicouplers for Ground-to-Air Communications**



**Antennas for Trains and Buses**



**The listed catalogues  
are also available on CD-ROM**



**Part 1:**

**Antennas for Mobile Communications**



698 – 894 MHz 1710 – 2170 MHz	XPol XXPol Dual-band
790 ... 960 MHz	XPol
790 ... 960 MHz	XXPol
790 ... 960 MHz 1710 ... 2170 MHz	VPol
1710 ... 2690 MHz	XPol
1710 ... 2690 MHz	XXPol 2-Multi-band
790 ... 960 MHz 1710 ... 2690 MHz	XXPol Dual-band
790 ... 960 MHz 1710 ... 2690 MHz	XXXPol
Omni	VPol
Indoor	VPol, VXPoI, VHPoI
RET	Remote Electrical Tilt-System
Electrical Accessories	Splitters, Tappers and Measurement Tools
Mechanical Accessories	Clamps, Downtilt Kits, ...

# Summary of Antenna Types

The articles are listed by type number in numerical order. **New or changed product.**

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
<b>730...</b>		<b>737...</b>		<b>741989v01</b>	76	<b>742351v01</b>	60
730368	52	737398	199	<b>741990v01</b>	77	<b>742352v01</b>	94
<b>730376v01</b>	53	<b>737971</b>	190				
<b>730378v01</b>	54	<b>737972</b>	190	<b>742...</b>			
730382	55	<b>737973</b>	190	742033	193	<b>800100..</b>	
730677	52	<b>737974</b>	190	742034	193	80010046	57
730691	53	<b>737975</b>	190	<b>742047v01</b>	106		
		<b>737977</b>	190	742113	195		
<b>731...</b>		<b>737978</b>	190	<b>742186v01</b>	73	<b>800101..</b>	
<b>731651</b>	188			<b>742192v01</b>	51	80010111	137
		<b>738...</b>		<b>742196v01</b>	64	<b>80010121v01</b>	110
<b>732...</b>		738187	138	<b>742210v01</b>	63	<b>80010122v01</b>	111
732317	189	738192	132	<b>742213v01</b>	71	<b>80010123v03</b>	112
732318	189	738440	201	<b>742214v01</b>	67	80010141	26
732321	189	738445	50	<b>742215v01</b>	68	80010147	153
732322	189	738446	50	<b>742218v01</b>	62		
732327	189	738449	151	<b>742219v01</b>	62		
		738450	128	<b>742222v01</b>	98	<b>800102..</b>	
		<b>738546</b>	188	<b>742223v02</b>	100	<b>80010202v02</b>	29
<b>734...</b>		738908	198	<b>742224v02</b>	104	<b>80010203v02</b>	30
734360	197			<b>742225v02</b>	109	<b>80010204v02</b>	32
734361	197	<b>739...</b>		<b>742226v01</b>	97	<b>80010207v01</b>	29
734362	197	<b>739489v01</b>	63	<b>742233v01</b>	86	<b>80010208v01</b>	33
734363	197	739619	28	<b>742235v01</b>	92	<b>80010214v01</b>	34
734364	197	739620	28	<b>742236v01</b>	89	<b>80010215v01</b>	33
734365	197	739710	76	<b>742237</b>	88	<b>80010217v01</b>	37
				742263	193	<b>80010218v01</b>	37
<b>735...</b>		<b>741...</b>		<b>742264v02</b>	99	<b>80010247v01</b>	64
735727	48	741322	101	<b>742265v02</b>	102	80010249	147
		741327	101	<b>742266v02</b>	107	<b>80010251v01</b>	60
<b>736...</b>		741573	148	<b>742270v03</b>	115	80010274	136
736347	133	741623	61	<b>742271v03</b>	118	<b>80010290v01</b>	117
736349	134	741790	139	<b>742272v03</b>	122	<b>80010291v02</b>	120
736350	131	<b>741984v01</b>	75	742290	57	<b>80010292v02</b>	124
736854	54	<b>741988v01</b>	75	<b>742317</b>	193	<b>80010294v02</b>	31

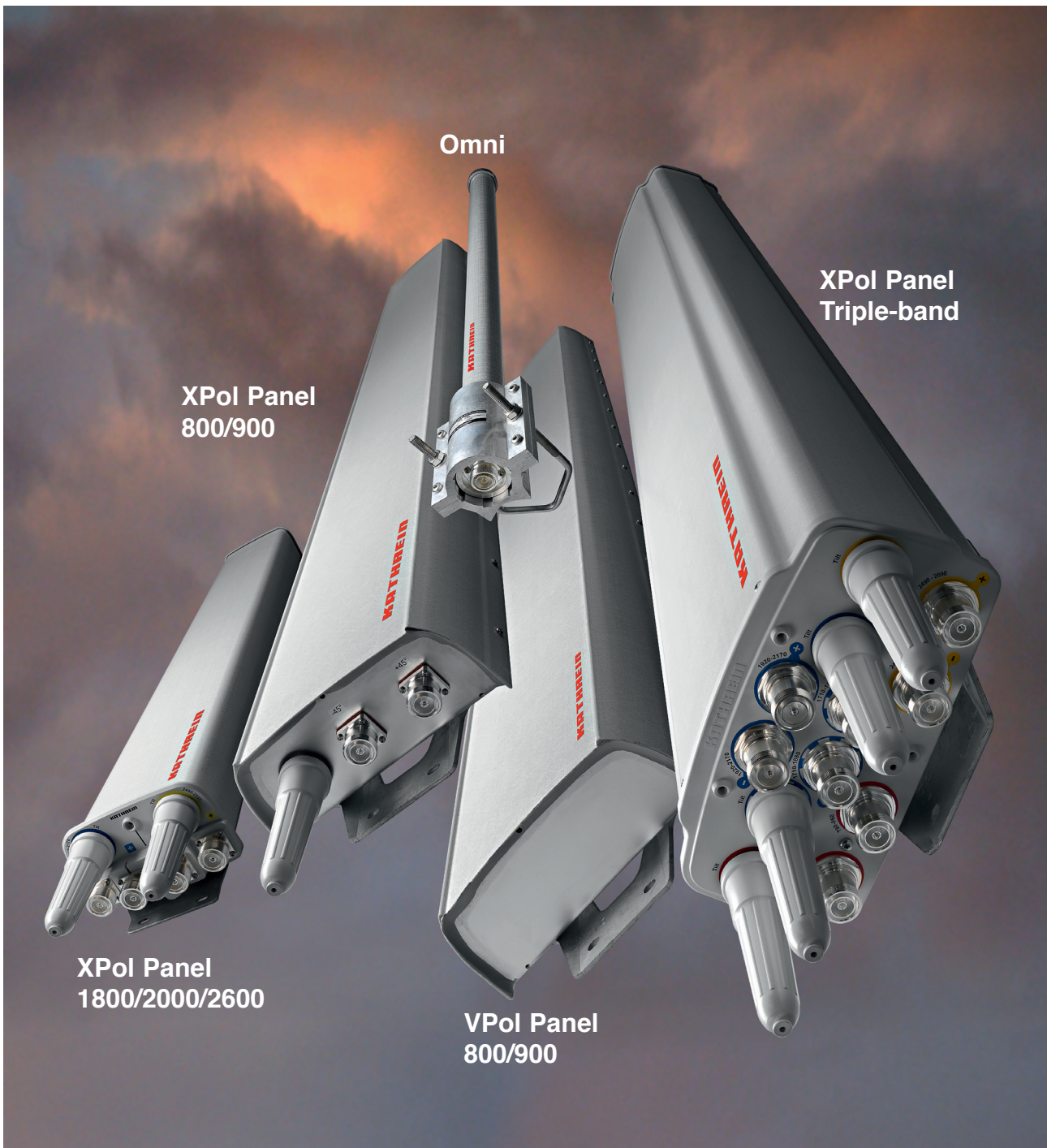


# Summary of Antenna Types

The articles are listed by type number in numerical order. **New or changed product.**

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
<b>800103..</b>		<b>80010511v01</b>	93	<b>80010736</b>	20	86010046	161
<b>80010300v01</b>	38	<b>80010516v01</b>	42	<b>80010747</b>	135	86010100	170
<b>80010303v02</b>	30	<b>80010517v01</b>	44	<b>80010748</b>	145	86010101	170
<b>80010305v02</b>	32	<b>80010518v01</b>	45	<b>80010749</b>	146	86010102	170
<b>80010306v02</b>	34			<b>80010764</b>	21	86010103	170
<b>80010307v01</b>	35	<b>800106..</b>		<b>80010765</b>	22	86010104	170
<b>80010308v01</b>	36	<b>80010605</b>	78	<b>80010766</b>	23	86010105	170
<b>80010309v01</b>	36	<b>80010606v01</b>	79			<b>86010130</b>	168
<b>80010310v01</b>	38	<b>80010614v01</b>	68	<b>850...</b>		86010131	168
80010314	80	80010618	80	85010002	188	86010136	171
80010360	82	<b>80010621v01</b>	70	85010003	188	86010137	171
80010368	56	80010622	90	85010005	202	86010138	171
80010375	81	<b>80010634v01</b>	31	85010006	196	86010140	160
80010378	74	80010636	73	<b>85010008</b>	191	86010141	160
		<b>80010644</b>	88	85010010	83	<b>86010147</b>	158
<b>800104..</b>		<b>80010643</b>	26	85010014	192	<b>86010148</b>	158
<b>80010425v01</b>	66	<b>80010647v01</b>	43	85010015	192	<b>86010150</b>	172
<b>80010426v01</b>	66	80010658	49	85010016	192	<b>86010151</b>	172
<b>80010428v01</b>	67	<b>80010665</b>	105	85010017	192	<b>86010152</b>	172
80010430	149	<b>80010667</b>	40	<b>85010058</b>	193		
80010431	152	<b>80010668</b>	41	<b>85010059</b>	193	<b>K61...</b>	
80010433	143	<b>80010670v01</b>	116	<b>85010060</b>	194	K61335	200
<b>80010439v01</b>	74	<b>80010671v01</b>	119	<b>85010061</b>	194		
80010442	140	<b>80010672v01</b>	123			<b>K63...</b>	
<b>80010454v01</b>	96	<b>80010675</b>	126	<b>860...</b>		<b>K63236001</b>	173
<b>80010456v02</b>	27	80010677	144	86010002	163		
80010465	142	80010681	65	86010006	159	<b>K75...</b>	
<b>80010485v01</b>	103	80010682	87	86010007	162	K751161	129
<b>80010486v01</b>	108	<b>80010692</b>	121	86010017	169	K7515641	130
<b>80010492v01</b>	125	<b>80010698</b>	114	86010018	169		
				86010019	169		
<b>800105..</b>		<b>800107..</b>		86010023	173		
<b>80010504v01</b>	69	<b>80010709</b>	150	86010026	159		
<b>80010505v01</b>	72	<b>80010734</b>	18	86010030	164		
<b>80010510v01</b>	91	<b>80010735</b>	19	86010031	165		

Antenna Designs:  
**Antenna Families**  
Harmony of Design and Technology





# Directional Antenna Designs: Special Directional Antennas For Particular Applications

## Antennas for

- tunnel use
- railway use
- micro cells (street use)
- high gain link for repeaters

The distinguishing features of these special versions, e.g. parabolic panels or log. periodic antennas, are:

- very small half-power beam width (high gain)
- high sidelobe suppression
- also Dual-band and Multi-band versions
- bidirectional horizontal pattern.





# Antenna Designs: Antenna Families / RET-system Distinguishing features

---

<b>Design</b>	Compact size and elegant design are the distinguishing features of Kathrein's antenna families.
<b>Radome</b>	The radomes cover the internal antenna components. The fiberglass material guarantees optimum performance with regards to stability, strength, UV resistance, painting and weather protection.
<b>Environmental influences</b>	Kathrein antenna designs are based on fundamental engineering knowledge and also on our decades of practical experience, during which the various constructions and materials used have proved their outstanding reliability.
<b>Environmental conditions</b>	Kathrein cellular antennas are designed to operate under the environmental conditions as described in ETS 300 019-1-4 class 4.1 E. The antennas exceed this standard with regards to the following items: – Low temperature: –55 °C – High temperature (dry): +60 °C
<b>Impedance</b>	Standard Impedance for all products is 50 Ω unless otherwise stated.
<b>Great variety of half-power beam width, gain values, electrical downtilt</b>	According to the antenna type selected, customer can choose from different half-power beam widths. Gain values up to 22.5 dBi and electrical downtilts up to 15° for panel antennas are available. Downtilts are either fixed or adjustable or even controlled by remote electrical tilt system (RET).
<b>Low intermodulation products (typically –150 dBc)</b>	After many years of experience in the construction of antennas and after intensive research into the effects of intermodulation, we have been able to optimize the material and technology used for antennas (the given value refers to 3rd order products measured with 2 carriers of 20 W each).
<b>Excellent tracking</b>	Tracking states the symmetry between the +45° and –45° polarized horizontal pattern. Bad tracking values lead to interferences in the network and reduced diversity performance. Kathreins special Tracking compensation reduces the average value measured at ±60° to < 2 dB.
<b>Superior squint</b>	Squint, also often referred to as “Pattern Symmetry”, gives the symmetry of the pattern over the whole frequency range measured at the 3 dB points. Interferences and nulls in the network may be the result of bad values. In contrast to the vertical squint which is usually good, excellent squint values of the horizontal pattern are hard to reach. Kathreins superior values of ± 5 % of the half-power beam width are in line with the requirements from system suppliers.
<b>Multi-band design</b>	Depending on antenna family broad-band, multi-band, dual-band and triple-band versions can be offered. Therefore the variety of antennas used can be kept to a minimum.
<b>Excellent grounding</b>	The antennas are DC grounded according EN 50083-1.
<b>Multi-functional installation hardware</b>	Depending on the type, the antennas are equipped with up to 3 attachment points. Panels can be wall-mounted without any additional hardware. For mast-mounting, stainless steel brackets and mechanical downtilt kits are available. To assist the installation technicians in aligning the panels, an azimuth adjustment tool can be supplied (see Mechanical Accessories).
<b>MTBF Statement</b>	Traditionally passive components like antennas cannot be well calculated due to the lack of a sufficient number of components in the MTBF library. Unfortunately this constraint results in a very inaccurate calculation. Thus such results are technically questionable and unrealistic. In essence, antennas are made out of mechanical parts that do not show any failure rates. Only available failure rates can be calculated into an MTBF value. Consequently such components cannot be listed in any MTBF library.
<b>Remote Electrical Tilt System AISG Compliancy</b>	Kathrein hereby states that RET devices, as far as the functionality and features are described within the AISG / 3 GPP standard, are compliant with the standard.

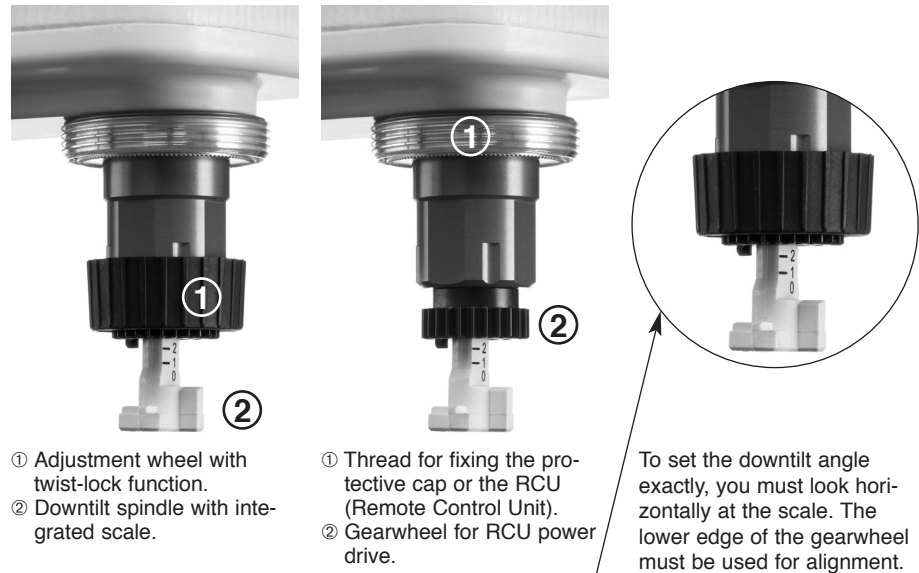
# Downtilting of Antennas: Downtilt Possibilities

**Mechanical downtilt**

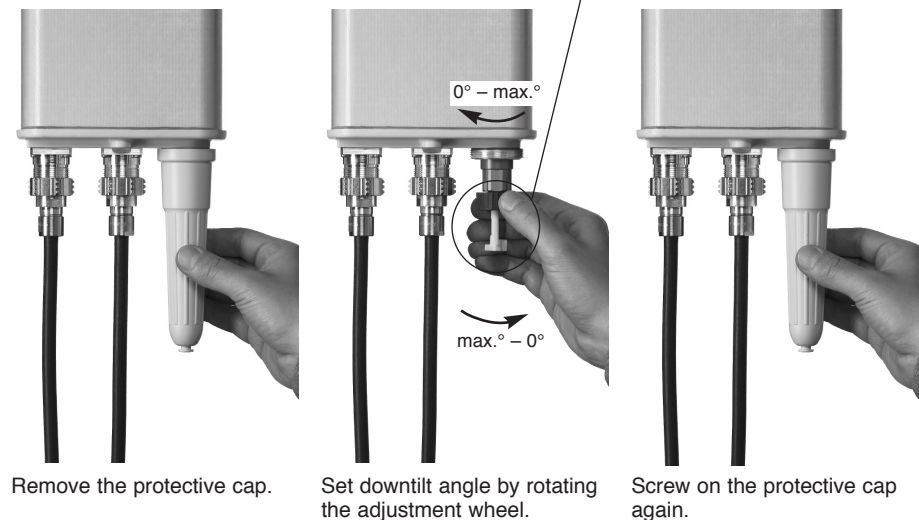
For further technical information please see “Mechanical Accessories”, page 186.

**Electrical downtilt**

Description of the adjustment mechanism (protective cap removed):



Manual adjustment procedure:



**Remote Electrical Tilt (RET)**

For further technical information please see “RET”, pages 156 and 157.

**XXPol Panel 870–960/1710–1880 C 65°/60° 17/18dBi 2°–8°T/2°T**

Polarization(s):   
(X) Dual +45°/–45°  
(V) Vertical

Antenna Family

Frequency Range(s)

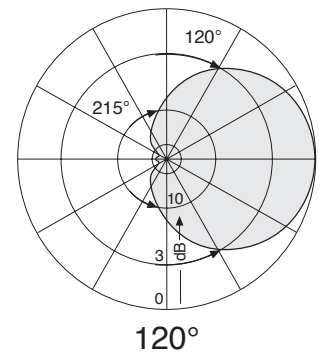
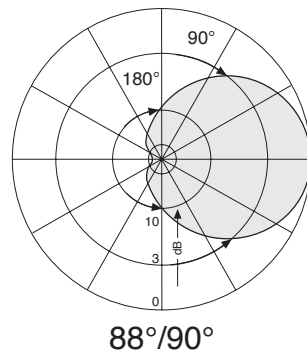
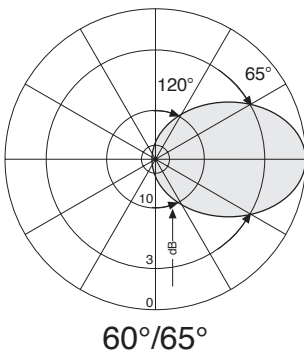
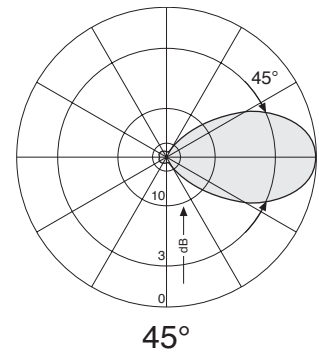
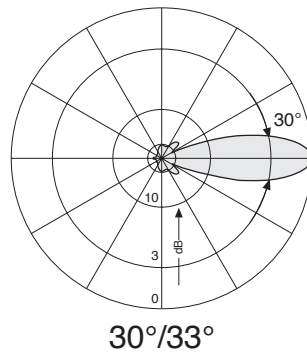
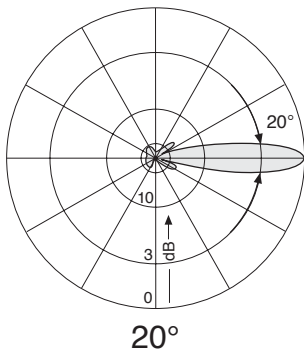
Integrated Combiner

Horizontal  
Half-power Beam Width(s)

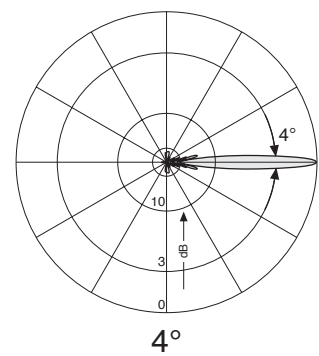
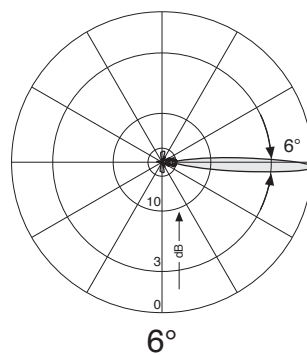
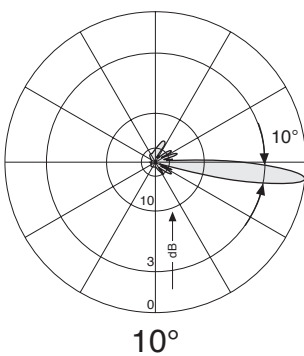
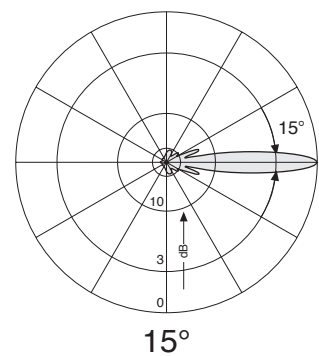
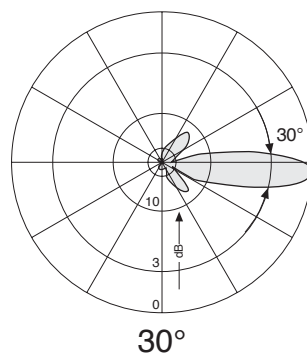
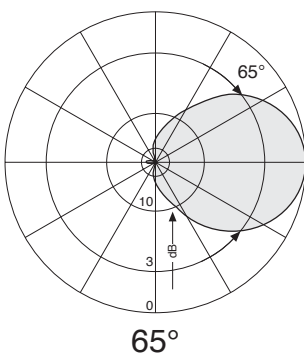
Gain Value(s)

Variable / Fixed Electrical Tilt(s)

## Horizontal Patterns:



## Vertical Patterns:





# Summary – Directional Antennas

## Dual Polarization +45°/–45°

### 700/800 XPol / 700/1800–2000 XXPoI

#### 700/800 XPol

Type	Type No.	Height [mm]	Connector position	Page
XPol Panel iRCU 698–894 65° 15dBi 0°–16°T	<b>80010734</b>	1355	bottom	18
XPol Panel iRCU 698–894 65° 16dBi 0°–10°T	<b>80010735</b>	1934	bottom	19
XPol Panel iRCU 698–894 65° 17dBi 0°–10°T	<b>80010736</b>	2438	bottom	20

#### 700/1800–2000 XXPoI

XXPol Panel iRCU 698–894 65° 15dBi 0°–16°T	1710–2170 65° 17.5dBi 0°–10°T	<b>80010764</b>	1403	bottom	21
XXPol Panel iRCU 698–894 65° 16dBi 0°–10°T	1710–2170 65° 18.5dBi 0°–10°T	<b>80010765</b>	1918	bottom	22
XXPol Panel iRCU 698–894 65° 17dBi 0°–10°T	1710–2170 65° 18.5dBi 0°–10°T	<b>80010766</b>	2438	bottom	23

**New or changed product**

iRCU specifications (86010145) see page 24



# Multi-band Panel

Dual Polarization

Half-power Beam Width

Integrated replaceable Remote Control Unit

Adjustable Electrical Downtilt

698-894

X

65°

iRCU

0°-16°

# KATHREIN

Antennen · Electronic

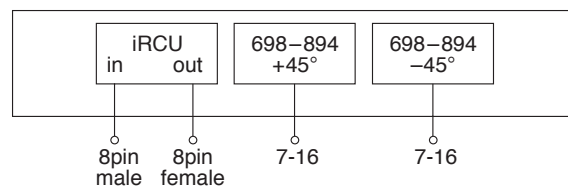


## XPol Panel iRCU 698-894 65° 15dBi 0°-16°T

Type No.	<b>80010734</b>		clamps included
Frequency range	<b>698-894</b>		
	698 – 806 MHz	824 – 894 MHz	
Polarization	+45°, -45°	+45°, -45°	
Gain	12.05 dBd / 14.2 dBi	12.65 dBd / 14.8 dBi	
<b>Horizontal Pattern:</b>			
Half-power beam width	68°	65°	
Front-to-back ratio	Copolar: > 30 dB Average: 32 dB	Copolar: > 30 dB Average: 33 dB	
Cross polar ratio			
Maindirection	0°	Typically: 24 dB	Typically: 23 dB
Sector	±60°	> 10 dB, Avg. 15 dB	> 10 dB, Avg. 16 dB
<b>Vertical Pattern:</b>			
Half-power beam width	16°	14.8°	
Electrical tilt	0°-16°, continuously adjustable		
Min. sidelobe suppression for first sidelobe above main beam: Average:	0° ... 8° ... 16° T 16 ... 17 ... 17 dB 19 ... 20 ... 20 dB	0° ... 8° ... 16° T 18 ... 17 ... 16 dB 25 ... 23 ... 23 dB	
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female iRCU in: 1 x 8pin male iRCU out: 1 x 8pin female		
Connector position	Bottom		
Wind load	Frontal: 620 N (at 150 km/h) Lateral: 200 N (at 150 km/h) Rearside: 710 N (at 150 km/h)	1550 N (at 150 mph) 500 N (at 150 mph) 1770 N (at 150 mph)	
Max. wind velocity	241 km/h (150 mph)		
Height/width/depth	1355 / 303 / 99 mm (53.3 / 11.9 / 3.9 inches)		
Category of mounting hardware	M (Medium)		
Weight	11 kg ( 24 lbs) / 13 kg (27 lbs) (clamps incl.)		
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter		



iRCU specifications (86010145) see page 24



# Multi-band Panel

698-894

# KATHREIN

Antennen · Electronic

Dual Polarization

X

Half-power Beam Width

65°

Integrated replaceable Remote Control Unit

iRCU

Adjustable Electrical Downtilt

0°-10°

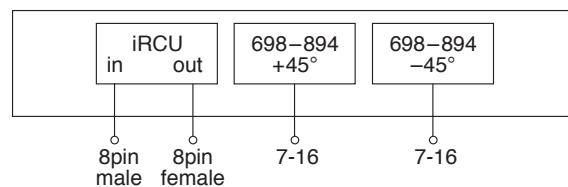


## XPol Panel iRCU 698-894 65° 16dBi 0°-10°T

Type No.	<b>80010735</b>		clamps included
Frequency range	<b>698-894</b>		
	698 – 806 MHz	824 – 894 MHz	
Polarization	+45°, -45°	+45°, -45°	
Gain	13.35 dBd / 15.5 dBi	13.85 dBd / 16 dBi	
<b>Horizontal Pattern:</b>			
Half-power beam width	67°	65°	
Front-to-back ratio	Copolar: > 30 dB Average: 35 dB	Copolar: > 30 dB Average: 35 dB	
Cross polar ratio			
Maindirection	0°	Typically: 25 dB	Typically: 25 dB
Sector	±60°	> 11 dB, Avg. 15 dB	> 11 dB, Avg. 15 dB
<b>Vertical Pattern:</b>			
Half-power beam width	11.3°	10°	
Electrical tilt	0°-10°, continuously adjustable		
Min. sidelobe suppression for first sidelobe above main beam:	0° ... 5° ... 10° T 16 ... 17 ... 17 dB	0° ... 5° ... 10° T 18 ... 17 ... 16 dB	
Average:	16 ... 19 ... 20 dB	20 ... 20 ... 20 dB	
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female iRCU in: 1 x 8pin male iRCU out: 1 x 8pin female		
Connector position	Bottom		
Wind load	Frontal: 900 N (at 150 km/h) Lateral: 310 N (at 150 km/h) Rearside: 1030 N (at 150 km/h)	2260 N (at 150 mph) 760 N (at 150 mph) 2580 N (at 150 mph)	
Max. wind velocity	241 km/h (150 mph)		
Height/width/depth	1934 / 303 / 99 mm (76.1 / 11.9 / 3.9 inches)		
Category of mounting hardware	H (Heavy)		
Weight	13 kg (28.7 lbs) / 15 kg (33 lbs) (clamps incl.)		
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter		



**iRCU specifications (86010145) see page 24**



# Multi-band Panel

698-894

## Dual Polarization

X

## Half-power Beam Width

65°

## Integrated replaceable Remote Control Unit

iRCU

## Adjustable Electrical Downtilt

0°-10°

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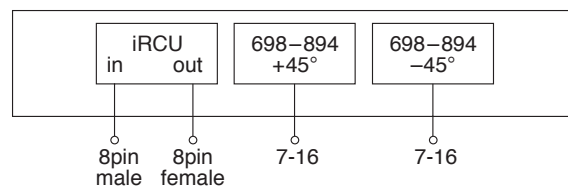


### XPol Panel iRCU 698-894 65° 17dBi 0°-10°T

Type No.	<b>80010736</b>		clamps included
Frequency range	<b>698-894</b>		
	698 – 806 MHz	824 – 894 MHz	
Polarization	+45°, -45°	+45°, -45°	
Gain	14.25 dBd / 16.4 dBi	14.85 dBd / 17 dBi	
<b>Horizontal Pattern:</b>			
Half-power beam width	67°	65°	
Front-to-back ratio	Copolar: > 30 dB Average: 35 dB	Copolar: > 30 dB Average: 35 dB	
Cross polar ratio			
Maindirection	0°	Typically: 25 dB	Typically: 20 dB
Sector	±60°	> 11 dB, Avg. 15 dB	> 11 dB, Avg. 15 dB
<b>Vertical Pattern:</b>			
Half-power beam width	9.5°	8.6°	
Electrical tilt	0.5°-9.5°, continuously adjustable		
Min. sidelobe suppression for first sidelobe above main beam:	0.5° ... 5° ... 9.5° T	0.5° ... 5° ... 9.5° T	
Average:	16 ... 16 ... 16 dB	18 ... 18 ... 17 dB	
	19 ... 18 ... 17 dB	20 ... 20 ... 20 dB	
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female iRCU in: 1 x 8pin male iRCU out: 1 x 8pin female		
Connector position	Bottom		
Wind load	Frontal: 1160 N (at 150 km/h) Lateral: 390 N (at 150 km/h) Rearside: 1380 N (at 150 km/h)	2900 N (at 150 mph) 970 N (at 150 mph) 3450 N (at 150 mph)	
Max. wind velocity	241 km/h (150 mph)		
Height/width/depth	2438 / 303 / 99 mm (96 / 11.9 / 3.9 inches)		
Category of mounting hardware	H (Heavy)		
Weight	15 kg (34.4 lbs) / 17 kg (37.4 lbs) (clamps incl.)		
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter		



iRCU specifications (86010145) see page 24



# Multi-band Panel

Dual Polarization

Half-power Beam Width

Integrated replaceable Remote Control Unit

Adjustable Electrical Downtilt

**698-894**    **1710-2170**

**X**    **X**

**65°**    **65°**

**iRCU**    **iRCU**

**0°-16°**    **0°-10°**

# KATHREIN

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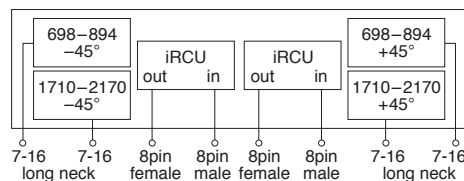
## XXPoI Panel iRCU 698-894/1710-2170 65°/65° 15/17.5dBi 0°-16°/0°-10°T

Type No.	<b>80010764</b>			
Frequency range	<b>698-894</b> 698 – 806 MHz    824 – 894 MHz		<b>1710-2170</b> 1710 – 1755 MHz    2110 – 2170 MHz    1850 – 1990 MHz	
Polarization	+45°, -45°		+45°, -45°	
Gain	12.15 dBi / 14.3 dBi	12.65 dBi / 14.8 dBi	17.3 dBi	17.5 dBi
<b>Horizontal Pattern:</b>				
Half-power beam width	68°	65°	61°	60°
Front-to-back ratio	Copolar: > 30 dB Average: 32 dB	Copolar: > 27 dB Average: 30 dB	Copolar: > 30 dB Average: 34 dB	Copolar: > 30 dB Average: 34 dB
Cross polar ratio Maindirection    0° Sector            ±60°	Typically: 25 dB > 10 dB, Avg. 15 dB	Typically: 25 dB > 8 dB, Avg. 14 dB	Typically: 25 dB > 8 dB, Avg. 14 dB	Typically: 25 dB > 10 dB, Avg. 16 dB
Tracking, Avg.	1.5 dB	1.5 dB	2.0 dB	1.0 dB
Squint	±2.5°	±4.0°	±4.0°	±1.5°
<b>Vertical Pattern:</b>				
Half-power beam width	15°	13.5°	7.5°	7.5°
Electrical tilt	0°-16°, continuously adjustable		0°-10°, continuously adjustable	
Sidelobe suppression for first sidelobe above main beam: Average:	0° ... 8° ... 16° T 17 ... 16 ... 16 dB 19 ... 19 ... 18 dB	0° ... 8° ... 16° T 18 ... 16 ... 16 dB 22 ... 20 ... 20 dB	0° ... 5° ... 10° T 18 ... 18 ... 17 dB 20 ... 20 ... 20 dB	0° ... 5° ... 10° T 18 ... 18 ... 17 dB 20 ... 20 ... 20 dB
VSWR	< 1.5			
Isolation, between ports	Intrasystem: > 30 dB, Intersystem: > 35 dB			
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)			
Max. power per input	500 W (at 50 °C ambient temperature)		300 W (at 50 °C ambient temperature)	
Input	4 x 7-16 female (long neck) iRCU in: 1 x 8pin male iRCU out: 1 x 8pin female			
Connector position	Bottom			
Wind load	Frontal: 690 N (at 150 km/h) Lateral: 260 N (at 150 km/h) Rearside: 710 N (at 150 km/h)	690 N (at 150 km/h) 260 N (at 150 km/h) 710 N (at 150 km/h)	1710 N (at 150 mph) 640 N (at 150 mph) 1770 N (at 150 mph)	1710 N (at 150 mph) 640 N (at 150 mph) 1770 N (at 150 mph)
Max. wind velocity	241 km/h (150 mph)			
Height/width/depth	1403 / 300 / 152 mm (55.2 / 11.8 / 6 inches)			
Category of mounting hardware	M (Medium)			
Weight	18.5 kg (40.8 lbs) / 20.5 kg (45.2 lbs) (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter			

clamps included



iRCU specifications (86010145) see page 24



# Multi-band Panel

Dual Polarization

Half-power Beam Width

Integrated replaceable Remote Control Unit

Adjustable Electrical Downtilt

**698-894**    **1710-2170**

**X**    **X**

**65°**    **65°**

**iRCU**    **iRCU**

**0°-10°**    **0°-10°**

# KATHREIN

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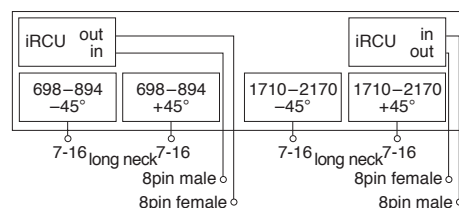
## XXPoI Panel iRCU 698-894/1710-2170 65°/65° 16/18.5dBi 0°-10°/0°-10°T

Type No.	<b>80010765</b>			
Frequency range	<b>698-894</b> 698 - 806 MHz    824 - 894 MHz		<b>1710-2170</b> 1710 - 1755 MHz    2110 - 2170 MHz    1850 - 1990 MHz	
Polarization	+45°, -45°		+45°, -45°	
Gain	13.15 dBd / 15.3 dBi	13.65 dBd / 15.8 dBi	18 dBi	18.5 dBi
<b>Horizontal Pattern:</b>				
Half-power beam width	68°	65°	63°	62°
Front-to-back ratio	Copolar: > 30 dB Average: 34 dB	Copolar: > 30 dB Average: 34 dB	Copolar: > 27 dB Average: 34 dB	Copolar: > 27 dB Average: 34 dB
Cross polar ratio				
Maindirection	0°	Typically: > 25 dB	Typically: > 25 dB	Typically: > 30 dB
Sector	±60°	> 10 dB, Avg. 16 dB	> 10 dB, Avg. 14 dB	> 10 dB, Avg. 15 dB
Tracking, Avg.	1.0 dB	1.5 dB	1.5 dB	1.0 dB
Squint	±2.5°	±3.0°	±3.0°	±2.5°
<b>Vertical Pattern:</b>				
Half-power beam width	11.8°	10.8°	5.8°	5.8°
Electrical tilt	0°-10°, continuously adjustable		0°-10°, continuously adjustable	
Min. sidelobe suppression for first sidelobe above main beam:	0° ... 5° ... 10° T 16 ... 16 ... 18 dB	0° ... 5° ... 10° T 18 ... 18 ... 16 dB	0° ... 5° ... 10° T 18 ... 18 ... 18 dB	0° ... 5° ... 10° T 18 ... 18 ... 18 dB
Average:	18 ... 20 ... 20 dB	20 ... 22 ... 20 dB	20 ... 22 ... 20 dB	20 ... 22 ... 20 dB
VSWR	< 1.5			
Isolation, between ports	Intrasystem: > 30 dB, Intersystem: > 35 dB			
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)			
Max. power per input	500 W (at 50 °C ambient temperature)		300 W (at 50 °C ambient temperature)	
Input	4 x 7-16 female (long neck) iRCU in: 2 x 8pin male iRCU out: 2 x 8pin female			
Connector position	Bottom			
Wind load	Frontal:	950 N (at 150 km/h)	2380 N (at 150 mph)	
	Lateral:	360 N (at 150 km/h)	890 N (at 150 mph)	
	Rearside:	980 N (at 150 km/h)	2460 N (at 150 mph)	
Max. wind velocity	241 km/h (150 mph)			
Height/width/depth	1918 / 300 / 152 mm (75.5 / 11.8 / 6 inches)			
Category of mounting hardware	H (Heavy)			
Weight	23.5 kg (51.8 lbs) / 25.5 kg (56.2 lbs) (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 42 - 115 mm diameter			

clamps included



iRCU specifications (86010145) see page 24



# Multi-band Panel

Dual Polarization

Half-power Beam Width

Integrated replaceable Remote Control Unit

Adjustable Electrical Downtilt

<b>698-894</b>	<b>1710-2170</b>
<b>X</b>	<b>X</b>
<b>65°</b>	<b>65°</b>
<b>iRCU</b>	<b>iRCU</b>
<b>0°-10°</b>	<b>0°-10°</b>

# KATHREIN

Antennen · Electronic



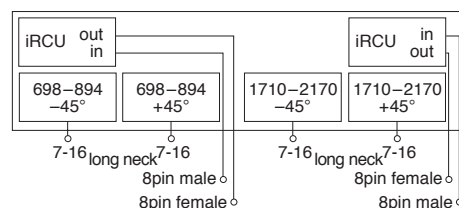
## XXPol Panel iRCU 698-894/1710-2170 65°/65° 17/18.5dBi 0°-10°/0°-10°T

Type No.	<b>80010766</b>			
Frequency range	<b>698-894</b> 698 - 806 MHz   824 - 894 MHz		<b>1710-2170</b> 1710 - 1755 MHz   2110 - 2170 MHz   1850 - 1990 MHz	
Polarization	+45°, -45°		+45°, -45°	
Gain	14.25 dBd / 16.4 dBi   14.65 dBd / 16.8 dBi		18 dBi   18.5 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	68°		65°	
Front-to-back ratio	Copolar: > 30 dB Average: 34 dB		Copolar: > 30 dB Average: 34 dB	
Cross polar ratio	Typically: > 25 dB		Typically: > 20 dB	
Maindirection	0°		0°	
Sector	±60°		±60°	
Tracking, Avg.	1.0 dB		1.5 dB	
Squint	±2.5°		±3.0°	
<b>Vertical Pattern:</b>				
Half-power beam width	9.5°		8.7°	
Electrical tilt	0°-10°, continuously adjustable		0°-10°, continuously adjustable	
Min. sidelobe suppression for first sidelobe above main beam:	0° ... 5° ... 10° T 16 ... 16 ... 16 dB		0° ... 5° ... 10° T 18 ... 18 ... 16 dB	
Average:	18 ... 20 ... 18 dB		20 ... 20 ... 20 dB	
VSWR	< 1.5			
Isolation, between ports	Intrasystem: > 30 dB, Intersystem: > 35 dB			
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)			
Max. power per input	500 W (at 50 °C ambient temperature)		300 W (at 50 °C ambient temperature)	
Input	4 x 7-16 female (long neck) iRCU in: 1 x 8pin male iRCU out: 1 x 8pin female			
Connector position	Bottom			
Wind load	Frontal: 1270 N (at 150 km/h)   3170 N (at 150 mph)		Lateral: 470 N (at 150 km/h)   1160 N (at 150 mph)	
	Rearside: 1320 N (at 150 km/h)   3310 N (at 150 mph)			
Max. wind velocity	241 km/h (150 mph)			
Height/width/depth	2438 / 300 / 152 mm (96 / 11.8 / 6.0 inches)			
Category of mounting hardware	H (Heavy)			
Weight	26.5 kg (58.3 lbs) / 28.5 kg (62.7 lbs) (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 42 - 115 mm diameter			

**clamps included**



**iRCU specifications (86010145) see page 24**





# Specifications

## iRCU

### 86010145

iRCU specifications (86010145)	
Field replaceable without dismantling the antenna	
Logical interface ex factory <sup>1)</sup>	AISG 1.1
Protocols	Compliant to AISG 1.1 and 3GPP/AISG 2.0
Hardware interface <sup>2)</sup>	2 x 8pin connector acc. IEC 60130-9; according to AISG: – iRCU in (male): Control / Daisy chain in – iRCU out (female): Daisy chain out
Power supply	10 ... 30 V
Power consumption	< 1 W (stand by) < 8.5 W (motor activated)
Adjustment time (full range)	40 sec.
Adjustment cycles	> 50,000
Certification	CE, <b>FC</b> <sup>3)</sup>

\* See mounting instructions and warnings.

<sup>1)</sup> The protocol of the logical interface can be switched from AISG 1.1 to 3GPP/AISG 2.0 and vice versa with a vendor specific command.

**Please note:** If the Primary of the RET system doesn't support the standard of the 'logical interface ex factory', the iRCU must be switched to the appropriate standard of the Primary before installation. Please contact Kathrein for further information.

<sup>2)</sup> The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened'). The connector should be tightened by hand only!

<sup>3)</sup> Tested to comply with FCC Standards. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

# Summary – Directional Antennas

## Dual Polarization +45°/–45°

### 800/900

#### Dual Polarization +45°/–45°

Type	Type No.	Height [mm]	Connector position	Page				
XPol Panel	806–960	30°	18.5dBi	0°T	80010141	1296	bottom	26
XPol Panel	790–960	30°	21dBi	0°T	80010643	2254	rearside	26
XPol Panel	790–960	30°	20.5dBi	0°–10°T	80010456v02	2254	rearside	27
XPol Panel	806–960	65°	9dBi	0°T	739619	256	bottom or top	28
XPol Panel	806–960	65°	12.5dBi	0°T	739620	656	bottom or top	28
XPol Panel	790–960	65°	15dBi	0°T	80010202v02	1294	bottom	29
XPol Panel	790–960	65°	15dBi	6°T	80010207v01	1294	bottom	29
XPol Panel	790–960	65°	15dBi	0°–14°T	80010303v02	1294	bottom	30
XPol Panel	790–960	65°	17dBi	0°T	80010203v02	1934	rearside	30
XPol Panel	790–960	65°	17dBi	6°T	80010294v02	1934	rearside	31
XPol Panel	790–960	65°	16.5dBi	0°–10°T	80010634v01	1934	rearside	31
XPol Panel	790–960	65°	18dBi	0°T	80010204v02	2254	rearside	32
XPol Panel	790–960	65°	17.5dBi	0°–8°T	80010305v02	2254	rearside	32
XPol Panel	790–960	65°	18dBi	0°T	80010215v01	2574	rearside	33
XPol Panel	790–960	65°	18dBi	6°T	80010208v01	2574	rearside	33
XPol Panel	790–960	65°	18dBi	9°T	80010214v01	2574	rearside	34
XPol Panel	790–960	65°	17.5dBi	0°–10°T	80010306v02	2574	bottom	34
XPol Panel	790–960	65°	18dBi	0°–10°T	80010307v01	2574	rearside	35
XPol Panel	790–960	85°	13.5dBi	0°–14°T	80010308v01	1294	bottom	36
XPol Panel	790–960	85°	15dBi	0°–10°T	80010309v01	1934	bottom	36
XPol Panel	790–960	85°	17dBi	0°T	80010217v01	2574	rearside	37
XPol Panel	790–960	85°	17dBi	6°T	80010218v01	2574	rearside	37
XPol Panel	790–960	85°	16dBi	0°–10°T	80010310v01	2574	bottom	38
XPol Panel	790–960	85°	16.5dBi	0°–10°T	80010300v01	2574	rearside	38

New or changed product

# Panel Dual Polarization Half-power Beam Width

790–960

X

30°

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## XPoI Panel 806–960 30° 18.5dBi

Type No.	80010141	
Frequency range	806–960 806 – 894 MHz   880 – 960 MHz	
Polarization	+45°, –45°	
Gain	2 x 18 dBi	
Half-power beam width Copolar +45°/–45°	Horizontal: 31° Vertical: 15°	Horizontal: 29° Vertical: 14°
Front-to-back ratio, copolar	> 25 dB	
Isolation	> 30 dB	
VSWR	< 1.5	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	500 W (at 50 °C ambient temperature)	
Input	2 x 7-16 female	
Connector position	Bottom	
Weight	22 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 680 / 130 / 970 N	
Height/width/depth	1296 / 560 / 116 mm	



## XPoI Panel 790–960 30° 21dBi 0°T

Type No.	80010643			clamps included
Frequency range	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz	
Polarization	+45°, –45°			
Gain at 0° T	2 x 20.2 dBi	2 x 20.4 dBi	2 x 20.8 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	33°	32°	30°	
Front-to-back ratio, copolar	> 30 dB			
Cross polar ratio Maindirection 0°	Typically: 30 dB	Typically: 26 dB	Typically: 23 dB	
Tracking, Avg.	2.0 dB			
Squint	±2.0°			
<b>Vertical Pattern:</b>				
Half-power beam width	8.4°	8.2°	7.4°	
Sidelobe suppression for first sidelobe above main beam	> 15 dB			
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	500 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Rearside			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1760 / 330 / 2040 N			
Height/width/depth	2254 / 576 / 99 mm			
Category of mounting hardware	H (Heavy)			
Weight	20.5 kg / 22.5 kg (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter			



**Panel**  
**Dual Polarization**  
**Half-power Beam Width**

806–960

X

30°

**KATHREIN**  
 Antennen · Electronic

800/900  
 XPol

**XPol Panel 790–960 30° 20.5dBi 0°–10°T**

Type No.	<b>80010456v02</b>			<i>clamps included</i>
Frequency range	<b>790–960</b>			
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Gain at 0° T	2 x 20.0 dBi	2 x 20.2 dBi	2 x 20.5 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	33°	32°	30°	
Front-to-back ratio, copolar	> 28 dB	> 29 dB	> 30 dB	
Cross polar ratio Maindirection 0°	Typically: 25 dB	Typically: 23 dB	Typically: 20 dB	
Tracking, Avg.	2.5 dB			
Squint	±2.0°			
<b>Vertical Pattern:</b>				
Half-power beam width	9.1°	8.8°	8.5°	
Electrical tilt	0.5°–10°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T > 16 ... 13 ... 13 dB	0° ... 5° ... 10° T > 18 ... 18 ... 17 dB	0° ... 5° ... 10° T > 18 ... 16 ... 15 dB	
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	500 W (at 50 °C ambient temperature)			
Input	2x 7-16 female			
Connector position	Rearside			
Adjustment mechanism	1x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1760 / 330 / 2040 N			
Height/width/depth	2254 / 576 / 99 mm			
Category of mounting hardware	H (Heavy)			
Weight	22 kg / 24 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			



# Panel Dual Polarization Half-power Beam Width

806–960

X

65°

# KATHREIN

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## XPol Panel 806–960 65° 9dBi

Type No.	<b>739619</b>	
Frequency range	<b>806–960</b>	
	806 – 880 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 8.5 dBi	2 x 9 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 70° Vertical: 70°	Horizontal: 65° Vertical: 68°
Front-to-back ratio, copolar	> 27 dB	> 27 dB
Cross polar ratio Maindirection 0° Sector ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Isolation	> 30 dB	
VSWR	< 1.5	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	350 W (at 50 °C ambient temperature)	
Input	2 x 7-16 female	
Connector position	Bottom or top	
Weight	3 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 40 / 25 / 90 N	
Height/width/depth	256 / 262 / 116 mm	



## XPol Panel 806–960 65° 12.5dBi

Type No.	<b>739620</b>	
Frequency range	<b>806–960</b>	
	806 – 880 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 12 dBi	2 x 12.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 68° Vertical: 29°	Horizontal: 65° Vertical: 27°
Front-to-back ratio, copolar	> 30 dB	
Isolation	> 30 dB	
VSWR	< 1.5	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	500 W (at 50 °C ambient temperature)	
Input	2 x 7-16 female	
Connector position	Bottom or top	
Weight	6 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 110 / 60 / 240 N	
Height/width/depth	656 / 262 / 116 mm	



# Panel Dual Polarization Half-power Beam Width

790–960

X

65°

**KATHREIN**  
Antennen · Electronic

800/900  
XPoI

## XPoI Panel 790–960 65° 15dBi 0°T

Type No.	80010202v02			clamps included
Frequency range	790–960			
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Gain	2 x 14.5 dBi	2 x 14.7 dBi	2 x 15 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	69°	68°	65°	
Front-to-back ratio (180°±30°)	> 23 dB	> 24 dB	> 25 dB	
Cross polar ratio				
Maindirection 0°	> 20 dB	> 20 dB	> 20 dB	
Sector ±60°	> 11 dB	> 11 dB	> 11 dB	
Tracking, Avg.	0.5 dB			
Squint	±2°			
<b>Vertical Pattern:</b>				
Half-power beam width	14.7°	14.3°	13.2°	
Sidelobe suppression for first sidelobe above horizon	> 14 dB	> 15 dB	> 14 dB	
VSWR	< 1.5			
Isolation	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	500 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 430 / 200/ 600 N			
Height/width/depth	1294 / 259 / 99 mm			
Category of mounting hardware	M (Medium)			
Weight	6.5 kg / 8.5 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			



## XPoI Panel 790–960 65° 15dBi 6°T

Type No.	80010207v01			clamps included
Frequency range	790–960			
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Gain	2 x 14.5 dBi	2 x 14.7 dBi	2 x 15 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	66°	65°	63°	
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB	
Cross polar ratio				
Maindirection 0°	Typically: > 20 dB	Typically: > 20 dB	Typically: > 20 dB	
Sector ±60°	Typically: > 10 dB	Typically: > 10 dB	Typically: > 10 dB	
<b>Vertical Pattern:</b>				
Half-power beam width	16°	15.7°	14.6°	
Electrical tilt	6°, fixed	6°, fixed	6°, fixed	
Sidelobe suppression for: first sidelobe above horizon sector 0°–30° above horizon	> 13 dB > 13 dB	> 14 dB > 14 dB	> 16 dB > 14 dB	
VSWR	< 1.4	< 1.3		
Isolation	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	500 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 790 / 370 / 1090 N			
Height/width/depth	1294 / 259 / 99 mm			
Category of mounting hardware	M (Medium)			
Weight	7.5 kg / 9.5 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 42 – 115 mm diameter			





# Panel Dual Polarization Half-power Beam Width

790–960

X

65°

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## XPoI Panel 790–960 65° 15dBi 0°–14°T

Type No.	80010303v02		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	14.5 ... 14.4 ... 14.3	14.7 ... 14.5 ... 14.4	15 ... 14.8 ... 14.7
Tilt	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°
<b>Horizontal Pattern:</b>			
Half-power beam width	67°	66°	65°
Front-to-back ratio, copolar	> 24 dB	> 25 dB	> 25 dB
Cross polar ratio			
Maindirection	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	> 10 dB	> 10 dB	> 10 dB
<b>Vertical Pattern:</b>			
Half-power beam width	15.7°	15.5°	15°
Electrical tilt	0°–14°, continuously adjustable		
Sidelobe suppression for first sidelobe above horizon	0° ... 7° ... 14° T 15 ... 14 ... 15 dB	0° ... 7° ... 14° T 18 ... 15 ... 15 dB	0° ... 7° ... 14° T 18 ... 15 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	400 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 440 / 210 / 610 N		
Height/width/depth	1294 / 259 / 99 mm		
Category of mounting hardware	M (Medium)		
Weight	8.5 kg		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



## XPoI Panel 790–960 65° 17dBi 0°T

Type No.	80010203v02		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16.4 dBi	2 x 16.6 dBi	2 x 16.9 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	69°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio			
Maindirection	> 22 dB	> 22 dB	> 22 dB
Sector	> 18 dB	> 18 dB	> 18 dB
Sector	> 14 dB	> 14 dB	> 14 dB
Tracking, Avg.	0.5 dB		
Squint	±2.0°		
<b>Vertical Pattern:</b>			
Half-power beam width	9.9°	9.5°	8.9°
Sidelobe suppression for first sidelobe above horizon	> 13 dB	> 15 dB	> 15 dB
VSWR	< 1.5	< 1.5	< 1.4
Isolation	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 690 / 310 / 910 N		
Height/width/depth	1934 / 259 / 99 mm		
Category of mounting hardware	M (Medium)		
Weight	9.5 kg / 11.5 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



# Panel Dual Polarization Half-power Beam Width

790–960

X

65°

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800/900  
XPol

## XPol Panel 790–960 65° 17dBi 6°T

Type No.	<b>80010294v02</b>		
Frequency range	<b>790–960</b>		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16.2 dBi	2 x 16.5 dBi	2 x 16.9 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	69°	68°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio			
Maindirection 0°	Typ. > 20 dB	Typ. > 20 dB	Typ. > 20 dB
Sector ±60°	Typ. > 10 dB	Typ. > 10 dB	Typ. > 10 dB
Tracking, Avg.	1 dB		
Squint	±1.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	9.4°	9.3°	8.8°
Electrical tilt	6°, fixed	6°, fixed	6°, fixed
Sidelobe suppression for first sidelobe above horizon	> 14 dB	> 15 dB	> 15 dB
VSWR	< 1.5	< 1.4	< 1.3
Isolation	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Wind load (at 150 km/h)	Frontal / lateral / rear: 690 / 310 / 910 N		
Height/width/depth	1934 / 259 / 99 mm		
Category of mounting hardware	M (Medium)		
Weight	9.5 kg / 11.5 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



## XPol Panel 790–960 65° 16.5dBi 0°–10°T

Type No.	<b>80010634v01</b>		
Frequency range	<b>790–960</b>		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain (dBi)	16.2 ... 16.4 ... 16.2	16.3 ... 16.6 ... 16.3	16.6 ... 16.8 ... 16.6
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°
<b>Horizontal Pattern:</b>			
Half-power beam width	69°	68°	65°
Front-to-back ratio (180°±30°)	> 24 dB	> 25 dB	> 25 dB
Cross polar ratio			
Maindirection 0°	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB
Sector ±60°	> 10 dB	> 10 dB	> 10 dB
Tracking, Avg.	0.5 dB		
Squint	±1.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	10°	9.9°	9.7°
Electrical tilt	0° – 10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T 18 ... 18 ... 18 dB	0° ... 5° ... 10° T 18 ... 18 ... 18 dB	0° ... 5° ... 10° T 18 ... 18 ... 18 dB
Isolation, between ports	> 30 dB		
VSWR	< 1.5		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	400 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rear: 680 / 310 / 900 N		
Height/width/depth	1934 / 259 / 99 mm		
Category of mounting hardware	M (Medium)		
Weight	10.5 kg / 12.5 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



# Panel Dual Polarization Half-power Beam Width

790–960

X

65°

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## XPoI Panel 790–960 65° 18dBi 0°T

Type No.	80010204v02		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.2 dBi	2 x 17.5 dBi	2 x 17.8 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	69°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio			
Maindirection 0°	> 25 dB	> 25 dB	> 25 dB
Sector ±60°	> 14 dB	> 14 dB	> 14 dB
Tracking, Avg.	1.0 dB		
Squint	±2.0°		
<b>Vertical Pattern:</b>			
Half-power beam width	8.5°	8.3°	7.8°
Sidelobe suppression for: first sidelobe above horizon	> 13 dB	> 14 dB	> 15 dB
VSWR	< 1.5	< 1.4	< 1.4
Isolation	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 790 / 370 / 1090 N		
Height/width/depth	2254 / 259 / 99 mm		
Category of mounting hardware	M (Medium)		
Weight	11 kg / 13 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



## XPoI Panel 790–960 65° 17.5dBi 0°–8°T

Type No.	80010305v02		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	16.8 ... 17 ... 16.7	16.9 ... 17.1 ... 16.9	17.2 ... 17.4 ... 17.0
Tilt	0° ... 4° ... 8°	0° ... 4° ... 8°	0° ... 4° ... 8°
<b>Horizontal Pattern:</b>			
Half-power beam width	69°	67°	65°
Front-to-back ratio, copolar	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio			
Maindirection 0°	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector ±60°	Typically: > 10 dB	Typically: > 10 dB	Typically: > 10 dB
Tracking, Avg.	0.5 dB		
Squint	±2.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	9.1°	8.8°	8.5°
Electrical tilt	0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 4° ... 8° T 18 ... 18 ... 18 ... 16 dB	0° ... 2° ... 4° ... 8° T 18 ... 18 ... 18 ... 16 dB	0° ... 2° ... 4° ... 8° T 20 ... 18 ... 17 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 800 / 390 / 1090 N		
Height/width/depth	2254 / 259 / 99 mm		
Category of mounting hardware	M (Medium)		
Weight	11.5 kg / 13.5 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



# Panel Dual Polarization Half-power Beam Width

790–960

X

65°

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## XPol Panel 790–960 65° 18dBi 0°T

Type No.	80010215v01		
Frequency range	<b>790–960</b>		
	790 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 17.9 dBi	2 x 18 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	69°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	0°	> 25 dB	> 25 dB
Sector	±60°	> 12 dB	> 12 dB
Tracking, Avg.	0.5 dB		
Squint	±2.0°		
<b>Vertical Pattern:</b>			
Half-power beam width	7.4°	7.2°	6.8°
Sidelobe suppression for first sidelobe above main beam	≥ 14 dB	≥ 15 dB	≥ 15 dB
Null-fill	Typically: –25 dB		
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 940 / 420 / 1270 N		
Height/width/depth	2574 / 259 / 99 mm		
Category of mounting hardware	H (Heavy)		
Weight	12 kg / 14 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



## XPol Panel 790–960 65° 18dBi 6°T

Type No.	80010208v01		
Frequency range	<b>790–960</b>		
	790 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 17.9 dBi	2 x 18 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	69°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	0°	> 25 dB	> 25 dB
Sector	±60°	> 10 dB	> 10 dB
Tracking, Avg.	0.5 dB		
Squint	±2.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	7.4°	7.2°	6.8°
Electrical tilt	6°, fixed		
Sidelobe suppression for first sidelobe above main beam	≥ 16 dB	≥ 17 dB	≥ 17 dB
Null-fill	Typically: –25 dB		
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 940 / 420 / 1270 N		
Height/width/depth	2574 / 259 / 99 mm		
Category of mounting hardware	H (Heavy)		
Weight	12 kg / 14 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



# Panel Dual Polarization Half-power Beam Width

790–960

X

65°

**KATHREIN**  
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## XPoI Panel 790–960 65° 18dBi 9°T

Type No.	80010214v01		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.6 dBi	2 x 17.8 dBi	2 x 18 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	69°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	0°	> 25 dB	> 25 dB
Sector	±60°	> 10 dB	> 10 dB
Tracking, Avg.		1.0 dB	
Squint		±2.5°	
<b>Vertical Pattern:</b>			
Half-power beam width	7.4°	7.2°	6.8°
Electrical tilt		9°, fixed	
Sidelobe suppression for first sidelobe above main beam	≥ 13 dB	≥ 15 dB	≥ 16 dB
Null-fill	Typically: –25 dB		
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 940 / 420 / 1270 N		
Height/width/depth	2574 / 259 / 99 mm		
Category of mounting hardware	H (Heavy)		
Weight	12 kg / 14 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



## XPoI Panel 790–960 65° 17.5dBi 0°–10°T

Type No.	80010306v02		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	17.0 ... 17.1 ... 17.0	17.1 ... 17.2 ... 17.1	17.3 ... 17.4 ... 17.3
Tilt	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°
<b>Horizontal Pattern:</b>			
Half-power beam width	68°	66°	65°
Front-to-back ratio (180°±30°)	> 24 dB	> 25 dB	> 25 dB
Cross polar ratio	0°	Typically: 23 dB	Typically: 25 dB
Sector	±60°	Typically: > 10 dB	Typically: > 10 dB
Tracking		1 dB	
Squint		±2°	
<b>Vertical Pattern:</b>			
Half-power beam width	7.7°	7.5°	7.3°
Electrical tilt	0.5°–9.5°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0.5° ... 5° ... 9.5° T ≥ 17 ... 14 ... 14 dB	0.5° ... 5° ... 9.5° T ≥ 18 ... 15 ... 15 dB	0.5° ... 5° ... 9.5° T ≥ 20 ... 18 ... 18 dB
Null-fill at 0° tilt	Typically: –25 dB		
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female (long neck)		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 940 / 440 / 1270 N		
Height/width/depth	2574 / 259 / 99 mm		
Category of mounting hardware	H (Heavy)		
Weight	14 kg / 16 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



**Panel  
Dual Polarization  
Half-power Beam Width**

790–960

X

65°

**KATHREIN**  
Antennen · Electronic

800/900  
XPol

**XPol Panel 790–960 65° 18dBi 0°–10°T**

Type No.	<b>80010307v01</b>		
Frequency range	<b>790–960</b>		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	17.4 ... 17.5 ... 17.4	17.5 ... 17.6 ... 17.5	17.7 ... 17.9 ... 17.7
Tilt	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°
<b>Horizontal Pattern:</b>			
Half-power beam width	68°	67°	65°
Front-to-back ratio (180°±30°)	> 24 dB	> 25 dB	> 25 dB
Cross polar ratio Sector	Typically: 22 dB Typically: > 10 dB	Typically: 23 dB Typically: > 10 dB	Typically: 25 dB Typically: > 10 dB
Tracking, Avg.	1.0 dB		
Squint	±2.0°		
<b>Vertical Pattern:</b>			
Half-power beam width	7.7°	7.5°	7.3°
Electrical tilt	0.5°–9.5°, continuously adjustable		
Sidelobe suppression – for first sidelobe above main beam	0.5° ... 5° ... 9.5° T ≥ 18 ... 15 ... 15 dB	0.5° ... 5° ... 9.5° T ≥ 18 ... 15 ... 15 dB	0.5° ... 5° ... 9.5° T ≥ 18 ... 16 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Adjustment mechanism	1 x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 940 / 420 / 1270 N		
Height/width/depth	2574 / 259 / 99 mm		
Category of mounting hardware	H (Heavy)		
Weight	13 kg / 15 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		

**clamps  
included**





# Panel Dual Polarization Half-power Beam Width

790–960

X

85°

**KATHREIN**  
Antennen · Electronic

## XPoI Panel 790–960 85° 13.5dBi 0°–14°T

Type No.	80010308v01		
Frequency range	<b>790–960</b>		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	13.2 ... 13.3 ... 13.2 dBi	13.3 ... 13.4 ... 13.3 dBi	13.4 ... 13.5 ... 13.4 dBi°
Tilt	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°
<b>Horizontal Pattern:</b>			
Half-power beam width	86°	85°	83°
Front-to-back ratio (180° ±0°)	> 24 dB	> 24 dB	> 26 dB
Front-to-back ratio (180° ±30°)	> 20 dB	> 22 dB	> 24 dB
Cross polar ratio	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB
Sector	0° ±60°	> 10 dB	> 10 dB
Tracking, Avg.	0.5 dB		
Squint	±1.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	16°	15.5°	15°
Electrical tilt	0°–14°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 7° ... 14° T ≥ 17 ... 16 ... 15 dB	0° ... 7° ... 14° T ≥ 17 ... 17 ... 16 dB	0° ... 7° ... 14° T ≥ 17 ... 16 ... 16 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 430 / 200 / 590 N		
Height/width/depth	1294 / 259 / 99 mm		
Category of mounting hardware	M (Medium)		
Weight	9 kg / 11 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



## XPoI Panel 790–960 85° 15dBi 0°–10°T

Type No.	80010309v01		
Frequency range	<b>790–960</b>		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain	14.8 ... 15.0 ... 14.6 dBi	14.9 ... 15.1 ... 14.7 dBi	14.8 ... 15.2 ... 15.0 dBi°
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°
<b>Horizontal Pattern:</b>			
Half-power beam width	85°	85°	83°
Front-to-back ratio (180° ±0°)	> 25 dB	> 25 dB	> 26 dB
Front-to-back ratio (180° ±30°)	> 21 dB	> 21 dB	> 21 dB
Cross polar ratio	Typically: 23 dB	Typically: 22 dB	Typically: 22 dB
Sector	0° ±60°	> 10 dB	> 10 dB
Tracking, Avg.	0.5 dB		
Squint	±3.0°		
<b>Vertical Pattern:</b>			
Half-power beam width	10.1°	9.8°	9.6°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam:	0° ... 5° ... 10° T ≥ 15 ... 15 ... 14 dB	0° ... 5° ... 10° T ≥ 15 ... 15 ... 15 dB	0° ... 5° ... 10° T ≥ 18 ... 18 ... 18 dB
Avg.:	≥ 19 ... 19 ... 19 dB	≥ 20 ... 20 ... 20 dB	≥ 22 ... 22 ... 22 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	400 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 680 / 310 / 900 N		
Height/width/depth	1934 / 259 / 99 mm		
Category of mounting hardware	M (Medium)		
Weight	11.5 kg / 13.5 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



# Panel Dual Polarization Half-power Beam Width

790–960

X

85°

**KATHREIN**  
Antennen · Electronic

800/900  
XPol

## XPol Panel 790–960 85° 17dBi 0°T

Type No.	80010217v01		
Frequency range	<b>790–960</b>		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	16.6 dBi	16.7 dBi	16.8 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	86°	85°	83°
Front-to-back ratio (180° ±0°)	> 25 dB	> 25 dB	> 25 dB
Front-to-back ratio (180° ±30°)	> 23 dB	> 24 dB	> 24 dB
Cross polar ratio	> 20 dB	> 20 dB	> 20 dB
Sector			
Tracking, Avg.	1.0 dB		
Squint	±4.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	7.5°	7.3°	7.0°
Sidelobe suppression for first sidelobe above main beam	16 dB	17 dB	16 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 940 / 420 / 1270 N		
Height/width/depth	2574 / 259 / 99 mm		
Category of mounting hardware	H (Heavy)		
Weight	12 kg / 14 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 42 – 115 mm diameter		



## XPol Panel 790–960 85° 17dBi 6°T

Type No.	80010218v01		
Frequency range	<b>790–960</b>		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	16.3 dBi	16.5 dBi	16.9 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	86°	85°	83°
Front-to-back ratio (180° ±0°)	> 24 dB	> 25 dB	> 27 dB
Front-to-back ratio (180° ±30°)	> 22 dB	> 23 dB	> 25 dB
Cross polar ratio	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB
Sector			
Tracking, Avg.	0.5 dB		
Squint	±2.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	7.6°	7.3°	7.0°
Electrical tilt	6°, fixed		
Sidelobe suppression for first sidelobe above main beam	17 dB	16 dB	16 dB
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 940 / 420 / 1270 N		
Height/width/depth	2574 / 259 / 99 mm		
Category of mounting hardware	H (Heavy)		
Weight	12 kg / 14 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 42 – 115 mm diameter		



# Panel Dual Polarization Half-power Beam Width

790–960

X

85°

**KATHREIN**  
Antennen · Electronic

## XPoI Panel 790–960 85° 16dBi 0°–10°T

Type No.	80010310v01		
Frequency range	<b>790–960</b>		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	15.8 ... 15.6 ... 15.4 dBi	16.0 ... 15.9 ... 15.8 dBi	16.2 ... 16.2 ... 16.2 dBi°
Tilt	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°
<b>Horizontal Pattern:</b>			
Half-power beam width	86°	85°	83°
Front-to-back ratio (180° ±0°)	> 24 dB	> 24 dB	> 26 dB
Front-to-back ratio (180° ±30°)	> 20 dB	> 22 dB	> 24 dB
Cross polar ratio	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB
Sector	0° ±60°	> 10 dB	> 10 dB
Tracking, Avg.	0.5 dB		
Squint	±3.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	8.1°	7.9°	7.6°
Electrical tilt	0.5°–9.5°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0.5° ... 5° ... 9.5° T ≥ 18 ... 14 ... 14 dB	0.5° ... 5° ... 9.5° T ≥ 18 ... 17 ... 16 dB	0.5° ... 5° ... 9.5° T ≥ 17 ... 16 ... 16 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 950 / 420 / 1270 N		
Height/width/depth	2574 / 259 / 99 mm		
Category of mounting hardware	H (Heavy)		
Weight	14 kg / 16 kg (clamps incl.)		
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter		

## XPoI Panel 790–960 85° 16.5dBi 0°–10°T

Type No.	80010300v01		
Frequency range	<b>790–960</b>		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	16.2 ... 16.2 ... 15.8 dBi	16.3 ... 16.3 ... 16.1 dBi	16.5 ... 16.6 ... 16.5 dBi°
Tilt	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°
<b>Horizontal Pattern:</b>			
Half-power beam width	85°	85°	83°
Front-to-back ratio (180° ±0°)	> 24 dB	> 25 dB	> 26 dB
Front-to-back ratio (180° ±30°)	> 21 dB	> 23 dB	> 24 dB
Cross polar ratio	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB
Sector	0° ±60°	> 10 dB	> 10 dB
Tracking, Avg.	0.5 dB		
Squint	±3.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	8°	7.8°	7.6°
Electrical tilt	0.5°–9.5°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0.5° ... 5° ... 9.5° T ≥ 18 ... 15 ... 14 dB	0.5° ... 5° ... 9.5° T ≥ 18 ... 17 ... 16 dB	0.5° ... 5° ... 9.5° T ≥ 18 ... 16 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 940 / 420 / 1270 N		
Height/width/depth	2574 / 259 / 99 mm		
Category of mounting hardware	H (Heavy)		
Weight	14 kg / 16 kg (clamps incl.)		
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter		

# Summary – Directional Antennas

## 2-Broad-band

### 800/900

#### Dual Polarization +45°/-45°

Type	Type No.	Height [mm]	Connector position	Page				
XXPol Panel	790–862 880–960	65° 65°	14.5dBi 15dBi	0°–12°T 0°–12°T	<b>80010667</b>	1355	bottom	40
XXPol Panel	790–862 880–960	65° 65°	16dBi 16.5dBi	0°–10°T 0°–10°T	<b>80010668</b>	1934	bottom	41
XXPol Panel	824–960 824–960	60° 60°	16dBi 16dBi	0°–10°T 0°–10°T	<b>80010516v01</b>	2024	rearside	42
XXPol Panel	790–960 790–960	65° 65°	17.5dBi 17.5dBi	0°–8°T 0°–8°T	<b>80010647v01</b>	2254	rearside	43
XXPol Panel	824–960 824–960	65° 65°	17dBi 17dBi	0°–8°T 0°–8°T	<b>80010517v01</b>	2631	rearside	44
XXPol Panel	824–960 824–960	88° 88°	17dBi 17dBi	0°–8°T 0°–8°T	<b>80010518v01</b>	2631	rearside	45

New or changed product

When deploying  
2-Broad-band Antennas,  
please also consider using  
special Hybrid Combiners  
(see page 252)

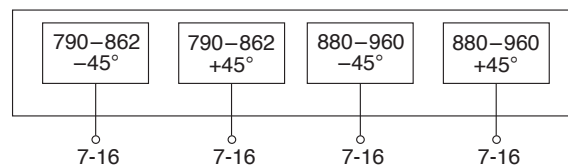
# Dual-band Panel Dual Polarization Half-power Beam Width

790–862	880–960
X	X
65°	65°

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## XXPol Panel 790–862/880–960 65°/65° 14.5/15dBi 0°–12°/0°–12°T

Type No.	<b>80010667</b>		clamps included
Frequency range	<b>790–862</b> 790 – 862 MHz	<b>880–960</b> 880 – 960 MHz	
Polarization	+45°, –45°	+45°, –45°	
Average gain (dBi) Tilt	14.3 ... 14.4 ... 14.1 0° ... 6° ... 12°	14.8 ... 15.0 ... 14.6 0° ... 6° ... 12°	
<b>Horizontal Pattern:</b>			
Half-power beam width	68°	64°	
Front-to-back ratio, copolar (180°±30°)	> 25 dB	> 25 dB	
Cross polar ratio Maindirection Sector	0° 20 dB > 10 dB	20 dB > 10 dB	
<b>Vertical Pattern:</b>			
Half-power beam width	15.2°	13.9°	
Electrical tilt, continuously adjustable	0°–12°	0°–12°	
Min. sidelobe suppression for first sidelobe above main beam	0° ... 6° ... 12° T ≥ 17 ... 16 ... 15 dB	0° ... 6° ... 12° T ≥ 17 ... 15 ... 15 dB	
VSWR	< 1.5		
Isolation: Intrasystem	> 30 dB		
Isolation: Intersystem	> 30 dB (790–862 // 880–960 MHz)		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	350 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	2x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 630 / 220 / 730 N		
Height/width/depth	1355 / 303 / 99 mm		
Category of mounting hardware	M (Medium)		
Weight	14 kg / 16 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



**Dual-band Panel**

790–862

880–960

**Dual Polarization**

X

X

**Half-power Beam Width**

65°

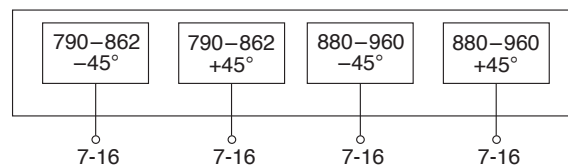
65°

**KATHREIN**

Antennen · Electronic

**XXPol Panel 790–862/880–960 65°/65° 16/16.5dBi 0°–10°/0°–10°T**

Type No.	<b>80010668</b> <i>clamps included</i>	
Frequency range	<b>790–862</b> 790 – 862 MHz	<b>880–960</b> 880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°
Average gain (dBi) Tilt	15.9 ... 16.0 ... 15.8 0° ... 5° ... 10°	16.3 ... 16.6 ... 16.1 0° ... 5° ... 10°
<b>Horizontal Pattern:</b>		
Half-power beam width	67°	63°
Front-to-back ratio, copolar (180°±30°)	> 25 dB	> 25 dB
Cross polar ratio Maindirection Sector	0° 23 dB > 10 dB	25 dB > 10 dB
<b>Vertical Pattern:</b>		
Half-power beam width	10°	9.7°
Electrical tilt, continuously adjustable	0°–10°	0°–10°
Min. sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T ≥ 17 ... 16 ... 16 dB	0° ... 5° ... 10° T ≥ 18 ... 16 ... 16 dB
VSWR	< 1.5	
Isolation: Intrasystem	> 30 dB	
Isolation: Intersystem	> 30 dB (790–862 // 880–960 MHz)	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	400 W (at 50 °C ambient temperature)	
Input	4 x 7-16 female	
Connector position	Bottom	
Adjustment mechanism	2x, Position bottom continuously adjustable	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 920 / 320 / 1050 N	
Height/width/depth	1934 / 303 / 99 mm	
Category of mounting hardware	M (Medium)	
Weight	18.5 kg / 20.5 kg (clamps incl.)	
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter)	

800/900  
XXPol



## 2-Multi-band Panel

## Dual Polarization

## Half-power Beam Width

824–960

824–960

X

X

60°

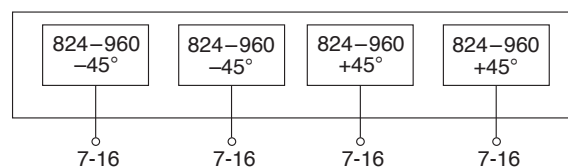
60°

# KATHREIN

Antennen · Electronic

### XXPol Panel 824–960/824–960 60°/60° 16/16dBi 0°–10°/0°–10°T

Type No.	<b>80010516v01</b>		clamps included
Frequency range	824–960		
	824 – 894 MHz	880 – 960 MHz	
Polarization	+45°, -45°; +45°, -45°	+45°, -45°; +45°, -45°	
Gain at 0° Tilt	4 x 15.5 dBi	4 x 15.7 dBi	
<b>Horizontal Pattern:</b>			
Half-power beam width	60°	58°	
Front-to-back ratio	> 25 dB	> 25 dB	
Cross polar ratio	Typically: 15 dB	Typically: 16 dB	
Sector	> 10 dB	> 10 dB	
<b>Vertical Pattern:</b>			
Half-power beam width	9.8°	9.3°	
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T ≥ 14 ... 15 ... 15 dB	0° ... 5° ... 10° T ≥ 14 ... 15 ... 15 dB	
VSWR	< 1.5		
Isolation, between ports	Typically: > 25 dB	Typically: > 28 dB	
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female		
Connector position	Rearside, pointing downwards		
Adjustment mechanism	2x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 910 / 300 / 1150 N		
Height/width/depth	2024 / 374 / 169 mm		
Category of mounting hardware	H (Heavy)		
Weight	23 kg / 25 kg (clamps incl.)		
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter		



# 2-Multi-band Panel

# Dual Polarization

# Half-power Beam Width

790–960	790–960
X	X
65°	65°

# KATHREIN

Antennen · Electronic

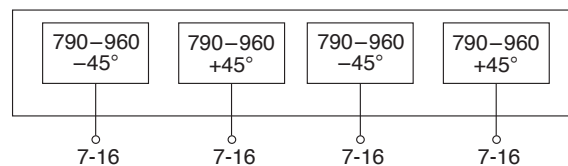
## XXPol Panel 790–960/790–960 65°/65° 17.5/17.5dBi 0°–8°/0°–8°T

Type No.	80010647v01		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	16.9 ... 17.1 ... 17.0	17.0 ... 17.2 ... 17.1	17.3 ... 17.4 ... 17.1
Tilt	0° ... 4° ... 8°	0° ... 4° ... 8°	0° ... 4° ... 8°
<b>Horizontal Pattern:</b>			
Half-power beam width	66°	65°	64°
Front-to-back ratio, copolar	> 27 dB	> 27 dB	> 27 dB
Cross polar ratio			
Main direction	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	Typically: > 10 dB	Typically: > 10 dB	Typically: > 10 dB
Tracking, Avg.	1.0 dB		
Squint	±2.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	9.1°	9.0°	8.5°
Electrical tilt	0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam avg.	0° ... 3° ... 6° ... 8° T 18 ... 18 ... 16 ... 15 dB	0° ... 3° ... 6° ... 8° T 18 ... 18 ... 16 ... 15 dB	0° ... 3° ... 6° ... 8° T 18 ... 18 ... 16 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	400 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female		
Connector position	Rearside		
Adjustment mechanism	2x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1760 / 330 / 2040 N		
Height/width/depth	2254 / 576 / 99 mm		
Category of mounting hardware	H (Heavy)		
Weight	24 kg / 26 kg (clamps incl.)		
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter		

clamps included



800900  
XXPol



## 2-Multi-band Panel

## Dual Polarization

## Half-power Beam Width

824–960

824–960

X

X

65°

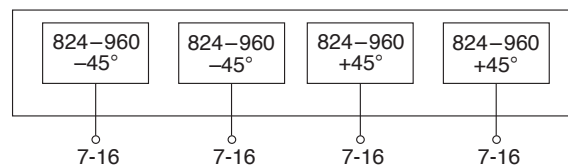
65°

**KATHREIN**

Antennen · Electronic

### XXPol Panel 824–960/824–960 65°/65° 17/17dBi 0°–8°/0°–8°T

Type No.	<b>80010517v01</b>		clamps included
Frequency range	824–960		
	824 – 894 MHz	880 – 960 MHz	
Polarization	+45°, -45°; +45°, -45°	+45°, -45°; +45°, -45°	
Gain at 0° Tilt	4 x 16.5 dBi	4 x 16.7 dBi	
<b>Horizontal Pattern:</b>			
Half-power beam width	66°	61°	
Front-to-back ratio	> 25 dB	> 25 dB	
Cross polar ratio	Typically: 16 dB	Typically: 17 dB	
Sector	> 8 dB	> 10 dB	
<b>Vertical Pattern:</b>			
Half-power beam width	7.2°	6.8°	
Electrical tilt	0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° T ≥ 15 ... 15 ... 15 dB	0° ... 4° ... 8° T ≥ 15 ... 16 ... 15 dB	
VSWR	< 1.5		
Isolation, between ports	Typically: > 25 dB	> 28 dB	
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female		
Connector position	Rearside, pointing downwards		
Adjustment mechanism	2x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1210 / 400 / 1540 N		
Height/width/depth	2631 / 374 / 169 mm		
Category of mounting hardware	H (Heavy)		
Weight	28 kg / 30 kg (clamps incl.)		
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter		



## 2-Multi-band Panel

## Dual Polarization

## Half-power Beam Width

824-960
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824-960
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X
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X
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88°
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88°
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# KATHREIN

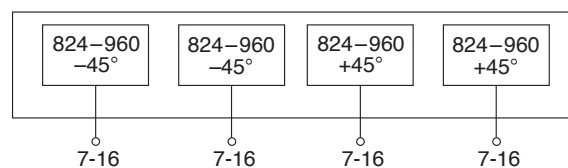
Antennen · Electronic

### XXPol Panel 824-960/824-960 88°/88° 17/17dBi 0°-8°/0°-8°T

Type No.	<b>80010518v01</b>		clamps included
Frequency range	824-960		
	824 - 894 MHz	880 - 960 MHz	
Polarization	+45°, -45°; +45°, -45°	+45°, -45°; +45°, -45°	
Gain at 0° Tilt	4 x 16.5 dBi	4 x 17 dBi	
<b>Horizontal Pattern:</b>			
Half-power beam width	88°	85°	
Front-to-back ratio	> 25 dB	> 25 dB	
Cross polar ratio	Typically: 15 dB	Typically: 15 dB	
Sector	> 10 dB	> 10 dB	
Tracking, Avg.	0.5 dB		
Squint	±4.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	7.2°	6.8°	
Electrical tilt	0°-8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° T ≥ 15 ... 15 ... 15 dB	0° ... 4° ... 8° T ≥ 16 ... 16 ... 15 dB	
VSWR	< 1.5		
Isolation, between ports	Typically: > 25 dB	> 28 dB	
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	4x 7-16 female		
Connector position	Rearside, pointing downwards		
Adjustment mechanism	2x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1210 / 400 / 1540 N		
Height/width/depth	2631 / 374 / 169 mm		
Category of mounting hardware	H (Heavy)		
Weight	28 kg / 30 kg (clamps incl.)		
Scope of supply	Panel and 2 units of clamps for 50 - 115 mm diameter		



80010518v01  
XXPol





# Summary – Directional Antennas

## Vertical Polarization

### 800/900 / 1800/1900/2000

#### VPol – 800/900

Type	Type No.	Height [mm]	Connector position	Page
VPol Panel 870–960 20° 16.5dBi 0°T	735727	492	bottom	48
Dual Yagi 870–960 C 33° 15.5dBi 0°T 1710–2170 26° 18dBi 0°T	80010658	170	rearside	49
VPol BiDir 790–960 / 1710–2170 65° 5dBi 0°T	738445	312		50
VPol BiDir 790–960 / 1710–2170 65° 5dBi 0°T	738446	312		50
VPol LogPer 790–2690 65° 11dBi 0°T	742192v01	300	bottom	51
VPol Panel 860–960 65° 9dBi 0°T	730677	264	bottom or top	52
VPol Panel 806–960 65° 15.5dBi 0°T	730368	1294	bottom	52
VPol Panel 806–960 65° 17dBi 0°T	730691	1934	rearside	53
VPol Panel 806–960 65° 18.5dBi 0°T	730376v01	2574	rearside	53
VPol Panel 872–960 90° 7.5dBi 0°T	736854	262	bottom or top	54
VPol Panel 806–960 90° 17dBi 0°T	730378v01	2574	rearside	54
VPol Panel 870–960 120° 16dBi 0°T	730382	2574	rearside	55

#### VPol – 800/900 / 1800/1900/2000

VPol Panel 1710–2180 12° 18.5dBi 0°T	80010368	299	side	56
Dual Yagi 870–960 C 33° 15.5dBi 0°T 1710–2170 26° 18dBi 0°T	80010658	170	rearside	49
VPol BiDir 790–960 / 1710–2170 65° 5dBi 0°T	738445	312		50
VPol BiDir 790–960 / 1710–2170 65° 5dBi 0°T	738446	312		50
VPol LogPer 790–2690 65° 11dBi 0°T	742192v01	300	bottom	51

#### VVPol – 800/900 – 1800–2000

VVPol Panel 824–960 C 90° 7dBi 0°T 1710–2170 82° 7dBi 0°T	742290	328	bottom or top	57
VVPol Panel 824–960 C 90° 10dBi 0°T 1710–2170 82° 11dBi 0°T	80010046	662	bottom or top	57

C = integrated Combiner

New or changed product

Additional versions on request

800/900 VPol  
1800/1900/2000 VPol



**Panel**  
**Vertical Polarization**  
**Half-power Beam Width**

870–960

V

20°

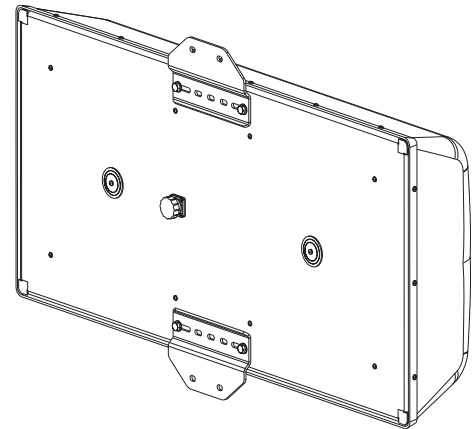
**VPol Panel 870–960 20° 16.5dBi**

Type No.	<b>735727</b>
Input	7-16 female
Frequency range	870 – 960 MHz
VSWR	< 1.3
Gain	16.5 dBi
Polarization	Vertical
Front-to-back ratio	> 24 dB
Half-power Beam Width	H-plane: 20°/ E-plane: 33°
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)
Weight	10 kg
Wind load	Frontal: 500 N (at 150 km/h) Lateral: 70 N (at 150 km/h) Rearside: 715 N (at 150 km/h)
Height/width/depth	492 / 992 / 190 mm

**Material:** Radiator: Aluminum.  
 Reflector screen: Weather-proof aluminum.  
 Radome: Fiberglass, colour: White.  
 All screws and nuts: Stainless steel.

**Ice protection:** Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

**Grounding:** All metal parts of the antenna as well as the inner conductor are DC grounded.



**Accessories (order separately)**

Type No.	Description	Remarks	Weight approx.
738546	1 clamp	Mast: 42 – 115 mm diameter	1.1 kg
85010002	1 clamp	Mast: 110 – 220 mm diameter	2.7 kg
85010003	1 clamp	Mast: 210 – 380 mm diameter	4.8 kg

800/900 VPol  
 1800/1900/2000 VPol

# Yagi Multi-band Antenna Dual Polarization Half-power Beam Width

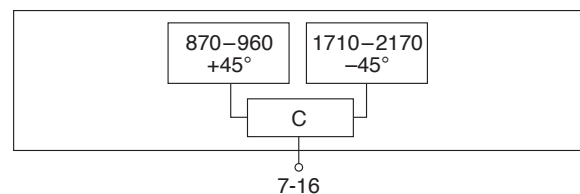
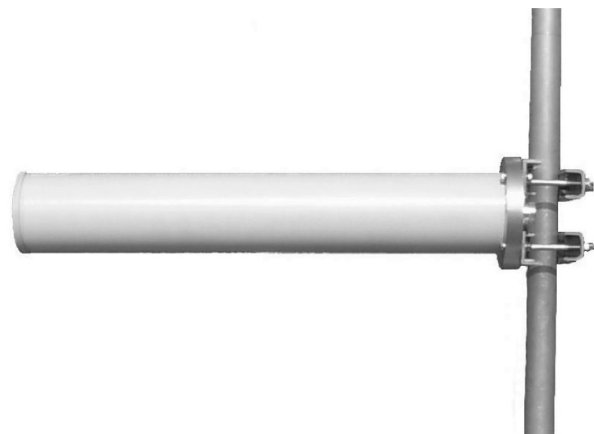
870–960	1710–2170
+45°	–45°
33°	26°

**KATHREIN**  
Antennen · Electronic

## Dual Yagi 870–960/1710–2170 C 33°/26° 15.5/18dBi

Type No.	80010658		
Frequency range	<b>870–960</b> 870 – 960 MHz	<b>1710–2170</b> 1710 – 1880 MHz   1920 – 2170 MHz	
VSWR	< 1.5	< 1.5	< 1.5
Gain (average)	15.5 dBi	15.5 dBi	18 dBi
Polarization	+45°	–45°	–45°
Front-to-back ratio	≥ 24 dB	≥ 27 dB	≥ 27 dB
Half-power beam width (avg.) horizontal vertical	33° 33°	30° 29°	23° 24°
Max. power	100 W (at 50 °C ambient temperature)		
Input	1 x 7-16 female		
Connector position	Rearside		
Weight	4.0 kg		
Wind load	200 N (at 150 km/h)		
Dimensions	1100 / ∅ 170 mm		
Integrated combiner	The insertion loss is included in the given antenna gain values.		

800/900 VPol  
1800/1900/2000 VPol



# Multi-band Bidirectional Antenna

## Vertical Polarization

## Half-power Beam Width

790–960/1710–2170

V

65°

**KATHREIN**

Antennen · Electronic

### VPol BiDir 790–960/1710–2170 65° 5dBi

Type No.	738445	738446
Input	1 x 7-16 female	1 x N female
Frequency range	790 – 960 MHz, 1710 – 2170 MHz	
VSWR	790 – 806 MHz: < 2.2 806 – 824 MHz: < 1.7 824 – 960 / 1710 – 2170 MHz: < 1.5	
Gain	790 – 960 MHz: 5 dBi 1710 – 1880 MHz: 5.5 dBi 1880 – 2170 MHz: 6.5 dBi	
Impedance	50 Ω	
Polarization	Vertical	
Max. power (total)	200 W (at 50 °C ambient temperature)	
Weight	0.8 kg	
Wind load	Frontal: 25 N (at 150 km/h) Lateral: 65 N (at 150 km/h) Rearside: 35 N (at 150 km/h)	
Max. wind velocity	200 km/h	
Packing size	422 x 212 x 95 mm	
Height/width/depth	312 / 55 / 188 mm	



Material:	Radiator: Tin-plated copper. Reflector: Weather-proof aluminum. Radome: High impact plastic, colour: Grey. All screws and nuts: Stainless steel.
Mounting:	Wall mounting: No additional mounting kit needed. For pipe mast mounting use clamps listed below (order separately).
Ice protection:	The radiating system is protected by the radome. Due to its very sturdy construction, the antenna remains operational even under icy conditions.
Grounding:	All metal parts of the antenna as well as the inner conductor are DC grounded.

### Accessories (order separately)

Type No.	Description	Remarks	Weight approx.	Units per antenna
734360	2 clamps	Mast: 34 – 60 mm diameter	60 g	1
734361	2 clamps	Mast: 60 – 80 mm diameter	70 g	1
734362	2 clamps	Mast: 80 – 100 mm diameter	80 g	1
734363	2 clamps	Mast: 100 – 120 mm diameter	90 g	1
734364	2 clamps	Mast: 120 – 140 mm diameter	110 g	1
734365	2 clamps	Mast: 45 – 125 mm diameter	80 g	1

# Logarithmic Periodic Vertical Polarization Half-power Beam Width

790–2690

V

65°

**KATHREIN**  
Antennen · Electronic

## VPol LogPer 790–2690 65° 11dBi

Type No.	742192v01				
Frequency range	790 – 960 MHz	960 – 1710 MHz	1710 – 2200 MHz	2200 – 2490 MHz	2490 – 2690 MHz
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Gain	10.8 dBi	11.0 dBi	11.2 dBi	11.0 dBi	10.8 dBi
Impedance	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω
Polarization	Vertical	Vertical	Vertical	Vertical	Vertical
Front-to-back ratio	> 25 dB	> 25 dB	> 25 dB	> 22 dB	> 25 dB
Half-power Beam Width horizontal vertical	65° 53°	60° 50°	55° 47°	50° 45°	50° 45°
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc	< -150 dBc	< -150 dBc	< -150 dBc	< -150 dBc
Max. power Total power	300 W	250 W	200 W	170 W	150 W
	500 W (at 50 °C ambient temperature)				
Input	1 x 7-16 female				
Connector position	Bottom				
Weight	5.7 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 20 / 210 / 30 N				
Max. wind velocity	200 km/h				
Height/width/depth	300 / 155 / 785 mm				

- Material:** Radiator: Tin-plated copper.  
Reflector screen: Weather-proof aluminum.  
Radome: Fiberglass, colour: Grey.  
All screws and nuts: Stainless steel.
- Mounting:** The antenna can be mounted on tubular mast with a diameter of 30 – 70 mm with supplied clamps.
- Ice protection:** Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.
- Grounding:** All metal parts of the antenna as well as the inner conductor are DC grounded.



800/900 VPol  
1800/1900/2000 VPol

**Panel**  
**Vertical Polarization**  
**Half-power Beam Width**

806–960

V

65°

**KATHREIN**  
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**VPol Panel 860–960 65° 9dBi**

Type No.	<b>730677</b>
Frequency range	860 – 960 MHz
Polarization	Vertical
Gain	9 dBi
Half-power beam width	H-plane: 65° E-plane: 70°
Front-to-back ratio	> 25 dB (890 – 960 MHz) > 20 dB (860 – 890 MHz)
VSWR	< 1.3
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	350 W (at 50 °C ambient temperature)
Input	N female
Connector position	Bottom or top
Weight	1.2 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 65 / 28 / 110 N
Height/width/depth	264 / 258 / 103 mm



**VPol Panel 806–960 65° 15.5dBi**

Type No.	<b>730368</b>		
Frequency range	806 – 866 MHz	<b>806–960</b> 824 – 894 MHz	880 – 960 MHz
Polarization	Vertical		
Gain	15.0 dBi	15.2 dBi	15.5 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	68°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
<b>Vertical Pattern:</b>			
Half-power beam width	14°	13.5°	13°
VSWR	< 1.5		
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	7-16 female		
Connector position	Bottom		
Weight	6 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 350 / 155 / 580 N		
Height/width/depth	1294 / 259 / 99 mm		



800/900 VPol  
 1800/1900/2000 VPol

**Panel**  
**Vertical Polarization**  
**Half-power Beam Width**

806–960

V

65°

**KATHREIN**  
 Antennen · Electronic

**VPol Panel 806–960 65° 17dBi**

Type No.	<b>730691</b>		
Frequency range	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	Vertical		
Gain	16.4 dBi	16.7 dBi	17.0 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	68°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
<b>Vertical Pattern:</b>			
Half-power beam width	9.5°	9.3°	8.5°
VSWR	< 1.5		
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	7-16 female		
Connector position	Rearside		
Weight	9 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 550 / 250 / 930 N		
Height/width/depth	1934 / 259 / 99 mm		



800/900 VPol  
 1800/1900/2000 VPol

**VPol Panel 806–960 65° 18.5dBi**

Type No.	<b>730376v01</b>			<i>clamps included</i>
Frequency range	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz	
Polarization	Vertical			
Gain	17.9 dBi	18.1 dBi	18.5 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	68°	67°	65°	
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB	
<b>Vertical Pattern:</b>				
Half-power beam width	7.4°	7.2°	6.8°	
Sidelobe suppression for first sidelobe above horizon	> 17 dB	> 17 dB	> 18 dB	
VSWR	< 1.5			
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)			
Max. power per input	500 W (at 50 °C ambient temperature)			
Input	7-16 female			
Connector position	Rearside			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 740 / 330 / 1270 N			
Height/width/depth	2574 / 259 / 99 mm			
Category of mounting hardware	H (Heavy)			
Weight	12 kg / 14 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			





**Panel**  
**Vertical Polarization**  
**Half-power Beam Width**

870–960

V

90°

**KATHREIN**  
 Antennen · Electronic

**VPol Panel 872–960 90° 7.5dBi**

Type No.	<b>736854</b>
Frequency range	872 – 960 MHz
Polarization	Vertical
Gain	7.5 dBi
Half-power beam width	H-plane: 90° E-plane: 70°
Front-to-back ratio	> 20 dB
VSWR	< 1.5
Intermodulation IM3	< -140 dBc (2 x 43 dBm carrier)
Max. power	350 W (at 50 °C ambient temperature)
Input	N female
Connector position	Bottom or top
Weight	1.5 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 45 / 20 / 60 N
Height/width/depth	262 / 155 / 49 mm



**VPol Panel 806–960 90° 17dBi**

Type No.	<b>730378v01</b>			<i>clamps included</i>
Frequency range	806 – 866 MHz	<b>806–960</b> 824 – 894 MHz	880 – 960 MHz	
Polarization	Vertical			
Gain	16.6 dBi	16.7 dBi	17.0 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	90°	90°	90°	
Front-to-back ratio (180°±30°)	> 22 dB	> 22 dB	> 22 dB	
<b>Vertical Pattern:</b>				
Half-power beam width	7.1°	6.9°	6.6°	
Sidelobe suppression for first sidelobe above horizon	> 12 dB	> 12 dB	> 12 dB	
VSWR	< 1.5			
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)			
Max. power per input	500 W (at 50 °C ambient temperature)			
Input	7-16 female			
Connector position	Rearside			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 930 / 410 / 1270 N			
Height/width/depth	2574 / 259 / 99 mm			
Category of mounting hardware	H (Heavy)			
Weight	12 kg / 14 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 42 – 115 mm diameter			



800/900 VPol  
 1800/1900/2000 VPol

**Panel**  
**Vertical Polarization**  
**Half-power Beam Width**

870–960

V

120°

**KATHREIN**  
 Antennen · Electronic

**VPol Panel 870–960 120° 16dBi**

Type No.	<b>730382</b>
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	16 dBi
Half-power beam width	H-plane: 120° E-plane: 6.5°
Front-to-back ratio	> 20 dB
VSWR	< 1.3
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)
Input	7-16 female
Connector position	Rearside
Weight	12 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 740 / 330 / 1270 N
Height/width/depth	2574 / 258 / 103 mm



800/900 VPol  
 1800/1900/2000 VPol

**Multi-band Panel  
Vertical Polarization  
Half-power Beam Width**

1710–2180

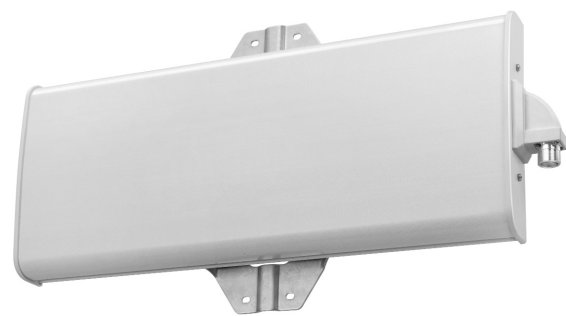
V

12°

**KATHREIN**  
Antennen · Electronic

**VPol Panel 1710–2180 12° 18.5dBi 0°T**

Type No.	80010368		
Frequency range	1710 – 1880 MHz	<b>1710–2180</b> 1850 – 1990 MHz	1920 – 2180 MHz
Polarization	Vertical	Vertical	Vertical
Gain	18.1 dBi	18.4 dBi	18.7 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	13.3°	12.8°	12°
Front-to-back ratio (180° ± 30°)	> 30 dB	> 30 dB	> 30 dB
Sidelobe suppression	> 18 dB	> 18 dB	> 17 dB
<b>Vertical Pattern:</b>			
Half-power beam width	37°	36°	36°
Electrical tilt	0°, fixed	0°, fixed	0°, fixed
Sidelobe suppression for first sidelobe above main beam	> 18 dB	> 18 dB	> 18 dB
VSWR	< 1.5		
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power	300 W (at 50 °C ambient temperature)		
Input	1 x 7-16 female		
Connector position	Side (see picture)		
Weight	9 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 25 / 400 N		
Height/width/depth	299 / 743 / 69 mm		



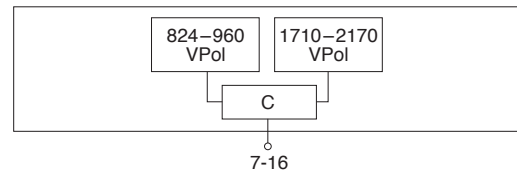
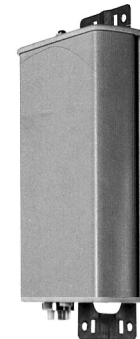
800/900 VPol  
1800/1900/2000 VPol

**Dual-band Panel**  
**Vertical Polarization**  
**Half-power Beam Width**

<b>824–960</b>	<b>1710–2170</b>
<b>V</b>	<b>V</b>
<b>90°</b>	<b>82°</b>

**VVPol Panel 824–960/1710–2170 C 90°/82° 7/7dBi**

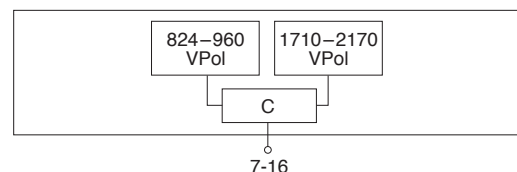
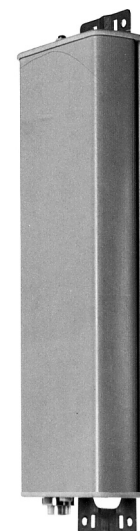
Type No.	<b>742290</b>	
Frequency range	824 – 960 MHz	1710 – 2170 MHz
Polarization	Vertical	Vertical
Gain	7 dBi	7 dBi
Half-power beam width	Horizontal: 90° Vertical: 60°	Horizontal: 82° Vertical: 70°
Front-to-back ratio	> 18 dB	> 20 dB
VSWR	< 1.7 (824 – 960 MHz) < 1.5 (870 – 960 MHz)	< 1.7 (1710 – 2170 MHz) < 1.5 (1710 – 1990 MHz)
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc	< -150 dBc
Max. power	100 W (at 50 °C ambient temperature)	
Input	1 x 7-16 female	
Connector position	Bottom or top	
Weight	2.8 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 90 / 23 / 100 N	
Height/width/depth	328 / 155 / 69 mm	



800/900 VPol  
1800/1900/2000 VPol

**VVPol Panel 824–960/1710–2170 C 90°/82° 10/11dBi**

Type No.	<b>80010046</b>	
Frequency range	824 – 960 MHz	1710 – 2170 MHz
Polarization	Vertical	Vertical
Gain	10 dBi	11 dBi
Half-power beam width	Horizontal: 90° Vertical: 33°	Horizontal: 82° Vertical: 19°
Front-to-back ratio	> 18 dB	> 20 dB
VSWR	< 1.7 (824 – 960 MHz) < 1.5 (870 – 960 MHz)	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc	< -150 dBc
Max. power	100 W (at 50 °C ambient temperature)	
Input	1 x 7-16 female	
Connector position	Bottom or top	
Weight	5 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 175 / 47 / 200 N	
Height/width/depth	662 / 155 / 69 mm	



# Summary – Directional Antennas

## Dual Polarization +45°/–45°

### 1800/1900/2000/2600

#### Dual Polarization +45°/–45°

Type	Type No.	Height [mm]	Connector position	Page
XPol Panel 1710–2170 33° 20dBi 0°–12°T	80010251v01	1032	bottom	60
XPol Panel 1710–2170 33° 21dBi 0°–8°T	742351v01	1304	bottom	60
XPol Panel 1710–1880 33° 22dBi 2°T	741623	1942	bottom	61
XPol Panel 1710–2170 45° 19.5dBi 0°–8°T	742218v01	1306	bottom	62
XPol Panel 1710–2180 45° 21.5dBi 0°–6°T	742219v01	1946	bottom	62
XPol Panel 1710–2170 65° 9dBi 0°T	742210v01	155	bottom or top	63
XPol Panel 1710–2170 65° 12dBi 2°T	739489v01	342	bottom	63
XPol Panel 1710–2170 65° 16dBi 0°T	742196v01	735	bottom or top	64
XPol Panel 1710–2200 65° 15.5dBi 0°–12°T	80010247v01	735	bottom	64
XPol Panel 1710–2690 65° 16.5dBi 0°–12°T	80010681	851	bottom	65
XPol Panel 1710–2200 65° 18.3dBi 0°T	80010425v01	1302	bottom	66
XPol Panel 1710–2200 65° 18.3dBi 2°T	80010426v01	1302	bottom	66
XPol Panel 1710–2200 65° 18dBi 6°T	80010428v01	1302	bottom	67
XPol Panel 1710–2170 65° 18dBi 0°–8°T	742214v01	1142	bottom	67
XPol Panel 1710–2200 65° 18dBi 0°–10°T	742215v01	1314	bottom	68
XPol Panel 1710–2200 65° 18dBi 2°–10°T ESLS	80010614v01	1314	bottom	68
XPol Panel 1710–2200 65° 18dBi 0°–15°T ESLS	80010504v01	1387	bottom	69
XPol Panel 1710–2690 65° 18dBi 0°–12°T ESLS	80010621v01	1400	bottom	70
XPol Panel 1710–2200 65° 19.5dBi 0°–6°T	742213v01	1954	bottom	71
XPol Panel 1710–2200 65° 19dBi 0°–10°T ESLS	80010505v01	1984	bottom	72
XPol Panel 1710–2200 62° 19dBi 0°–8°T HE	80010636	1407	bottom	73
XPol Panel 1710–2170 65° 20.5dBi 0°T	742186v01	2160	bottom	73
XPol Panel 1710–2200 65° 21dBi 0°T HE	80010439v01	2172	bottom or top	74
XPol Panel 1710–2200 62° 21.2dBi 0°–6°T HE	80010378	2548	bottom	74
XPol Panel 1710–2170 88° 11.5dBi 0°T	741984v01	342	bottom or top	75
XPol Panel 1710–2170 88° 14dBi 0°–10°T	741988v01	662	bottom	75
XPol Panel 1710–2200 88° 17dBi 0°–8°T	741989v01	1302	bottom	76
XPol Panel 1710–1880 90° 17.5dBi 2°T	739710	1902	bottom	76
XPol Panel 1710–2170 88° 18dBi 0°–6°T	741990v01	1942	bottom	77

#### Antennas with Dual-Beam

XXPol Panel 1710–2200 40° (–30°) 17dBi 2°–14°T	80010605	662	bottom	78
1710–2200 40° (+30°) 17dBi 2°–14°T				
XXPol Panel 1710–2200 45° (–30°) 19.5dBi 0°–10°T	80010606v01	1314	bottom	79
1710–2200 45° (+30°) 19.5dBi 0°–10°T				

New or changed product

Abbreviations:

ESLS: Enhanced Side Lobe Suppression (above or below horizon)

HE: High Efficiency (Antennas with high gain compared to length)

# Summary – Directional Antennas

## Dual Polarization +45°/–45°

### 1800/1900/2000/2600

#### Antennas with integrated RET

Type	Type No.	Height [mm]	Connector position	Page	
XPol Panel IRT	1710–2200 65° 18dBi 0°–10°T	80010314	1302	bottom	80
XPol Panel IRT	1710–2200 65° 18dBi 0°–10°T	80010618	1302	bottom	80

#### Tri-Sector Pipe Antenna

XPol Tri-Sector Pipe	1710–2170 65° 15.5dBi 0°–12°T	80010375	1241	bottom	81
XPol Tri-Sector Pipe	1710–2170 65° 18dBi 0°–10°T	80010360	1823	bottom	82
Flexible Sealing Frame		85010010			83

**Further types on request.  
Please contact:  
mobilcom@kathrein.de**

# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2170

X

33°

**KATHREIN**  
Antennen · Electronic

## XPoL Panel 1710–2170 33° 20dBi 0°–12°T

Type No.	80010251v01			clamps included
Frequency range	1710–2170			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Gain	2 x 19.2 dBi	2 x 19.5 dBi	2 x 19.8 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	36°	35°	33°	
Front-to-back ratio, copolar (180° ± 30°)	> 30 dB	> 30 dB	> 30 dB	
Cross polar ratio Maindirection 0° Sector ±30°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	
Sidelobe suppression	> 18 dB	> 17 dB	> 15 dB	
Tracking, Avg.	1.0 dB			
Squint	±1.0°			
<b>Vertical Pattern:</b>				
Half-power beam width	9.2°	9°	8.5°	
Electrical tilt	0°–12°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	0° ... 6° ... 12° T 15 ... 17 ... 17 dB	0° ... 6° ... 12° T 15 ... 17 ... 17 dB	0° ... 6° ... 12° T 15 ... 17 ... 17 dB	
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	1 x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 420 / 110 / 520 N			
Height/width/depth	1032 / 299 / 69 mm			
Category of mounting hardware	M (Medium)			
Weight	11.5 kg / 13.5 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			



## XPoL Panel 1710–2170 33° 21dBi 0°–8°T

Type No.	742351v01			clamps included
Frequency range	1710–2170			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Gain	2 x 20.2 dBi	2 x 20.5 dBi	2 x 20.7 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	36°	35°	33°	
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB	
Cross polar ratio Maindirection 0° Sector ±30°	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	
Sidelobe suppression	> 14 dB	> 14 dB	> 14 dB	
Tracking, Avg.	0.5 dB			
Squint	±1.0°			
<b>Vertical Pattern:</b>				
Half-power beam width	7.4°	7.0°	6.7°	
Electrical tilt	0°–8°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° T 18 ... 17 ... 16 dB	0° ... 4° ... 8° T 18 ... 18 ... 17 dB	0° ... 4° ... 8° T 18 ... 17 ... 16 dB	
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	1 x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 540 / 135 / 640 N			
Height/width/depth	1304 / 299 / 69 mm			
Category of mounting hardware	M (Medium)			
Weight	13.5 kg / 15.5 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			





**Panel**  
**Dual Polarization**  
**Half-power Beam Width**

1710–1880

X

33°

**KATHREIN**  
 Antennen · Electronic

**XPol Panel 1710–1880 33° 22dBi 2°T**

Type No.	<b>741623</b>	
Frequency range	1710 – 1880 MHz	
Polarization	+45°, -45°	
Gain	2 x 22 dBi	
Half-power beam width Copolars	+45° Horizontal: 33° Vertical: 5°	-45° Horizontal: 33° Vertical: 5°
Electrical tilt	2°, fixed	
Sidelobe suppression	above horizon for first sidelobe better or equal 14 dB below maximum gain	
Front-to-back ratio, copolar	> 30 dB	
Isolation	> 30 dB	
VSWR	< 1.5	
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)	
Max. power per input	200 W (at 50 °C ambient temperature)	
Input	2 x 7-16 female	
Connector position	Bottom	
Weight	11 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 540 / 210 / 770 N	
Height/width/depth	1942 / 262 / 59 mm	



1800/1900/2000/2600  
XPol

# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2180

X

45°

**KATHREIN**  
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## XPoL Panel 1710–2170 45° 19.5dBi 0°–8°T

Type No.	742218v01		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 19 dBi	2 x 19.5 dBi	2 x 19.6 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	47°	45°	44°
Front-to-back ratio (180° ± 30°)	Copolar: > 27 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 27 dB Total power: > 25 dB
Cross polar ratio Maindirection Sector	0° ±30° Typically: 18 dB > 13 dB	Typically: 18 dB > 13 dB	Typically: 18 dB > 13 dB
Sidelobe suppression	> 18 dB	> 18 dB	> 18 dB
Tracking, Avg.	0.5 dB		
Squint	±1.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	7.3°	7°	6.7°
Electrical tilt	0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 5° ... 8° T 17 ... 17 ... 15 ... 15 dB	0° ... 2° ... 5° ... 8° T 18 ... 18 ... 17 ... 17 dB	0° ... 2° ... 5° ... 8° T 18 ... 18 ... 15 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1 x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside 450 / 145 / 490 N		
Height/width/depth	1306 / 199 / 69 mm		
Category of mounting hardware	M (Medium)		
Weight	10.5 kg / 12.5 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



## XPoL Panel 1710–2180 45° 21.5dBi 0°–6°T

Type No.	742219v01		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	20.5 ... 20.6 ... 20.3	20.9 ... 21.1 ... 20.9	21 ... 21.4 ... 21
Tilt	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°
<b>Horizontal Pattern:</b>			
Half-power beam width	48°	45°	44°
Front-to-back ratio (180° ± 30°)	Copolar: > 28 dB Total power: > 25 dB	Copolar: > 27 dB Total power: > 25 dB	Copolar: > 25 dB Total power: > 25 dB
Cross polar ratio Maindirection Sector	0° ±30° Typically: 19 dB > 13 dB	Typically: 18 dB > 13 dB	Typically: 17 dB > 13 dB
Sidelobe suppression	> 18 dB	> 18 dB	> 18 dB
Tracking, Avg.	1.0 dB		
Squint	±2.0°		
<b>Vertical Pattern:</b>			
Half-power beam width	4.7°	4.5°	4.4°
Electrical tilt	0°–6°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 16 ... 16 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 17 ... 16 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 17 ... 16 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1 x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 700 / 220 / 740 N		
Height/width/depth	1946 / 199 / 69 mm		
Category of mounting hardware	M (Medium)		
Weight	14 kg / 16 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2170

X

65°

**KATHREIN**  
Antennen · Electronic

## XPoL Panel 1710–2170 65° 9dBi 0°T

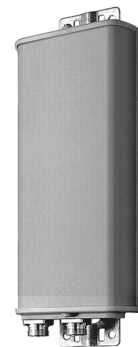
Type No.	742210v01		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 8.5 dBi	2 x 8.6 dBi	2 x 8.7 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	70°	68°	65°
Front-to-back ratio, copolar	> 25 dB	> 30 dB	> 30 dB
Cross polar ratio			
Maindirection	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	> 10 dB	> 10 dB	> 10 dB
Tracking, Avg.	1.0 dB		
Squint	±3.0°		
<b>Vertical Pattern:</b>			
Half-power beam width	65°	65°	63°
Electrical tilt	0°, fixed	0°, fixed	0°, fixed
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	150 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom or top		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 50 / 13 / 55 N		
Height/width/depth	155 / 155 / 69 mm		
Category of mounting hardware	L (Light)		
Weight	1.5 kg / 1.7 kg (tension bands incl.)		
<b>Scope of supply</b>	Panel and 1 unit of tension bands for 45 – 125 mm diameter		



1800/1900/2000/2600  
XPoL

## XPoL Panel 1710–2170 65° 12dBi 2°T

Type No.	739489v01		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 11.5 dBi	2 x 12 dBi	2 x 12 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	67°	65°	63°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 27 dB
Cross polar ratio			
Maindirection	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	> 10 dB	> 10 dB	> 10 dB
Tracking, Avg.	0.5 dB		
Squint	±1.5°		
<b>Vertical Pattern:</b>			
Half-powr beam width	32°	30°	28°
Electrical tilt	3°, fixed	2°, fixed	0°, fixed
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	150 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 90 / 27 / 105 N		
Height/width/depth	342 / 155 / 69 mm		
Category of mounting hardware	L (Light)		
Weight	2.2 kg / 2.4 kg (tension bands incl.)		
<b>Scope of supply</b>	Panel and 1 unit of tension bands for 45 – 125 mm diameter		



# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

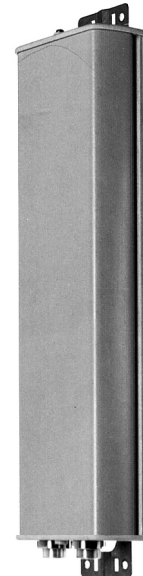
65°

**KATHREIN**  
Antennen · Electronic

## XPoL Panel 1710–2170 65° 16dBi 0°T

Type No.	742196v01		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 15.3 dBi	2 x 15.6 dBi	2 x 15.8 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	67°	66°	64°
Front-to-back ratio (180° ± 30°)	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB
Cross polar ratio Maindirection Sector	0° ±60° Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Tracking, Avg.	0.5 dB		
Squint	±1.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	12.6°	11.8°	11°
Sidelobe suppression for first sidelobe above horizon	> 14 dB	> 16 dB	> 14 dB
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom or top		
Wind load (at 150 km/h)	Frontal: / lateral / rearside: 85 / 65 / 220 N		
Height/width/depth	735 / 155 / 69 mm		
Category of mounting hardware	L (Light)		
Weight	4.5 kg / 4.7 kg (tension bands incl.)		
<b>Scope of supply</b>	Panel and 1 unit of tension bands for 45 – 125 mm diameter		

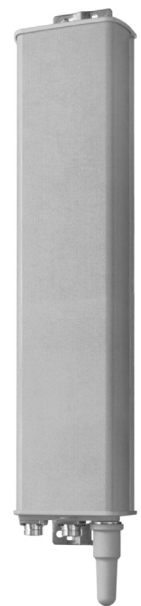
clamps  
included



## XPoL Panel 1710–2200 65° 15.5dBi 0°–12°T

Type No.	80010247v01		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain per input	0° ... 4° ... 8° ... 12° T 15.5 ... 15.4 ... 15.3 ... 15.1 dBi	0° ... 4° ... 8° ... 12° T 15.6 ... 15.5 ... 15.4 ... 15 dBi	0° ... 4° ... 8° ... 12° T 15.8 ... 15.7 ... 15.5 ... 14.9 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	67°	66°	64°
Front-to-back ratio	Copolar: > 27 dB	Copolar: > 27 dB	Copolar: > 27 dB
Cross polar ratio Maindirection Sector	0° ±60° Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Tracking, Avg.	0.5 dB		
Squint	±2.0°		
<b>Vertical Pattern:</b>			
Half-power beam width	12.9°	12.3°	11.5°
Electrical tilt	0°–12°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 12° T > 14 ... 14 ... 14 ... 14 dB	0° ... 4° ... 8° ... 12° T > 14 ... 14 ... 14 ... 14 dB	0° ... 4° ... 8° ... 12° T > 14 ... 14 ... 14 ... 14 dB
Isolation, between ports	> 30 dB		
VSWR	< 1.4		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 195 / 70 / 220 N		
Height/width/depth	735 / 155 / 69 mm		
Category of mounting hardware	L (Light)		
Weight	4.5 kg / 4.7 kg (tension bands incl.)		
<b>Scope of supply</b>	Panel and 1 unit of tension bands for 45 – 125 mm diameter		

clamps  
included



# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2690

X

65°

## KATHREIN

Antennen · Electronic

### XPol Panel 1710–2690 65° 16.5dBi 0°–12°T

Type No.	<b>80010681</b>			
Frequency range	<b>1710–2690</b>			
	1710 – 1990 MHz	1920 – 2200 MHz	2200 – 2490 MHz	2490 – 2690 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain at 0° tilt	2 x 15.5 dBi	2 x 16.3 dBi	2 x 16.7 dBi	2 x 16.7 dBi
<b>Horizontal Pattern:</b>				
Half-power beam width	67°	64°	60°	60°
Front-to-back ratio (180° ±30°)	> 25 dB	> 25 dB	> 23 dB	> 23 dB
Cross polar ratio Sector 0° ±60°	Typically: 25 dB > 9 dB	Typically: 28 dB > 8 dB	Typically: 28 dB > 8 dB	Typically: 28 dB > 11 dB
<b>Vertical Pattern:</b>				
Half-power beam width	10.8°	9.9°	8.8°	8.4°
Electrical tilt	0°–12°, continuously adjustable			
Sidelobe suppression – for first sidelobe above main beam	0° ... 6° ... 12° T ≥ 12 ... 13 ... 15 dB	0° ... 6° ... 12° T ≥ 13 ... 14 ... 15 dB	0° ... 6° ... 12° T ≥ 13 ... 14 ... 16 dB	0° ... 6° ... 12° T ≥ 15 ... 15 ... 17 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	250 W (at 50 °C ambient temperature)			
Input	2x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	1x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 210 / 60 / 220 N			
Height/width/depth	851 / 155 / 70 mm			
Category of mounting hardware	L (Light)			
Weight	5 kg / 5.2 kg (tension bands incl.)			
<b>Scope of supply</b>	Panel and 1 unit of tension bands for 45 – 125 mm diameter			

clamps  
included

1800/1900/2000/2600  
XPol



# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

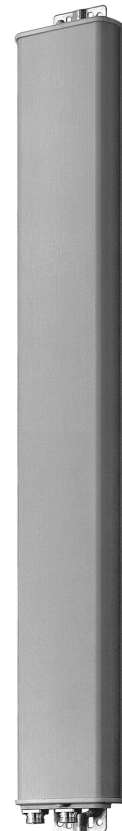
X

65°

**KATHREIN**  
Antennen · Electronic

## XPoI Panel 1710–2200 65° 18.3dBi 0°T

Type No.	80010425v01			clamps included
Frequency range	1710–2200			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Gain	2 x 17.9 dBi	2 x 18.1 dBi	2 x 18.3 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	67°	66°	64°	
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB	
Cross polar ratio	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB	
Sector	0° ±60°	> 10 dB	> 10 dB	
Tracking, Avg.	0.5 dB			
Squint	±1.5°			
<b>Vertical Pattern:</b>				
Half-power beam width	6.6°	6.2°	5.8°	
Electrical tilt	0°, fixed	0°, fixed	0°, fixed	
Sidelobe suppression for first sidelobe above main beam	> 14 dB	> 15 dB	> 16 dB	
First null-fill below main beam	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	
VSWR	< 1.4			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 115 / 390 N			
Height/width/depth	1302 / 155 / 69 mm			
Category of mounting hardware	M (Medium)			
Weight	7 kg / 9 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			



## XPoI Panel 1710–2200 65° 18.3dBi 2°T

Type No.	80010426v01			clamps included
Frequency range	1710–2200			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Gain	2 x 17.9 dBi	2 x 18.1 dBi	2 x 18.3 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	66°	65°	63°	
Front-to-back ratio, copolar	> 28 dB	> 30 dB	> 33 dB	
Cross polar ratio	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB	
Sector	0° ±60°	> 10 dB	> 10 dB	
Tracking, Avg.	0.5 dB			
Squint	±1.5°			
<b>Vertical Pattern:</b>				
Half-power beam width	6.6°	6.2°	5.8°	
Electrical tilt	2°, fixed	2°, fixed	2°, fixed	
Sidelobe suppression for first sidelobe above main beam	> 14 dB	> 15 dB	> 15 dB	
First null-fill below main beam	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	
VSWR	< 1.4			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 115 / 390 N			
Height/width/depth	1302 / 155 / 69 mm			
Category of mounting hardware	M (Medium)			
Weight	7 kg / 9 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			



1800/1900/2000/2600  
XPoI



# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

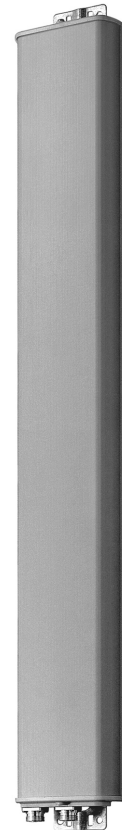
X

65°

**KATHREIN**  
Antennen · Electronic

## XPoL Panel 1710–2200 65° 18dBi 6°T

Type No.	80010428v01			clamps included
Frequency range	1710–2200			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Gain	2 x 17.7 dBi	2 x 17.9 dBi	2 x 18.1 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	67°	65°	63°	
Front-to-back ratio, copolar	> 27 dB	> 33 dB	> 33 dB	
Cross polar ratio	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	
Sector	0° ±60°	> 10 dB	> 10 dB	
Tracking, Avg.	0.5 dB			
Squint	±1.5°			
<b>Vertical Pattern:</b>				
Half-power beam width	6.7°	6.3°	5.8°	
Electrical tilt	6°, fixed	6°, fixed	6°, fixed	
Sidelobe suppression for first sidelobe above main beam	> 14 dB	> 14 dB	> 15 dB	
First null-fill below main beam	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	
VSWR	< 1.3			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 115 / 390 N			
Height/width/depth	1302 / 155 / 69 mm			
Category of mounting hardware	M (Medium)			
Weight	7 kg / 9 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 42 – 115 mm diameter			



1800/1900/2000/2600  
XPoL

## XPoL Panel 1710–2170 65° 18dBi 0°–8°T

Type No.	742214v01			clamps included
Frequency range	1710–2170			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Gain at 0° tilt	2 x 17.5 dBi	2 x 17.7 dBi	2 x 18 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	66°	64°	62°	
Front-to-back ratio	Copolar: 30 dB	Copolar: 30 dB	Copolar: 30 dB	
Cross polar ratio	Avg.: 25 dB	Avg.: 25 dB	Avg.: 28 dB	
Maindirection	0°	> 10 dB	> 10 dB	
Sector	±60°			
Tracking, Avg.	1 dB			
Squint	±2.5°			
<b>Vertical Pattern:</b>				
Half-power beam width	8.3°	7.8°	7.4°	
Electrical tilt	0°–8°, continuously adjustable			
Sidelobe suppression for first sidelobe above horizon, Avg.	0° ... 4° ... 8° T 20 ... 20 ... 20 dB	0° ... 4° ... 8° T 20 ... 20 ... 20 dB	0° ... 4° ... 8° T 20 ... 20 ... 20 dB	
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	1x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 290 / 80 / 300 N			
Height/width/depth	1142 / 155 / 70 mm			
Category of mounting hardware	L (Light)			
Weight	5 kg / 7 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			





# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

65°

**KATHREIN**  
Antennen · Electronic

## XPoI Panel 1710–2200 65° 18dBi 0°–10°T

Type No.	742215v01		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 17.9 dBi	2 x 18 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	68°	66°	64°
Front-to-back ratio (180° ± 30°)	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB
Cross polar ratio Maindirection Sector	0° ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Tracking, Avg.	0.5 dB		
Squint	±1.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	7.1°	6.8°	6.4°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 17 ... 17 dB	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 17 ... 17 dB	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 17 ... 17 dB
Isolation, between ports	> 30 dB		
VSWR	< 1.5		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 90 / 340 N		
Height/width/depth	1314 / 155 / 70 mm		
Category of mounting hardware	L (Light)		
Weight	6.5 kg / 8.5 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		

clamps  
included



## XPoI Panel 1710–2200 65° 18dBi 2°–10°T ESLs

Type No.	80010614v01		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain at 0° tilt	2 x 17.3 dBi	2 x 17.7 dBi	2 x 18 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	66°	64°	62°
Front-to-back ratio (180° ± 30°)	≥ 25 dB	≥ 25 dB	≥ 25 dB
Cross polar ratio Sector	0° ±60°	25 dB ≥ 10 dB	25 dB ≥ 10 dB
Tracking, Avg.	0.5 dB		
Squint	±1.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	7.9°	7.5°	7.2°
Electrical tilt	2°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	> 15 dB	> 17 dB	> 18 dB
Sidelobe suppression in the sector 40°–180° below horizon for Tx-Frequencies	> 23 dB	> 24 dB	> 25 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 90 / 340 N		
Height/width/depth	1314 / 155 / 70 mm		
Category of mounting hardware	L (Light)		
Weight	7 kg / 9 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		

clamps  
included



# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

65°

## KATHREIN

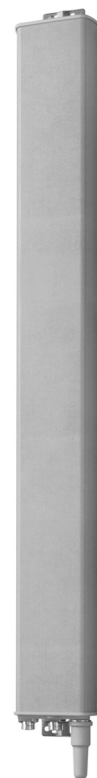
Antennen · Electronic

### XPol Panel 1710–2200 65° 18dBi 0°–15°T ESLS

Type No.	<b>80010504v01</b>			
Frequency range	1710–2200			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	2000 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain at 0° tilt	2 x 17.5 dBi	2 x 17.6 dBi	2 x 17.7 dBi	2 x 17.8 dBi
<b>Horizontal Pattern:</b>				
Half-power beam width	68°	66°	64°	62°
Front-to-back ratio (180° ±30°)	≥ 25 dB	≥ 25 dB	≥ 25 dB	≥ 25 dB
Cross polar ratio	0°	0°	0°	0°
Sector	±60°	±60°	±60°	±60°
Tracking, Avg.	1.0 dB			
Squint	±2.0°			
<b>Vertical Pattern:</b>				
Half-power beam width	7.9°	7.5°	7.2°	7.0°
Electrical tilt	0°–15°, continuously adjustable			
Sidelobe suppression	0° ... 5° ... 10° ... 15° T	0° ... 5° ... 10° ... 15° T	0° ... 5° ... 10° ... 15° T	0° ... 5° ... 10° ... 15° T
– for first sidelobe above main beam	≥ 17 ... 20 ... 18 ... 17 dB	≥ 16 ... 20 ... 18 ... 17 dB	≥ 16 ... 20 ... 18 ... 17 dB	≥ 15 ... 20 ... 18 ... 15 dB
– within 0°–20° sector above horizon	≥ 16 ... 18 ... 18 ... 16 dB	≥ 16 ... 18 ... 17 ... 16 dB	≥ 15 ... 18 ... 17 ... 16 dB	≥ 15 ... 16 ... 16 ... 15 dB
Null-fill at 0° tilt	21 dB	20 dB	19 dB	18 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	1 x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 360 / 100 / 370 N			
Height/width/depth	1387 / 155 / 69 mm			
Category of mounting hardware	L (Light)			
Weight	7 kg / 9 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 42 – 115 mm diameter			

clamps  
included

1800/1900/2000/2600  
XPol



# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2690

X

65°

## KATHREIN

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### XPoL Panel 1710–2690 65° 18dBi 0°–12°T ESLS

Type No.	80010621 v01			
Frequency range	1710–2690			
	1710 – 1990 MHz	1920 – 2200 MHz	2200 – 2490 MHz	2490 – 2690 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain (dBi)	17.4 ... 17.4 ... 17.3	18.2 ... 18.0 ... 17.9	18.2 ... 18.1 ... 17.7	18.3 ... 18.0 ... 17.6
Tilt	0° ... 6° ... 12°	0° ... 6° ... 12°	0° ... 6° ... 12°	0° ... 6° ... 12°
<b>Horizontal Pattern:</b>				
Half-power beam width	68°	64°	61°	60°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio Sector	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Tracking, Avg.	1.0 dB			
Squint	±2.5°			
<b>Vertical Pattern:</b>				
Half-power beam width	7.1°	6.5°	5.9°	5.7°
Electrical tilt	0°–12°, continuously adjustable			
Sidelobe suppression – for first sidelobe above main beam – within 0°–20° sector above horizon	0° ... 6° ... 12° T ≥ 18 ... 18 ... 18 dB ≥ 17 ... 17 ... 16 dB	0° ... 6° ... 12° T ≥ 18 ... 18 ... 18 dB ≥ 17 ... 17 ... 16 dB	0° ... 6° ... 12° T ≥ 18 ... 17 ... 17 dB ≥ 16 ... 18 ... 17 dB	0° ... 6° ... 12° T ≥ 18 ... 18 ... 16 dB ≥ 15 ... 15 ... 14 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	1x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 370 / 135 / 420 N			
Height/width/depth	1400 / 155 / 70 mm			
Category of mounting hardware	M (Medium)			
Weight	8 kg / 10 kg (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter			

clamps  
included

1800/1900/2000/2600  
XPoL



**Panel**  
**Dual Polarization**  
**Half-power Beam Width**

1710–2200

X

65°

**KATHREIN**  
 Antennen · Electronic

**XPol Panel 1710–2200 65° 19.5dBi 0°–6°T**

Type No.	<b>742213v01</b>		
Frequency range	<b>clamps included</b>		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 19 dBi	2 x 19.2 dBi	2 x 19.5 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	67°	65°	63°
Front-to-back ratio (180° ± 30°)	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB
Cross polar ratio Maindirection Sector	0° ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Tracking, Avg.	0.5 dB		
Squint	±2°		
<b>Vertical Pattern:</b>			
Half-power beam width	4.7°	4.5°	4.3°
Electrical tilt	0°–6°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 16 ... 15 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 17 ... 16 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 18 ... 18 dB
Isolation, between ports	> 30 dB		
VSWR	< 1.5		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 510 / 140 / 510 N		
Height/width/depth	1954 / 155 / 70 mm		
Category of mounting hardware	M (Medium)		
Weight	9 kg / 11 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		



1800/1900/2000/2600  
 XPol

# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

65°

## KATHREIN

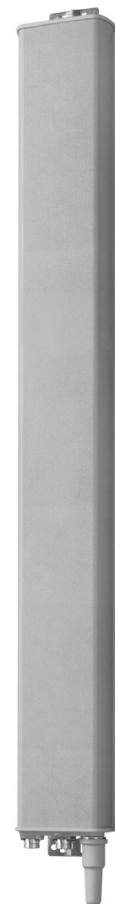
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### XPoI Panel 1710–2200 65° 19dBi 0°–10°T ESLS

Type No.	80010505v01			
Frequency range	1710–2200			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	2000 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average Gain (dBi)	18.5 ... 18.7 ... 18.5 dBi	18.7 ... 19.0 ... 18.5 dBi	18.7 ... 19.0 ... 18.4 dBi	18.7 ... 18.9 ... 18.3 dBi
Tilt	0° ... 5° ... 10° T	0° ... 5° ... 10° T	0° ... 5° ... 10° T	0° ... 5° ... 10° T
<b>Horizontal Pattern:</b>				
Half-power beam width	67°	65°	64°	63°
Front-to-back ratio (180° ±30°)	≥ 30 dB	≥ 30 dB	≥ 27 dB	≥ 26 dB
Cross polar ratio Sector 0° ±60°	Typically: 25 dB ≥ 11 dB	Typically: 22 dB ≥ 11 dB	Typically: 22 dB ≥ 11 dB	Typically: 22 dB ≥ 10 dB
Tracking, Avg.	0.5 dB			
Squint	±2.5°			
<b>Vertical Pattern:</b>				
Half-power beam width	5.0°	4.8°	4.6°	4.4°
Electrical tilt	0°–10°, continuously adjustable			
Sidelobe suppression – for first sidelobe above main beam – within 0°–20° sector above horizon	0° ... 4° ... 8° ... 10° T ≥ 20 ... 20 ... 18 ... 18 dB ≥ 18 ... 18 ... 17 ... 17 dB	0° ... 4° ... 8° ... 10° T ≥ 20 ... 20 ... 18 ... 18 dB ≥ 17 ... 18 ... 17 ... 15 dB	0° ... 4° ... 8° ... 10° T ≥ 19 ... 20 ... 18 ... 18 dB ≥ 17 ... 17 ... 17 ... 15 dB	0° ... 4° ... 8° ... 10° T ≥ 18 ... 20 ... 18 ... 18 dB ≥ 17 ... 17 ... 14 ... 12 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	1 x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 520 / 190 / 630 N			
Height/width/depth	1984 / 155 / 69 mm			
Category of mounting hardware	M (Medium)			
Weight	11 kg / 13 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			

clamps  
included

1800/1900/2000/2600  
XPoI



# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

65°

**KATHREIN**  
Antennen · Electronic

## XPoL Panel 1710–2200 62° 19dBi 0°–8°T

Type No.	<b>80010636</b>		
Frequency range	<b>1710–2200</b>		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 18.3 dBi	2 x 18.7 dBi	2 x 19 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	65°	62°	59°
Front-to-back ratio (180°±30°)	> 30 dB	> 30 dB	> 28 dB
Cross polar ratio			
Maindirection	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	> 10 dB	> 10 dB	> 10 dB
Tracking, Avg.	0.5 dB		
Squint	±1.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	6.6°	6.2°	5.9°
Electrical tilt	0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° T 18 ... 14 ... 14 dB	0° ... 4° ... 8° T 18 ... 15 ... 15 dB	0° ... 4° ... 8° T 18 ... 15 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 360 / 100 / 370 N		
Height/width/depth	1407 / 155 / 70 mm		
Category of mounting hardware	L (Light)		
Weight	7 kg / 9 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		

clamps  
included



1800/1900/2000/2600  
XPoL

## XPoL Panel 1710–2170 65° 20.5dBi 0°T

Type No.	<b>742186v01</b>		
Frequency range	<b>1710–2170</b>		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	20 dBi	20.2 dBi	20.5 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	67°	65°	61°
Front-to-back ratio (180° ± 30°)	Copolar: > 30 dB Total power: > 28 dB	Copolar: > 30 dB Total power: > 28 dB	Copolar: > 30 dB Total power: > 27 dB
Cross polar ratio			
Maindirection	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	> 14 dB	> 14 dB	> 14 dB
Tracking, Avg.	0.5 dB		
Squint	±1.0°		
<b>Vertical Pattern:</b>			
Half-power beam width	4°	3.8°	3.5°
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 580 / 200 / 670 N		
Height/width/depth	2160 / 155 / 69 mm		
Category of mounting hardware	M (Medium)		
Weight	9.5 kg / 11.5 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		

clamps  
included



# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

65°

**KATHREIN**  
Antennen · Electronic

## XPoI Panel 1710–2200 65° 21dBi 0°T

Type No.	<b>80010439v01</b>			
Frequency range	<b>1710–2200</b>			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	2000 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 20.5 dBi	2 x 20.8 dBi	2 x 21.1 dBi	2 x 21.2 dBi
<b>Horizontal Pattern:</b>				
Half-power beam width	66°	63°	60°	58°
Front-to-back ratio (180°±30°)	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio	25 dB	23 dB	23 dB	23 dB
Sector	±60°	> 12 dB	> 10 dB	> 10 dB
Tracking, Avg.	0.5 dB			
Squint	±1.0°			
<b>Vertical Pattern:</b>				
Half-power beam width	4.2°	4°	3.7°	3.5°
Electrical tilt	0°, fixed			
Sidelobe suppression	> 15 dB			
– for first sidelobe above main beam	> 15 dB			
– within 0°–30° sector above horizon	> 10 dB			
First null-fill below main beam	< 20 dB			
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom or top			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 550 / 210 / 610 N			
Height/width/depth	2172 / 155 / 89 mm			
Category of mounting hardware	M (Medium)			
Weight	11.5 kg / 13.5 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			

clamps  
included



## XPoI Panel 1710–2200 62° 21.2dBi 0°–6°T

Type No.	<b>80010378</b>		
Frequency range	<b>1710–2200</b>		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 20.6 dBi	2 x 21.1 dBi	2 x 21.2 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	65°	62°	60°
Front-to-back ratio (180°±30°)	> 30 dB	> 28 dB	> 28 dB
Cross polar ratio	25 dB	23 dB	23 dB
Sector	±60°	> 10 dB	> 10 dB
Tracking, Avg.	1.0dB		
Squint	±2.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	3.7°	3.5°	3.3°
Electrical tilt	0°–6°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 3° ... 6° T 18 ... 18 ... 17 dB	0° ... 3° ... 6° T 18 ... 17 ... 17 dB	0° ... 3° ... 6° T 17 ... 17 ... 17 dB
Null-fill at 0° tilt	20 dB	20 dB	20 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 660 / 260 / 730 N		
Height/width/depth	2548 / 155 / 89 mm		
Category of mounting hardware	M (Medium)		
Weight	13 kg / 15 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		

clamps  
included





# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2170

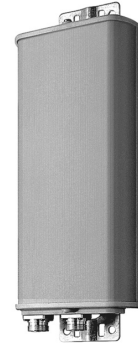
X

88°

**KATHREIN**  
Antennen · Electronic

## XPoI Panel 1710–2170 88° 11.5dBi

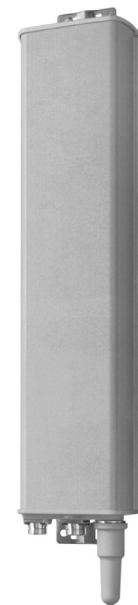
Type No.	741984v01		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 11.3 dBi	2 x 11.5 dBi	2 x 11.6 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	86°	87°	88°
Front-to-back ratio (180° ± 30°)	Copolar: > 23 dB Total power: > 23 dB	Copolar: > 23 dB Total power: > 23 dB	Copolar: > 23 dB Total power: > 23 dB
Cross polar ratio Maindirection Sector	0° ±60° Typically: 20 dB > 18 dB	Typically: 25 dB > 18 dB	Typically: 20 dB > 15 dB
Tracking, Avg.	0.5 dB		
Squint	±3.0°		
<b>Vertical Pattern:</b>			
Half-power beam width	28°	26°	26°
Sidelobe suppression vertical sector ±45°	> 20 dB	> 20 dB	> 20 dB
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	150 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom or top		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 90 / 27 / 105 N		
Height/width/depth	342 / 155 / 69 mm		
Category of mounting hardware	L (Light)		
Weight	2 kg / 2.2 kg (tension bands incl.)		
<b>Scope of supply</b>	Panel and 1 unit of tension bands for 45 – 125 mm diameter		



1800/1900/2000/2600  
XPoI

## XPoI Panel 1710–2170 88° 14dBi 0°–10°T

Type No.	741988v01		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 13.7 dBi	2 x 14 dBi	2 x 14.1 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	88°	88°	88°
Front-to-back ratio, copolar total power	> 25 dB > 25 dB	> 25 dB > 25 dB	> 25 dB > 25 dB
Cross polar ratio Maindirection Sector	0° ±60° Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Tracking, Avg.	0.5 dB		
Squint	±3.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	14.7°	14°	13°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 18 ... 18 dB	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 18 ... 18 dB	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 18 ... 18 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 175 / 65 / 200 N		
Height/width/depth	662 / 155 / 69 mm		
Category of mounting hardware	L (Light)		
Weight	4.2 kg / 4.4 kg (tension bands incl.)		
<b>Scope of supply</b>	Panel and 1 unit of tension bands for 45 – 125 mm diameter		



# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

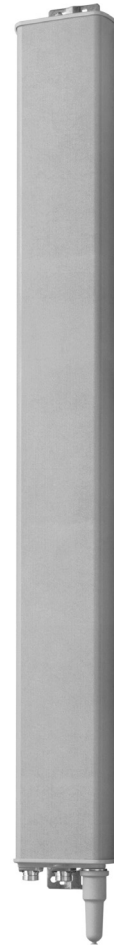
88°

**KATHREIN**  
Antennen · Electronic

## XPoL Panel 1710–2200 88° 17dBi 0°–8°T

Type No.	741989v01		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16.5 dBi	2 x 16.8 dBi	2 x 16.7 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	88°	88°	88°
Front-to-back ratio (180° ± 30°)	Copolar: > 25 dB Total power: > 25 dB	Copolar: > 25 dB Total power: > 25 dB	Copolar: > 24 dB Total power: > 24 dB
Cross polar ratio Maindirection Sector	0° ±60° Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Tracking, Avg.	0.5 dB		
Squint	±2.0°		
<b>Vertical Pattern:</b>			
Half-power beam width	7°	6.7°	6.5°
Electrical tilt	0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 5° ... 8° T 18 ... 18 ... 16 ... 14 dB	0° ... 2° ... 5° ... 8° T 20 ... 20 ... 18 ... 17 dB	0° ... 2° ... 5° ... 8° T 18 ... 18 ... 18 ... 17 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1 x, Position bottomcontinuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 350 / 125 / 400 N		
Height/width/depth	1302 / 155 / 69 mm		
Category of mounting hardware	M (Medium)		
Weight	7.5 kg / 9.5 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		

clamps  
included



## XPoL Panel 1710–1880 90° 17.5dBi 2°T

Type No.	739710
Frequency range	1710 – 1880 MHz
Polarization	+45°, –45°
Gain	2 x 17.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 90° Vertical: 5°
Electrical tilt	2°, fixed
Sidelobe suppression for first sidelobe above horizon	≥ 14 dB
Front-to-back ratio, copolar	> 25 dB
Isolation, between ports	> 30 dB
VSWR	< 1.4
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)
Max. power per input	200 W (at 50 °C ambient temperature)
Input	2 x 7-16 female
Connector position	Bottom
Weight	9 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 530 / 150 / 610 N
Height/width/depth	1902 / 155 / 69 mm



# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2170

X

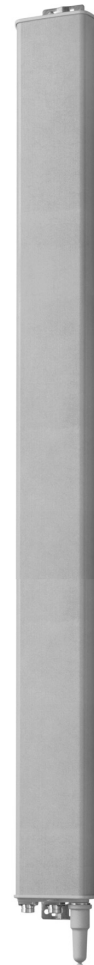
88°

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## XPol Panel 1710–2170 88° 18dBi 0°–6°T

Type No.	741990v01		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 18 dBi	2 x 18.2 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	88°	88°	88°
Front-to-back ratio, copolar total power	> 25 dB > 25 dB	> 25 dB > 25 dB	> 25 dB > 25 dB
Cross polar ratio Maindirection Sector	0° ±60° Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Tracking, Avg.	0.5 dB		
Squint	±2.5°		
<b>Vertical Pattern:</b>			
Half-power beam width	4.9°	4.7°	4.5°
Electrical tilt	0°–6°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 4° ... 6° T 17 ... 17 ... 17 ... 17 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 18 ... 18 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 18 ... 18 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 510 / 185 / 610 N		
Height/width/depth	1942 / 155 / 69 mm		
Category of mounting hardware	M (Medium)		
Weight	11 kg / 13 kg (clamps incl.)		
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter		

clamps  
included



1800/1900/2000/2600  
XPol

# Dual-Beam Panel

# Dual Polarization

# Half-power Beam Width

1710–2200	1710–2200
-----------	-----------

X	X
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40°	40°
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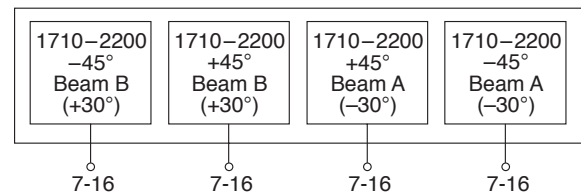
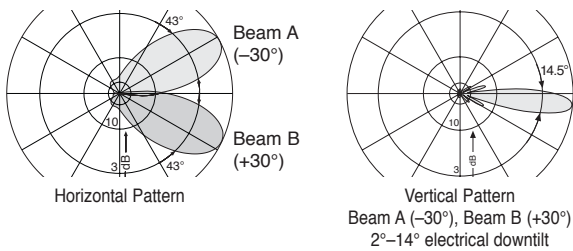
## XXPol Panel 1710–2200/1710–2200 40°(–30°)/40°(+30°) 17/17dBi 2°–14°/2°–14°

Type No.	<b>80010605</b>		
Frequency range	1710 – 1880 MHz   1850 – 1990 MHz   1920 – 2200 MHz		
Azimuth direction	Beam A (–30°), Beam B (+30°)		
Polarization	+45°, –45°, +45°, –45°	+45°, –45°, +45°, –45°	+45°, –45°, +45°, –45°
Gain	4 x 16 dBi	4 x 16.8 dBi	4 x 17 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width (offset beams ±30°)	43°	39°	36°
Front-to-back ratio	Copolar: > 30 dB Total power: > 25 dB		
<b>Cross polar ratio</b>			
Main direction –30°; +30°	Typically: 15 dB	Typically: 15 dB	Typically: 15 dB
Sector –60°; 0°; 0°; +60°	> 10 dB	> 10 dB	> 10 dB
Sidelobe suppression for sidelobes beside main beam	> 18 dB		
<b>Vertical Pattern:</b>			
Half-power beam width	14.5°	14°	13°
Electrical tilt	2°–14°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	> 15 dB		
VSWR	< 1.5		
Isolation, between inputs	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	200 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female		
Connector position	Bottom		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 420 / 110 / 480 N		
Height/width/depth	662 / 380 / 150 mm		
Category of mounting hardware	M (Medium)		
Weight (approx.)	16 kg / 18 kg (clamps incl.)		
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter		

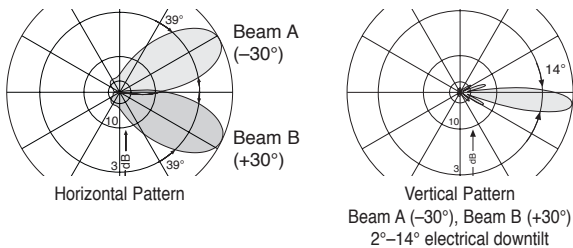


### Dual Beam Antenna Patterns:

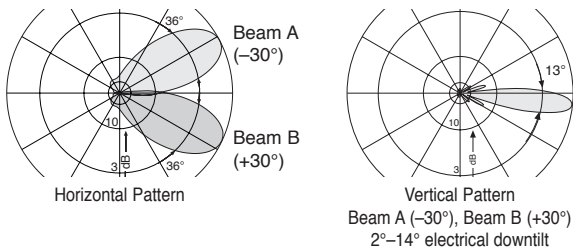
#### 1710 – 1880 MHz



#### 1850 – 1990 MHz



#### 1920 – 2200 MHz



# Dual-Beam Panel

# Dual Polarization

# Half-power Beam Width

1710–2200	1710–2200
-----------	-----------

X	X
---	---

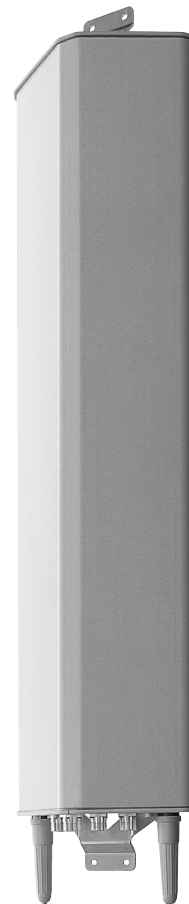
45°	45°
-----	-----

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## XXPol Panel 1710–2200/1710–2200 45°(-30°)/45°(+30°) 19.5/19.5dBi 0°–10°/0°–10°T

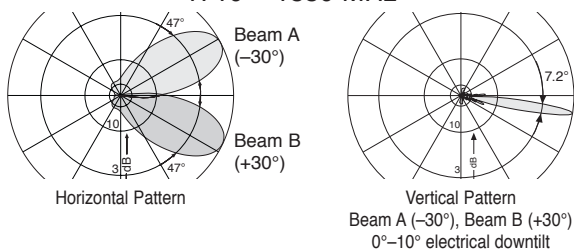
Type No.	<b>80010606v01</b>			clamps included
Frequency range	1710 – 1880 MHz   1850 – 1990 MHz   1920 – 2200 MHz			
Azimuth direction	Beam A (-30°), Beam B (+30°)			
Polarization	+45°, -45°, +45°, -45°	+45°, -45°, +45°, -45°	+45°, -45°, +45°, -45°	
Gain	4 x 19 dBi	4 x 19.3 dBi	4 x 19.5 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width (offset beams ±30°)	47°	45°	43°	
Front-to-back ratio	Copolar: > 30 dB Total power: > 25 dB			
<b>Cross polar ratio</b>				
Maindirection -30°; +30°	Typically: 18 dB	Typically: 17 dB	Typically: 16 dB	
Sector -60°; 0°; 0°; +60°	> 13 dB	> 13 dB	> 13 dB	
Sidelobe suppression for sidelobes beside main beam	> 18 dB			
<b>Vertical Pattern:</b>				
Half-power beam width	7.2°	7.1°	6.8°	
Electrical tilt	0°–10°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	> 18 dB			
VSWR	< 1.5			
Isolation, between inputs	> 30 dB			
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)			
Max. power per input	200 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 710 / 200 / 820 N			
Height/width/depth	1314 / 380 / 150 mm			
Category of mounting hardware	M (Medium)			
Weight	18.5 kg / 20.5 kg (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter			



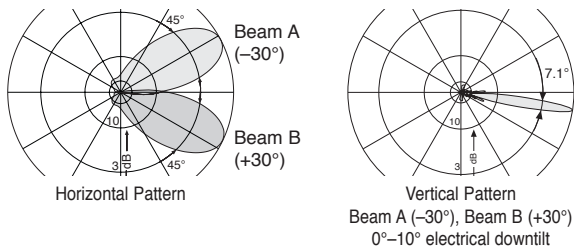
1800/1900/2000/2600  
XXPol

### Dual Beam Antenna Patterns:

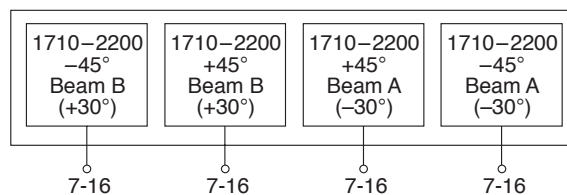
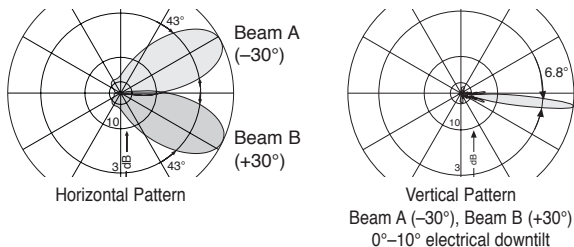
#### 1710 – 1880 MHz



#### 1850 – 1990 MHz



#### 1920 – 2200 MHz



# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

65°

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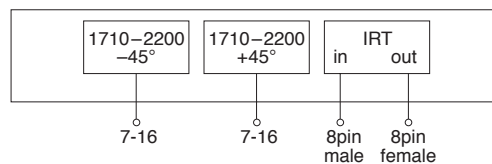
### XPol Panel IRT 1710–2200 65° 18dBi 0°–10°T



Type No.	<b>80010314 / 80010618</b>		
<b>A) Antenna specifications</b>			
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 17.9 dBi	2 x 18 dBi
<b>Horizontal Pattern:</b>			
Half-power beam width	67°	66°	65°
Front-to-back ratio	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB
Cross polar ratio			
Main direction	0°		
Sector	±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
<b>Vertical Pattern:</b>			
Half-power beam width	7.1°	6.8°	6.6°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10° T 16 ... 16 ... 16 ... 16 dB	0° ... 4° ... 8° ... 10° T 17 ... 17 ... 17 ... 17 dB	0° ... 4° ... 8° ... 10° T 17 ... 17 ... 17 ... 17 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	120 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female IRT in: 1 x 8pin male IRT out: 1 x 8pin female		
Connector position	Bottom		
Wind load(at 150 km/h)	Frontal / lateral / rearside: 330 / 115 / 390 N		
Height/width/depth	1302 / 155 / 69 mm		
Category of mounting hardware	M (Medium)		
Weight	7.5 kg		



<b>B) IRT specifications</b>	<b>80010314</b>	<b>80010618</b>
Logical interface ex factory <sup>1)</sup>	AISG 1.1	3GPP/AISG 2.0
Protocols	Compliant to AISG 1.1 and 3GPP/AISG 2.0	
Hardware interface <sup>2)</sup>	2 x 8pin connector acc. IEC 60130-9; according to AISG: – IRT in (male): Control / Daisy chain in – IRT out (female): Daisy chain out	
Power supply	10 ... 30 V	
Power consumption	< 1 W (stand by) < 8.5 W (motor activated)	
Adjustment time (full range)	40 sec.	
Adjustment cycles	> 50,000	



<sup>1)</sup> The protocol of the logical interface can be switched from AISG 1.1 to 3GPP/AISG 2.0 and vice versa with a vendor specific command. Start-up operation of the 80010314 is only possible with a primary station supporting AISG 1.1 and start-up operation of the 80010618 is only possible with a primary station supporting 3GPP/AISG 2.0!

**Please note:** The used Primary-SW has to be able to handle also integrated remote tilt units, like Kathrein CCU with firmware 1.29 or higher and the Kathrein PCA with SW 2.0 or higher. If the Primary of the system doesn't support the standard of the 'logical interface ex factory', the IRT must be switched to the appropriate standard of the Primary before installation. Please contact Kathrein for further information.

<sup>2)</sup> The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened'). The connector should be tightened by hand only!



# Tri-Sector Pipe Antenna

## Frequency Range

## Dual Polarization

## Half-power Beam Width

## Adjust. Electr. Downtilt

set by hand or by optional RCUs (Remote Control Units)




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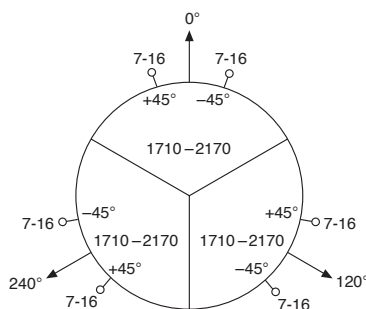


### XPol Tri-Sector Pipe 1710-2170 65° 15.5dBi 0°-12°T

Type No.	<b>80010375</b>			Electrical datas per sector
Frequency range	<b>1710-2170</b>			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	
Polarization	+45°, -45°	+45°, -45°	+45°, -45°	
Gain per Input (dBi)	0° ... 4° ... 8° ... 12° T 15.4 ... 15.2 ... 15.0 ... 14.8	0° ... 4° ... 8° ... 12° T 15.5 ... 15.4 ... 15.3 ... 14.9	0° ... 4° ... 8° ... 12° T 15.7 ... 15.6 ... 15.4 ... 14.9	
Half-power beam width Copolar +45°/-45°	Horizontal: 67° Vertical: 12.7°	Horizontal: 65° Vertical: 12°	Horizontal: 62° Vertical: 11.2°	
Electrical tilt continuously adjustable	0°-12°	0°-12°	0°-12°	
Sidelobe suppression for first sidelobe above horizon	0° ... 4° ... 8° ... 12° T 16 ... 16 ... 15 ... 15 dB	0° ... 4° ... 8° ... 12° T 18 ... 17 ... 17 ... 16 dB	0° ... 4° ... 8° ... 12° T 18 ... 18 ... 16 ... 16 dB	
Front-to-back ratio	Copolar: > 25 dB	Copolar: > 25 dB	Copolar: > 25 dB	
Cross polar ratio Maindirection Sector	0° ±60° Typically: 20 dB Typically: > 10 dB	Typically: 20 dB Typically: > 10 dB	Typically: 20 dB Typically: > 10 dB	
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	
Isolation: Intersystem	> 40 dB	> 40 dB	> 40 dB	
Impedance	50 Ω	50 Ω	50 Ω	
VSWR	< 1.5	< 1.5	< 1.5	
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)			
Max. power per input	250 W (at 50 °C ambient temperature)			



1800/1900/2000/2600  
XPol



### Mechanical specifications

Input	3 x 2 x 7-16 female
Connector position	Bottom – inside service area
Adjustment mechanism	3 x 1, Position bottom continuously adjustable inside service area
Weight	32 kg
Wind load	205 N (at 150 km/h)
Max. wind velocity	200 km/h
Natural frequency	45 – 47 Hz
Damping ratio	0.032
Mechanical interface	Flange connection 12 x 12M at a graduated diameter of 208 mm 0°-360° continuously adjustable (for further details see application note)
Packing size	1395 x 315 x 330 mm
Height / diameter	1241 / 230 and 280 mm



# Tri-Sector Pipe Antenna

## Frequency Range

## Dual Polarization

## Half-power Beam Width

## Adjust. Electr. Downtilt

0°

120°

240°

1710–2170

1710–2170

1710–2170

X

X

X

65°

65°

65°

0°–10°

0°–10°

0°–10°

set by hand or by optional RCUs (Remote Control Units)

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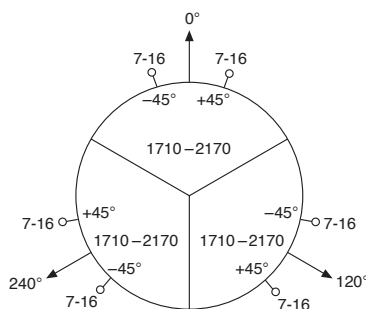
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### XPol Tri-Sector Pipe 1710–2170 65° 18dBi 0°–10°T

Type No.	80010360			Electrical datas per sector
Frequency range	1710–2170			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Average gain (dBi)	17.2 ... 17.5 ... 17.2	17.6 ... 17.8 ... 17.6	17.8 ... 17.9 ... 17.4	
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°	
Half-power beam width	Horizontal: 66°	Horizontal: 63°	Horizontal: 60°	
Copolar +45°/–45°	Vertical: 7°	Vertical: 6.7°	Vertical: 6.4°	
Electrical tilt continuously adjustable	0°–10°	0°–10°	0°–10°	
Sidelobe suppression for first sidelobe above horizon	0° ... 5° ... 10° T 17 ... 15 ... 15 dB	0° ... 5° ... 10° T 17 ... 17 ... 15 dB	0° ... 5° ... 10° T 17 ... 17 ... 15 dB	
Front-to-back ratio (180° ± 30°)	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	
Cross polar ratio				
Maindirection	0°			
Sector	±60°			
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	
Isolation: Intersystem	> 45 dB	> 42 dB	> 42 dB	
Impedance	50 Ω	50 Ω	50 Ω	
VSWR	< 1.5	< 1.5	< 1.5	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			



compact service area



### Mechanical specifications

Input	3 x 2 x 7-16 female
Connector position	Bottom – inside service area
Adjustment mechanism	3 x 1, Position bottom continuously adjustable inside service area
Weight	56 kg
Wind load	320 N (at 150 km/h)
Max. wind velocity	200 km/h
Natural frequency	19 – 21 Hz
Damping ratio	0.032
Mechanical interface	Flange connection 12 x 12M at a graduated diameter of 208 mm 0°–360° continuously adjustable (for further details see application note)
Packing size	2030 x 400 x 400 mm
Height / diameter	1823 / 230 and 280 mm

## Accessories delivered with the Tri-Sector-Pipe Antenna:

1. Clamping ring for mounting the antenna on the customer-supplied base
2. Lightning conductor rod
3. Ring bolt as attachment possibility for lifting aid
4. Wrench (SW41 + SW27) for attaching the RCU

## Optional Accessories:

The following components may be ordered separately

1. 86010025 Slimline Remote Control Unit (RCU)
2. 78210352 Multipack TMA MPTMA-UMTS-12-AISG-6P with 12 dB (equals 3\*DTMA) and RET-Support
3. 78210353 Multipack TMA MPTMA-UMTS-24-AISG-6P with 24 dB (equals 3\*DTMA) and RET-Support
4. 78210354 Multipack TMA MPTMA-UMTS-12-CW-6P with 12 dB (equals 3\*DTMA) without RET-Support
5. 78210355 Multipack TMA MPTMA-UMTS-24-CW-6P with 24 dB (equals 3\*DTMA) without RET-Support
6. 85010010 Flexible Sealing Frame (Roxtec frame to seal connection between the mast and the antenna, see below)
7. 738440 Azimuth Adjustment Tool, see page 201
8. 737306 3-way power splitter for optional omni pattern
9. 85010111 Inlay mounting plate kit for 3-way splitter and DTMA for omni pattern
10. 782 10xxx Double TMA optional for omni pattern (several types, see page 302)



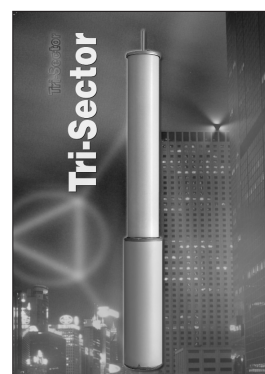
View inside service zone with MPTMA and Slimline RCUs

## Flexible Sealing Frame

Type No.	<b>85010010</b>
Outer diameter	180 mm
Cable diameter (6x)	15 – 42 mm
Cable diameter (3x)	3.5 – 10.5 mm
Frame-Material	Stainless steel
Sealing-Material	Halogen free cross linkable compound on ethylene-propylene rubber (EPDM)
Material of screws	Stainless steel
Accessories	Mounting lubricant
Required assembly tools	Socket wrench size 6 mm
Weight (without packaging)	1.8 kg
Packing size (L x W x H)	approx. 208 x 208 x 68 mm



For further information please refer to separate application note under:  
[www.kathrein.de/en/mca/index-customerportal.htm](http://www.kathrein.de/en/mca/index-customerportal.htm)





# Summary – Directional Antennas

## 2-Multi-band

### 1800/1900/2000/2600

#### Dual Polarization +45°/–45°

Type	Type No.	Height [mm]	Connector position	Page
XXPol Panel 1710–2170 65° 15dBi 0°–10°T 1710–2170 65° 15dBi 0°–10°T	<b>742233v01</b>	679	bottom	86
XXPol Panel 1710–2690 65° 16.5dBi 0°–12°T 1710–2690 65° 16.5dBi 0°–12°T	80010682	855	bottom	87
XXPol Panel 1710–2170 65° 18dBi 0°–8°T 1710–2170 65° 18dBi 0°–8°T	<b>742237</b>	1147	bottom	88
XXPol Panel 1710–2170 65° 18dBi 0°–10°T 2490–2690 60° 18dBi 0°–10°T	<b>80010644</b>	1410	bottom	88
XXPol Panel 1710–2200 65° 18dBi 0°–10°T 1710–2200 65° 18dBi 0°–10°T	<b>742236v01</b>	1319	bottom	89
XXPol Panel 1710–2690 65° 18dBi 0°–12°T ESLS 1710–2690 65° 18dBi 0°–10°T	80010622	1415	bottom	90
XXPol Panel 1710–2200 65° 18dBi 0°–15°T ESLS 1710–2200 65° 18dBi 0°–15°T	<b>80010510v01</b>	1389	bottom	91
XXPol Panel 1710–2170 65° 19.5dBi 0°–6°T 1710–2170 65° 19.5dBi 0°–6°T	<b>742235v01</b>	1959	bottom	92
XXPol Panel 1710–2200 65° 19dBi 0°–10°T ESLS 1710–2200 65° 19dBi 0°–10°T	<b>80010511v01</b>	1999	bottom	93
XXPol Panel 1710–2180 88° 16.5dBi 0°–10°T 1710–2180 88° 16.5dBi 0°–10°T	<b>742352v01</b>	1319	bottom	94

New or changed product

When deploying  
2-Multi-band Antennas,  
please also consider using  
special Dual-band Combiners  
(see pages 220 and 221)

Abbreviations:

ESLS: Enhanced Side Lobe Suppression (above or below horizon)

1800/1900/2000/2600  
XXPol 2-Multi

## 2-Multi-band Panel

1710–2200

1710–2200

## Dual Polarization

X

X

## Half-power Beam Width

65°

65°

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### XXPol Panel 1710–2170/1710–2170 65°/65° 15/15dBi 0°–10°/0°–10°T

Type No.	<b>742233v01</b>			clamps included
Frequency range	1710–2170			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	
Gain	4 x 15 dBi	4 x 15.2 dBi	4 x 15.3 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	67°	65°	62°	
Front-to-back ratio	Copolar: > 25 dB Total power: > 25 dB	Copolar: > 25 dB Total power: > 25 dB	Copolar: > 25 dB Total power: > 25 dB	
Cross polar ratio Maindirection Sector	0° ±60° Typically: 20 dB Typically: 10 dB	Typically: 20 dB Typically: 10 dB	Typically: 20 dB Typically: 10 dB	
<b>Vertical Pattern:</b>				
Half-power beam width	14°	13.7°	13°	
Electrical tilt	0°–10°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10°T 16 ... 16 ... 15 ... 15 dB	0° ... 4° ... 8° ... 10°T 16 ... 16 ... 16 ... 16 dB	0° ... 4° ... 8° ... 10°T 16 ... 16 ... 16 ... 16 dB	
VSWR	< 1.5			
Isolation, between inputs	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	250 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 350 / 85 / 370 N			
Height/width/depth	679 / 323 / 71 mm			
Category of mounting hardware	L (Light)			
Weight	10.5 kg / 12.5 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			



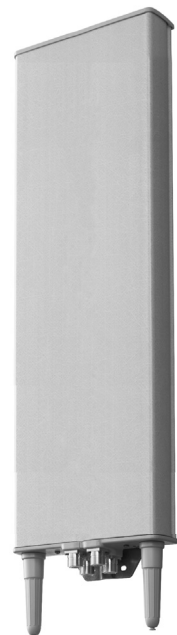
**Multi-band Panel  
Dual Polarization  
Half-power Beam Width**

1710–2690	1710–2690
X	X
65°	65°

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**XXPol Panel 1710–2690/1710–2690 65°/65° 16.5/16.5dBi 0°–12°/0°–12°T**

Type No.	<b>80010682</b>			
Frequency range	<b>1710–2690</b>			
	1710 – 1990 MHz	1920 – 2200 MHz	2200 – 2490 MHz	2490 – 2690 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain at 0° tilt	4 x 15.8 dBi	4 x 16.2 dBi	4 x 16.6 dBi	4 x 16.7 dBi
<b>Horizontal Pattern:</b>				
Half-power beam width	65°	64°	60°	61°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB	> 28 dB
Cross polar ratio Sector 0° ±60°	Typically: 25 dB > 8 dB	Typically: 25 dB > 8 dB	Typically: 25 dB > 8 dB	Typically: 25 dB > 10 dB
<b>Vertical Pattern:</b>				
Half-power beam width	11°	10°	9°	8.7°
Electrical tilt	0°–12°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	0° ... 6° ... 12° T ≥ 12 ... 13 ... 15 dB	0° ... 6° ... 12° T ≥ 13 ... 14 ... 16 dB	0° ... 6° ... 12° T ≥ 13 ... 15 ... 16 dB	0° ... 6° ... 12° T ≥ 15 ... 15 ... 17 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	250 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 440 / 100 / 460 N			
Height/width/depth	855 / 323 / 71 mm			
Category of mounting hardware	M (Medium)			
Weight	11 kg / 13 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			



1800/1900/2000/2600  
XXPol 2-Multi

## 2-Multi-band Panel

## Dual Polarization

## Half-power Beam Width

1710–2170

1710–2170

X

X

65°

65°

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### XXPol Panel 1710–2170/1710–2170 65°/65° 18/18dBi 0°–8°/0°–8°T

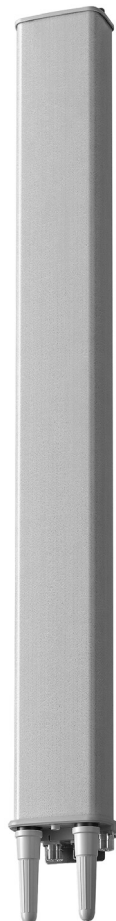
Type No.	<b>742237</b>			clamps included
Frequency range	1710–2170			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	
Gain	4 x 17.5 dBi	4 x 17.7 dBi	4 x 18 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	65°	63°	61°	
Front-to-back ratio	Copolar: 30 dB	Copolar: 30 dB	Copolar: 30 dB	
Cross polar ratio				
Main direction	Avg.: 25 dB	Avg.: 25 dB	Avg.: 25 dB	
Sector	±60° > 10 dB	> 10 dB	> 10 dB	
<b>Vertical Pattern:</b>				
Half-power beam width	8.3°	8°	7.5°	
Electrical tilt	0°–8°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam, Avg.	0° ... 4° ... 8° T 20 ... 20 ... 18 dB	0° ... 4° ... 8° T 20 ... 20 ... 18 dB	0° ... 4° ... 8° T 20 ... 20 ... 18 dB	
VSWR	< 1.5			
Isolation, between inputs	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	250 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 590 / 135 / 610 N			
Height/width/depth	1147 / 323 / 71 mm			
Category of mounting hardware	M (Medium)			
Weight	12.5 kg / 14.5 kg (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter			



### XXPol Panel 1710–2170/2490–2690 65°/60° 18/18dBi 0°–10°/0°–10°T

Type No.	<b>80010644</b>			clamps included
Frequency range	1710–2170		2490–2690	
	1710 – 1990 MHz	1920 – 2170 MHz	2490 – 2690 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Gain at 0° tilt	2 x 17.5 dBi	2 x 17.7 dBi	2 x 18.0 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	68°	65°	61°	
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB	
Cross polar ratio				
Sector	±60° Typically: 25 dB > 8 dB	Typically: 25 dB > 8 dB	Typically: 25 dB > 10 dB	
<b>Vertical Pattern:</b>				
Half-power beam width	6.7°	6.3°	5.4°	
Electrical tilt, continuously adjustable	0°–10°		0°–10°	
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T ≥ 17 ... 17 ... 16 dB	0° ... 5° ... 10° T ≥ 17 ... 17 ... 16 dB	0° ... 6° ... 10° T ≥ 17 ... 17 ... 16 dB	
VSWR	< 1.5		< 1.5	
Isolation: Intrasystem	> 30 dB		> 30 dB	
Isolation: Intersystem	> 30 dB		> 30 dB	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	200 W*		200 W*	
Total power	400 W*		400 W*	
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 370 / 145 / 400 N			
Height/width/depth	1410 / 155 / 89 mm			
Category of mounting hardware	M (Medium)			
Weight	10 kg / 12 kg (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter			

\* (at 50 °C ambient temperature)





## 2-Multi-band Panel

## Dual Polarization

## Half-power Beam Width

1710–2170	1710–2170
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X	X
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65°	65°
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### XXPol Panel 1710–2200/1710–2200 65°/65° 18/18dBi 0°–10°/0°–10°T

Type No.	<b>742236v01</b>			clamps included
Frequency range	<b>1710–2200</b>			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz	
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	
Gain	4 x 17.6 dBi	4 x 17.8 dBi	4 x 18 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	64°	64°	62°	
Front-to-back ratio	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	
Cross polar ratio Maindirection Sector	0° ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
<b>Vertical Pattern:</b>				
Half-power beam width	7°	6.8°	6.5°	
Electrical tilt	0°–10°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T 20 ... 18 ... 16 dB	0° ... 5° ... 10° T 20 ... 18 ... 16 dB	0° ... 5° ... 10° T 16 ... 18 ... 16 dB	
VSWR	< 1.5			
Isolation, between inputs	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 660 / 155 / 690 N			
Height/width/depth	1319 / 323 / 71 mm			
Category of mounting hardware	M (Medium)			
Weight	15 kg / 17 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			



1800/1900/2000/2600  
XXPol 2-Multi

# Multi-band Panel Dual Polarization Half-power Beam Width

1710–2690	1710–2690
X	X
65°	65°

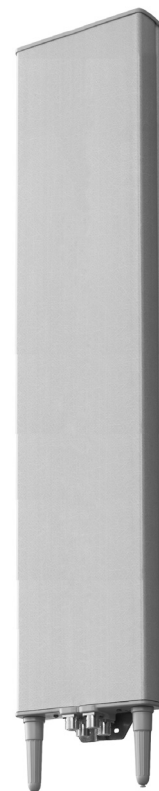
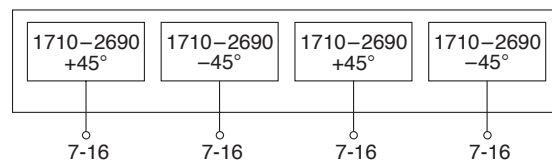
**KATHREIN**  
Antennen · Electronic

## XXPol Panel 1710–2690/1710–2690 65°/65° 18/18dBi 0°–12°/0°–12°T ESLS

Type No.	<b>80010622</b>			
Frequency range	<b>1710–2690</b>			
	1710 – 1990 MHz	1920 – 2200 MHz	2200 – 2490 MHz	2490 – 2690 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain (dBi)	17.4 ... 17.4 ... 17.3	17.8 ... 17.6 ... 17.5	18.0 ... 17.9 ... 17.5	18.0 ... 17.7 ... 17.3
Tilt	0° ... 6° ... 12°	0° ... 6° ... 12°	0° ... 6° ... 12°	0° ... 6° ... 12°
<b>Horizontal Pattern:</b>				
Half-power beam width	65°	65°	61°	61°
Front-to-back ratio (180° ±30°)	> 25 dB, avg. 28 dB	> 26 dB, avg. 28 dB	> 25 dB, avg. 27 dB	> 25 dB, avg. 27 dB
Cross polar ratio Sector	Typically: 30 dB > 10 dB	Typically: 30 dB > 10 dB	Typically: 25 dB > 8 dB	Typically: 25 dB > 10 dB
<b>Vertical Pattern:</b>				
Half-power beam width	7.1°	6.5°	5.9°	5.7°
Electrical tilt	0°–12°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	0° ... 6° ... 12° T ≥ 18 ... 18 ... 18 dB	0° ... 6° ... 12° T ≥ 18 ... 18 ... 18 dB	0° ... 6° ... 12° T ≥ 18 ... 17 ... 17 dB	0° ... 6° ... 12° T ≥ 18 ... 18 ... 17 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 720 / 165 / 740 N			
Height/width/depth	1415 / 323 / 71 mm			
Category of mounting hardware	M (Medium)			
Weight	17.5 kg / 19.5 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			

clamps  
included

1800/1900/2000/2600  
XXPol 2-Multi



# 2-Multi-band Panel

# Dual Polarization

# Half-power Beam Width

1710–2200	1710–2200
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X	X
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65°	65°
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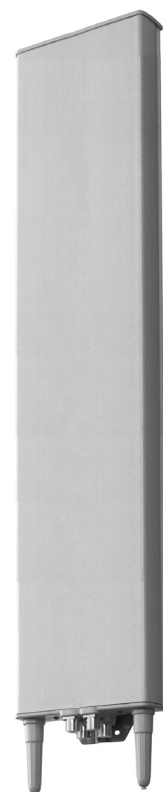
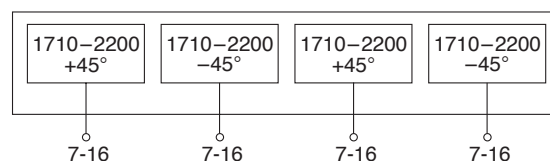
# KATHREIN

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## XXPol Panel 1710–2200/1710–2200 65°/65° 18/18dBi 0°–15°/0°–15°T ESLS

Type No.	80010510v01			
Frequency range	1710–2200			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	2000 – 2200 MHz
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°
Gain at 0° tilt	4 x 17.5 dBi	4 x 17.6 dBi	4 x 17.7 dBi	4 x 17.8 dBi
<b>Horizontal Pattern:</b>				
Half-power beam width	65°	63°	62°	62°
Front-to-back ratio (180° ±30°)	≥ 30 dB	≥ 30 dB	≥ 30 dB	≥ 28 dB
Cross polar ratio	24 dB	24 dB	24 dB	26 dB
Sector	±60°	≥ 9 dB	≥ 9 dB	≥ 10 dB
<b>Vertical Pattern:</b>				
Half-power beam width	7.9°	7.5°	7.2°	6.9°
Electrical tilt	0°–15°, continuously adjustable			
Sidelobe suppression	0° ... 5° ... 10° ... 15° T	0° ... 5° ... 10° ... 15° T	0° ... 5° ... 10° ... 15° T	0° ... 5° ... 10° ... 15° T
– for first sidelobe above main beam	≥ 17 ... 20 ... 18 ... 17 dB	≥ 16 ... 20 ... 18 ... 18 dB	≥ 15 ... 19 ... 18 ... 17 dB	≥ 14 ... 18 ... 18 ... 16 dB
– within 0°–20° sector above horizon	≥ 17 ... 18 ... 18 ... 16 dB	≥ 16 ... 17 ... 17 ... 16 dB	≥ 15 ... 17 ... 17 ... 16 dB	≥ 14 ... 16 ... 16 ... 15 dB
Null-fill at 0° tilt	23 dB	22 dB	21 dB	20 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 700 / 160 / 720 N			
Height/width/depth	1389 / 323 / 71 mm			
Category of mounting hardware	M (Medium)			
Weight	17 kg / 19 kg (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter			

1800/1900/2000/2600  
XXPol 2-Multi



## 2-Multi-band Panel

## Dual Polarization

## Half-power Beam Width

1710–2170	1710–2170
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X	X
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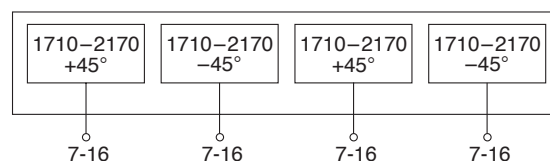
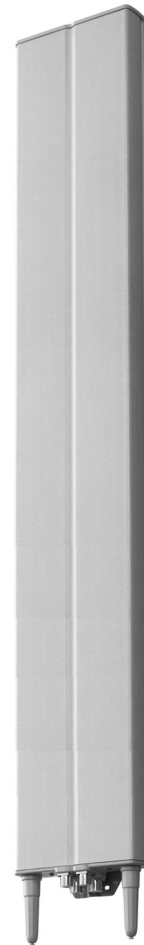
65°	65°
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# KATHREIN

Antennen · Electronic

### XXPol Panel 1710–2170/1710–2170 65°/65° 19.5/19.5dBi 0°–6°/0°–6°T

Type No.	<b>742235v01</b>			<i>clamps included</i>
Frequency range	1710–2170			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	
Gain	4 x 19 dBi	4 x 19.2 dBi	4 x 19.5 dBi	
<b>Horizontal Pattern:</b>				
Half-power beam width	65°	64°	63°	
Front-to-back ratio	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 24 dB	
Cross polar ratio Maindirection Sector	0° ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Tracking, Avg.	0.5 dB			
Squint	±2.5°			
<b>Vertical Pattern:</b>				
Half-power beam width	4.6°	4.4°	4.2°	
Electrical tilt	0°–6°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 4° ... 6° T 17 ... 17 ... 14 ... 14 dB	0° ... 2° ... 4° ... 6° T 17 ... 17 ... 15 ... 15 dB	0° ... 2° ... 4° ... 6° T 17 ... 17 ... 15 ... 15 dB	
VSWR	< 1.5			
Isolation, between inputs	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1010 / 220 / 1040 N			
Height/width/depth	1959 / 323 / 71 mm			
Category of mounting hardware	M (Medium)			
Weight	18 kg / 20 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			



## 2-Multi-band Panel

## Dual Polarization

## Half-power Beam Width

1710–2200	1710–2200
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X	X
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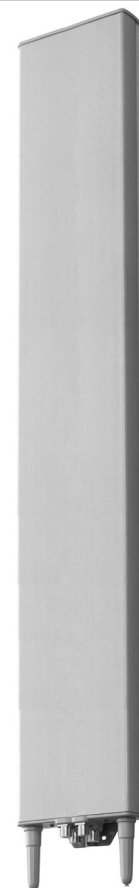
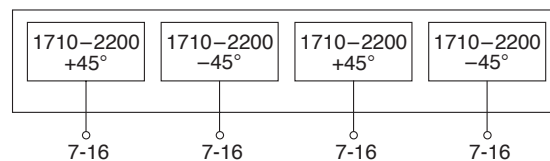
65°	65°
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# KATHREIN

Antennen · Electronic

### XXPol Panel 1710–2200/1710–2200 65°/65° 19/19dBi 0°–10°/0°–10°T ESLS

Type No.	80010511v01			
Frequency range	1710–2200			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	2000 – 2200 MHz
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°
Gain	18.5 ... 18.7 ... 18.5 dBi	18.7 ... 19.0 ... 18.5 dBi	18.7 ... 19.0 ... 18.4 dBi	18.7 ... 18.9 ... 18.3 dBi
Tilt	0° ... 5° ... 10° T	0° ... 5° ... 10° T	0° ... 5° ... 10° T	0° ... 5° ... 10° T
<b>Horizontal Pattern:</b>				
Half-power beam width	66°	65°	65°	63°
Front-to-back ratio (180° ±30°)	≥ 30 dB	≥ 30 dB	≥ 30 dB	≥ 28 dB
Cross polar ratio	Typically: 22 dB	Typically: 22 dB	Typically: 22 dB	Typically: 22 dB
Sector	0°	0°	0°	0°
	±60°	≥ 10 dB	≥ 10 dB	≥ 10 dB
<b>Vertical Pattern:</b>				
Half-power beam width	5.0°	4.8°	4.6°	4.4°
Electrical tilt	0°–10°, continuously adjustable			
Sidelobe suppression	0° ... 4° ... 8° ... 10° T	0° ... 4° ... 8° ... 10° T	0° ... 4° ... 8° ... 10° T	0° ... 4° ... 8° ... 10° T
– for first sidelobe above main beam	≥ 20 ... 20 ... 18 ... 18 dB	≥ 20 ... 20 ... 18 ... 18 dB	≥ 19 ... 20 ... 18 ... 18 dB	≥ 18 ... 20 ... 18 ... 18 dB
– within 0°–20° sector above horizon	≥ 18 ... 18 ... 17 ... 17 dB	≥ 17 ... 18 ... 17 ... 15 dB	≥ 17 ... 17 ... 17 ... 15 dB	≥ 17 ... 17 ... 14 ... 12 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1020 / 230 / 1080 N			
Height/width/depth	1999 / 323 / 71 mm			
Category of mounting hardware	M (Medium)			
Weight	18 kg / 20 kg (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter			



## 2-Multi-band Panel

## Dual Polarization

## Half-power Beam Width

1710–2180

1710–2180

X

X

88°

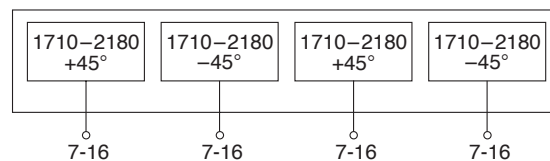
88°

# KATHREIN

Antennen · Electronic

### XXPol Panel 1710–2180/1710–2180 88°/88° 16.5/16.5dBi 0°–10°/0°–10°T

Type No.	742352v01			clamps included
Frequency range	1710–2180			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz	
Polarization	+45°, –45°, +45°, –45°	+45°, –45°, +45°, –45°	+45°, –45°, +45°, –45°	
Gain (average)	16.1 ... 16.3 ... 16.0 dBi	16.2 ... 16.4 ... 16.1 dBi	16.5 ... 16.7 ... 16.2 dBi	
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°	
<b>Horizontal Pattern:</b>				
Half-power beam width	88°	90°	88°	
Front-to-back ratio	Copolar: > 24 dB Total power: > 24 dB	Copolar: > 24 dB Total power: > 24 dB	Copolar: > 24 dB Total power: > 24 dB	
Cross polar ratio				
Maindirection	0°			
Sector	±60°	Typically: 15 dB > 8 dB	Typically: 15 dB > 7.5 dB	Typically: 15 dB > 7 dB
Tracking, Avg.	0.5 dB			
Squint	±2.5°			
<b>Vertical Pattern:</b>				
Half-power beam width	7.4°	7°	6.5°	
Electrical tilt	0°–10°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10° T 18 ... 17 ... 16 ... 15 dB	0° ... 4° ... 8° ... 10° T 18 ... 17 ... 16 ... 15 dB	0° ... 4° ... 8° ... 10° T 17 ... 17 ... 16 ... 15 dB	
VSWR	< 1.5			
Isolation: Intrasystem	> 30 dB			
Isolation: Intersystem	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 660 / 155 / 690 N			
Height/width/depth	1319 / 323 / 71 mm			
Category of mounting hardware	M (Medium)			
Weight	16.5 kg / 18.5 kg (clamps incl.)			
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter			



# Summary – Directional Antennas

## Dual-band

### 800/900 – 1800/2000/2600

#### Dual Polarization +45°/-45°

Type	Type No.	Height [mm]	Connector position	Page
XXPol Panel 806-960 C 65° 8.5dBi 0°T 1710-2180 60° 9.5dBi 0°T	<b>80010454v01</b>	270	bottom or top	96
XXPol Panel 790-960 65° 12dBi 0°T 1710-2170 60° 14dBi 0°T	<b>742226v01</b>	579	bottom or top	97
XXPol Panel 790-960 C 65° 12dBi 0°T 1710-2170 60° 14dBi 0°T	<b>742222v01</b>	579	bottom or top	98
XXPol Panel 790-960 65° 14.5dBi 0°-14°T 1710-2180 65° 17.5dBi 0°-8°T	<b>742264v02</b>	1334	bottom	99
XXPol Panel 790-960 C 65° 14.5dBi 0°-14°T 1710-2180 65° 17.5dBi 0°-8°T	<b>742223v02</b>	1334	bottom	100
XXPol Panel 870-960 65° 17dBi 0°T 1710-1880 60° 18.5dBi 0°T	741327	1936	bottom or top	101
XXPol Panel 870-960 C 65° 17dBi 0°T 1710-1880 60° 18dBi 0°T	741322	1936	bottom or top	101
XXPol Panel 790-960 65° 16dBi 0°-10°T 1710-2180 65° 18.5dBi 0°-6°T	<b>742265v02</b>	1933	bottom	102
XXPol Panel 790-960 65° 16.5dBi 2°-14°T 1710-2180 65° 18.5dBi 4°-14°T	<b>80010485v01</b>	2038	bottom	103
XXPol Panel 790-960 C 65° 16dBi 0°-10°T 1710-2180 65° 18.5dBi 0°-6°T	<b>742224v02</b>	1933	bottom	104
XXPol Panel 790-960 65° 16.5dBi 0°-10°T 1710-2690 65° 19dBi 0°-6°T	<b>80010665</b>	1997	bottom	105
XXPol Panel 870-960 C 65° 17dBi 2°-8°T 1710-1880 60° 18dBi 2°T	<b>742047v01</b>	2580	bottom	106
XXPol Panel 790-960 65° 17dBi 0°-7°T 1710-2180 65° 18.5dBi 0°-6°T	<b>742266v02</b>	2533	bottom	107
XXPol Panel 790-960 65° 17.5dBi 4°-12°T 1710-2180 65° 18.5dBi 4°-14°T	<b>80010486v01</b>	2516	bottom	108
XXPol Panel 790-960 C 65° 17dBi 0°-7°T 1710-2180 65° 18.5dBi 0°-6°T	<b>742225v02</b>	2533	bottom	109
XXPol Panel 790-960 88° 13.5dBi 0°-12°T 1710-2180 88° 16.5dBi 0°-10°T	<b>80010121v01</b>	1384	bottom	110
XXPol Panel 790-960 88° 15.2dBi 0°-10°T 1710-2180 88° 18dBi 0°-6°T	<b>80010122v01</b>	1917	bottom	111
XXPol Panel 790-960 88° 16.5dBi 0°-7°T 1710-2180 88° 18dBi 0°-6°T	<b>80010123v03</b>	2635	bottom	112

C = integrated Combiner

New or changed product

*When deploying  
Dual-band Antennas,  
please also consider using  
special Dual-band Combiners  
(see pages 220 and 221)*

800/900 –  
1800/2000/2600  
XXPol



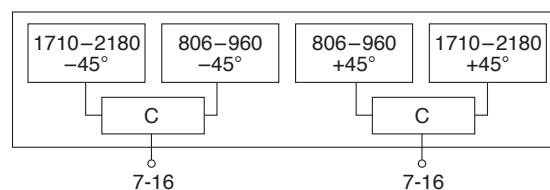
# Dual-band Panel Dual Polarization Half-power Beam Width

806–960	1710–2180
X	X
65°	65°

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## XXPol Panel 806–960/1710–2180 C 65°/65° 8.5/9.5dBi

Type No.	80010454v01						clamps included
Frequency range	806–960			1710–2180			
	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Average gain	2 x 8.5 dBi	2 x 8.5 dBi	2 x 8.5 dBi	2 x 9.5 dBi	2 x 9.5 dBi	2 x 9.2 dBi	
<b>Horizontal Pattern:</b>							
Half-power beam width	67°	67°	65°	60°	63°	68°	
Front-to-back ratio [dB]	Copolar: > 25	Copolar: > 25	Copolar: > 25	Copolar: > 25	Copolar: > 25	Copolar: > 25	
[dB]	Total power: > 20	Total power: > 20	Total power: > 22	Total power: > 22	Total power: > 22	Total power: > 22	
Cross polar ratio	Typically: 25 dB	Typically: 25 dB	Typically: 20 dB	Typically: 20 dB	Typically: 19 dB	Typically: 20 dB	
Maindirection	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	
Sector	±60°						
<b>Vertical Pattern:</b>							
Half-power beam width	68°	68°	69°	64°	62°	60°	
VSWR							< 1.5
Isolation: Intrasystem							> 30 dB
Intermodulation IM3							< –150 dBc (2 x 43 dBm carrier)
Max. power	250 W (at 50 °C ambient temperature)			100 W (at 50 °C ambient temperature)			
Max. power per combined input							350 W (at 50 °C ambient temperature)
nput							2 x 7-16 female
Connector position							Bottom or top*
Wind load (at 150 km/h)							Frontal / lateral / rearside: 95 / 35 / 130 N
Height/width/depth							270 / 262 / 116 mm
Category of mounting hardware							M (Medium)
Weight							4.5 kg / 6.5 kg (clamps incl.)
<b>Scope of supply</b>							Panel and 1 unit of tension bands for 45 – 125 mm diameter
Integrated combiner							The insertion loss is included in the given antenna gain values.



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# Dual-band Panel Dual Polarization Half-power Beam Width

790–960	1710–2170
X	X
65°	60°

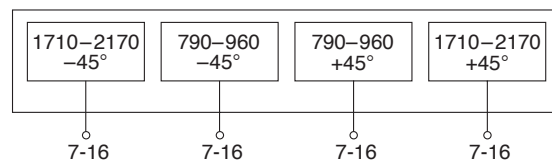
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## XXPol Panel 790–960/1710–2170 65°/60° 12/14dBi 0°/0°T

Type No.	742226v01					
Frequency range	790–960			1710–2170		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 11.1 dBi	2 x 11.4 dBi	2 x 11.8 dBi	2 x 12.8 dBi	2 x 13.3 dBi	2 x 13.6 dBi
<b>Horizontal Pattern:</b>						
Half-power beam width	68°	67°	65°	66°	60°	60°
Front-to-back ratio [dB] (180° ±30°)	Copolar: > 23 Total power: > 20	Copolar: > 23 Total power: > 20	Copolar: > 25 Total power: > 22	Copolar: > 25 Total power: > 22	Copolar: > 25 Total power: > 22	Copolar: > 25 Total power: > 22
Cross polar ratio Maindirection Sector 0° ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 16 dB > 10 dB	Typically: 18 dB > 10 dB	Typically: 20 dB > 10 dB
Tracking, Avg.	1.0 dB			0.5 dB		
Squint	±3.0°			±1.5°		
<b>Vertical Pattern:</b>						
Half-power beam width	34°	33°	30°	20°	18°	17.5°
Electrical tilt	0°, fixed			0°, fixed		
VSWR	< 1.5			< 1.5		
Isolation: Intrasystem	> 30 dB			> 30 dB		
Isolation: Intersystem	> 45 dB (790–960 // 1710–2170 MHz)					
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	250 W (at 50 °C ambient temperature)			200 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female					
Connector position	Bottom or top					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 200 / 90 / 250 N					
Height/width/depth	579 / 262 / 139 mm					
Category of mounting hardware	M (Medium)					
Weight	7.5 kg / 9.5 kg (clamps incl.)					
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter					

clamps included

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1800/2000/2600  
XXPol



# Dual-band Panel

790–960

1710–2170

# Dual Polarization

X

X

# Half-power Beam Width

65°

60°

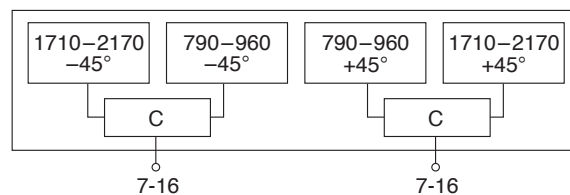
# KATHREIN

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## XXPol Panel 790–960/1710–2170 C 65°/60° 12/14dBi 0°/0°T

Type No.	742222v01					
Frequency range	790–960			1710–2170		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 11.1 dBi	2 x 11.4 dBi	2 x 11.8 dBi	2 x 12.5 dBi	2 x 13.3 dBi	2 x 13.6 dBi
Half-power beam width	Horizontal: 68°	Horizontal: 67°	Horizontal: 65°	Horizontal: 66°	Horizontal: 60°	Horizontal: 60°
Copolar +45°/–45°	Vertical: 34°	Vertical: 33°	Vertical: 30°	Vertical: 20°	Vertical: 18°	Vertical: 17.5°
Front-to-back ratio [dB]	Copolar: > 23	Copolar: > 23	Copolar: > 25	Copolar: > 25	Copolar: > 25	Copolar: > 25
(180° ± 30°)	Total power: > 20	Total power: > 20	Total power: > 22	Total power: > 22	Total power: > 22	Total power: > 22
Cross polar ratio						
Maindirection 0°	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	Typically: 18 dB	Typically: 18 dB	Typically: 20 dB
Sector ±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc			< –150 dBc		
Max. power	250 W (at 50 °C ambient temperature)			200 W (at 50 °C ambient temperature)		
Max. power per combined input	450 W (at 50 °C ambient temperature)					
Input	2 x 7-16 female					
Connector position	Bottom or top					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 200 / 90 / 250 N					
Height/width/depth	579 / 262 / 139 mm					
Category of mounting hardware	M (Medium)					
Weight	7.5 kg / 9.5 kg (clamps incl.)					
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter					
Integrated combiner	The insertion loss is included in the given antenna gain values.					

clamps included



800/900 – 1800/2000/2600 XXPol

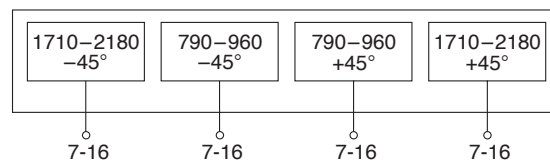
# Dual-band Panel Dual Polarization Half-power Beam Width

824–960	1710–2180
X	X
65°	65°

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## XXPol Panel 790–960/1710–2180 65°/65° 14.5/17.5dBi 0°–14°/0°–8°T

Type No.	742264v02						clamps included
Frequency range	790–960		1710–2180				
	790–862 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1920–2180 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Gain (dBi)	14.1 ... 14.1 ... 13.7	14.3 ... 14.2 ... 13.8	14.5 ... 14.4 ... 13.9	17.1 ... 17.3 ... 17.1	17.2 ... 17.4 ... 17.1	17.3 ... 17.5 ... 17.2	
Tilt	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 4° ... 8°	0° ... 4° ... 8°	0° ... 4° ... 8°	
<b>Horizontal Pattern:</b>							
Half-power beam width	68°	67°	65°	65°	62°	61°	
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB	> 32 dB	> 32 dB	> 32 dB	
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	Typically:	
Maindirection	0°	0°	0°	0°	0°	0°	
Sector	±60°	±60°	±60°	±60°	±60°	±60°	
Tracking, Avg.	1 dB			0.5 dB			
Squint	±2°			±3°			
<b>Vertical Pattern:</b>							
Half-power beam width	16.5°	16°	15.3°	7.4°	7.1°	6.7°	
Electrical tilt, contin. adjust.	0°–14°	0°–14°	0°–14°	0°–8°	0°–8°	0°–8°	
Sidelobe suppression for first sidelobe above main beam avg.	0° ... 7° ... 14° T 17 ... 16 ... 15 dB	0° ... 7° ... 14° T 19 ... 18 ... 18 dB	0° ... 7° ... 14° T 17 ... 18 ... 17 dB	0° ... 4° ... 8° T 17 ... 17 ... 16 dB	0° ... 4° ... 8° T 15 ... 15 ... 15 dB	0° ... 4° ... 8° T 16 ... 16 ... 15 dB	
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	
Isolation: Intersystem	> 45 dB, Typ. > 50 dB (790–960 // 1710–2180 MHz)						
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	500 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)			
Total power	1000 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female (long neck)						
Connector position	Bottom						
Adjustment mechanism	2x, Position bottom continuously adjustable						
Wind load (at 150 km/h)	Frontal / lateral / rearside: 560 / 260 / 600 N						
Height/width/depth	1334 / 261 / 146 mm						
Category of mounting hardware	M (Medium)						
Weight	15.5 kg / 17.5 kg (clamps incl.)						
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter						



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# Dual-band Panel Dual Polarization Half-power Beam Width

790–960	1710–2180
X	X
65°	65°

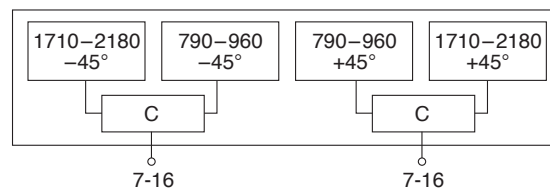
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## XXPol Panel 790–960/1710–2180 C 65°/65° 14.5/17.5dBi 0°–14°/0°–8°T

Type No.	742223v02					clamps included
Frequency range	790–960		1710–2180			
	790–862 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1920–2180 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Gain (dBi)	14.1 ... 14.1 ... 13.7	14.5 ... 14.4 ... 13.9	17.1 ... 17.3 ... 17.1	17.2 ... 17.4 ... 17.1	17.3 ... 17.5 ... 17.2	
Tilt	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 4° ... 8°	0° ... 4° ... 8°	0° ... 4° ... 8°	
<b>Horizontal Pattern:</b>						
Half-power beam width	68°	65°	65°	62°	61°	
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 32 dB	> 32 dB	> 32 dB	
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	
Main direction	0°	0°	0°	0°	0°	
Sector	±60°	±60°	±60°	±60°	±60°	
	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	
Tracking, Avg.	1.0 dB			0.5 dB		
Squint	±2.0°			±3.0°		
<b>Vertical Pattern:</b>						
Half-power beam width	16.5°	15.3°	7.4°	7.1°	6.7°	
Electrical tilt continuously adjustable	0°–14°	0°–14°	0°–8°	0°–8°	0°–8°	
Sidelobe suppression for first sidelobe above main beam avg.	0° ... 7° ... 14° T 17 ... 16 ... 15 dB	0° ... 7° ... 14° T 17 ... 18 ... 17 dB	0° ... 4° ... 8° T 17 ... 17 ... 16 dB	0° ... 4° ... 8° T 15 ... 15 ... 15 dB	0° ... 4° ... 8° T 16 ... 16 ... 15 dB	
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Intermodulation IM3	< –150 dBc					
Max. power per input	250 W*		200 W*			
Total power per combined input	450 W*					
Input	2 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	2x, Position bottom continuously adjustable					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 560 / 260 / 600 N					
Height/width/depth	1334 / 261 / 146 mm					
Category of mounting hardware	M (Medium)					
Weight	15.5 kg / 17.5 kg (clamps incl.)					
<b>Scope of supply</b>	Panel and 2 units of clamps for 42 – 115 mm diameter					
Integrated combiner	The insertion loss is included in the given antenna gain values.					



\* (at 50 °C ambient temperature)



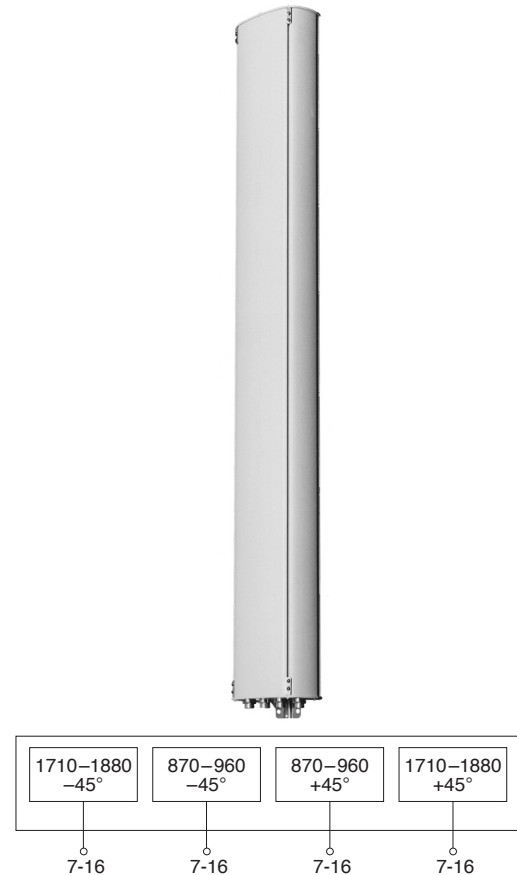
# Dual-band Panel Dual Polarization Half-power Beam Width

870–960	1710–1880
X	X
65°	60°

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## XXPol Panel 870–960/1710–1880 65°/60° 17/18.5dBi

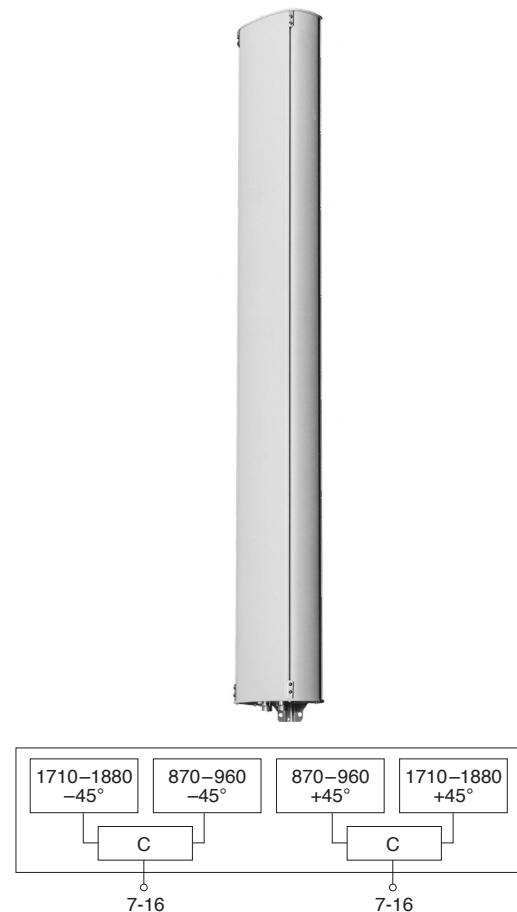
Type No.	741327	
Frequency range	<b>870–960</b> 870 – 960 MHz	<b>1710–1880</b> 1710 – 1880 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 17 dBi	2 x 18.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 9.5°	Horizontal: 60° Vertical: 5.5°
Sidelobe suppression for first sidelobe above horizon	> 15 dB	
Front-to-back ratio, copolar	> 30 dB	> 30 dB
Isolation, between ports	> 30 dB (GSM 900 – GSM 900) > 30 dB (GSM 1800 – GSM 1800) > 30 dB (GSM 900 – GSM 1800)	
VSWR	< 1.5	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	< –150 dBc
Max. power per input	400 W	200 W (at 50 °C ambient temperature)
Input	4 x 7-16 female	
Connector position	Bottom or top	
Weight	19 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 200 / 770 N	
Height/width/depth	1936 / 262 / 116 mm	



800/900 –  
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## XXPol Panel 870–960/1710–1880 C 65°/60° 17/18dBi

Type No.	741322	
Frequency range	<b>870–960</b> 870 – 960 MHz	<b>1710–1880</b> 1710 – 1880 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 17 dBi	2 x 18 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 9.5°	Horizontal: 60° Vertical: 5.5°
Sidelobe suppression for first sidelobe above horizon	> 15 dB	> 15 dB
Front-to-back ratio, copolar	> 30 dB	> 30 dB
Isolation, between ports	> 30 dB	> 30 dB
VSWR	< 1.5	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	< –150 dBc
Max. power per input	250 W	150 W (at 50 °C ambient temperature)
Input	2 x 7-16 female	
Connector position	Bottom or top	
Weight	19 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 200 / 770 N	
Height/width/depth	1936 / 262 / 116 mm	
Integrated combiner	The insertion loss is included in the given antenna gain values.	



# Dual-band Panel Dual Polarization Half-power Beam Width

790–960

1710–2180

X

X

65°

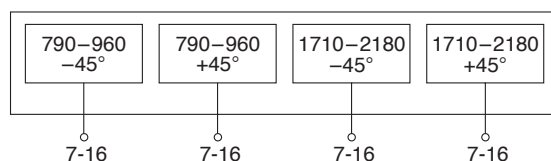
65°

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## XXPol Panel 790–960/1710–2180 65°/65° 16/18.5dBi 0°–10°/0°–6°T

Type No.	742265v02						clamps included
Frequency range	790–960			1710–2180			
	790–862 MHz	824 – 894 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1920–2180 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Gain (dBi)	15.6 ... 15.5 ... 15.3	15.9 ... 15.8 ... 15.5	16.1 ... 16.0 ... 15.6	18.2 ... 18.5 ... 18.3	18.5 ... 18.7 ... 18.3	18.5 ... 18.7 ... 18.3	
Tilt	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°	
<b>Horizontal Pattern:</b>							
Half-power beam width	68°	67°	65°	65°	65°	61°	
Front-to-back ratio, copolar	> 27 dB	> 28 dB	> 28 dB	> 30 dB	> 30 dB	> 30 dB	
Cross polar ratio	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	
Maindirection	0°						
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	
Tracking, Avg.	1.5 dB			0.5 dB			
Squint	±2.5°			±2.5°			
<b>Vertical Pattern:</b>							
Half-power beam width	10.9°	10.6°	10°	5.0°	4.8°	4.6°	
Electrical tilt, contin. adjust.	0.5°–9.5°	0.5°–9.5°	0.5°–9.5°	0°–6°	0°–6°	0°–6°	
Sidelobe suppression for first sidelobe above main beam avg.	0.5° ... 5° ... 9.5° T ≥ 15 ... 16 ... 17 dB	0.5° ... 5° ... 9.5° T ≥ 15 ... 17 ... 19 dB	0.5° ... 5° ... 9.5° T ≥ 15 ... 18 ... 19 dB	0° ... 3° ... 6° T ≥ 18 ... 17 ... 15 dB	0° ... 3° ... 6° T ≥ 18 ... 18 ... 16 dB	0° ... 3° ... 6° T ≥ 18 ... 18 ... 16 dB	
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	
Isolation: Intersystem	> 45 dB, Typ. > 50 dB (790–960 // 1710–2180 MHz)						
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	500 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)			
Total power	1000 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female (long neck)						
Connector position	Bottom						
Adjustment mechanism	2x, Position bottom continuously adjustable						
Wind load (at 150 km/h)	Frontal / lateral / rearside: 850 / 380 / 910 N						
Height/width/depth	1933 / 261 / 146 mm						
Category of mounting hardware	M (Medium)						
Weight	20 kg / 22 kg (clamps incl.)						
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter						





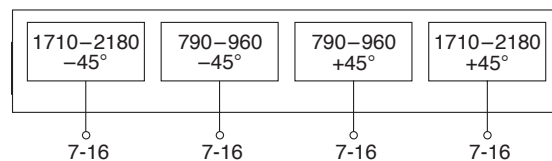
# Dual-band Panel Dual Polarization Half-power Beam Width

790 – 960	1710–2180
X	X
65°	65°

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Antennen · Electronic

## XXPol Panel 790–960/1710–2180 65°/65° 16.5/18.5dBi 2°–14°/4°–14°T

Type No.	80010485v01						clamps included
Frequency range	790–960			1710–2180			
	790 – 862 MHz	824 – 896 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Average gain (dBi)	16.2 ... 16 ... 15.7	16.3 ... 16.1 ... 15.8	16.4 ... 16.2 ... 15.8	18 ... 18.2 ... 17.7	18.4 ... 18.5 ... 17.8	18.7 ... 18.6 ... 18	
Tilt	2° ... 8° ... 14°	2° ... 8° ... 14°	2° ... 8° ... 14°	4° ... 9° ... 14°	4° ... 9° ... 14°	4° ... 9° ... 14°	
<b>Horizontal Pattern:</b>							
Half-power beam width	68°	67°	65°	66°	64°	60°	
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	Typically:	
Maindirection	0°	25 dB	25 dB	25 dB	20 dB	20 dB	21 dB
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
<b>Vertical Pattern:</b>							
Half-power beam width	10°	9.7°	9.3°	5°	4.7°	4.5°	
Electrical tilt	2°–14°, continuously adjustable			4°–14°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	2° ... 8° ... 14° T 17 ... 17 ... 15 dB	2° ... 8° ... 14° T 17 ... 17 ... 16 dB	2° ... 8° ... 14° T 17 ... 17 ... 16 dB	4° ... 9° ... 14° T 20 ... 18 ... 15 dB	4° ... 9° ... 14° T 19 ... 18 ... 15 dB	4° ... 9° ... 14° T 18 ... 17 ... 15 dB	
VSWR	< 1.5						
Isolation: Intrasystem	> 30 dB						
Isolation: Intersystem	> 35 dB (790–960 // 1710–2180 MHz)						
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)						
Max. power per input	400 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)			
Total power	800 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female (long neck)						
Connector position	Bottom						
Adjustment mechanism	1 x, Position bottom continuously adjustable						
Wind load (at 150 km/h)	Frontal / lateral / rearside: 750 / 380 / 900 N						
Height/width/depth	2038 / 262 / 139 mm						
Category of mounting hardware	M (Medium)						
Weight	24 kg / 26 kg (clamps incl.)						
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter						



800/500 –  
1800/2000/2600  
XXPol

# Dual-band Panel Dual Polarization Half-power Beam Width

790–960

1710–2180

X

X

65°

65°

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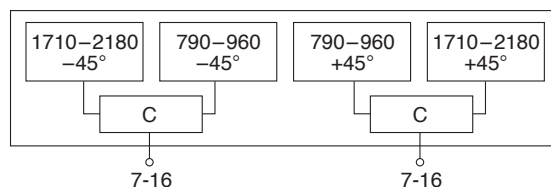
Antennen · Electronic

## XXPol Panel 790–960/1710–2180 C 65°/65° 16/18.5dBi 0°–10°/0°–6°T

Type No.	742224v02					clamps included
Frequency range	790–960 790–862 MHz   880–960 MHz		1710–2180 1710–1880 MHz   1850–1990 MHz   1920–2180 MHz			
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Gain (dBi)	15.6 ... 15.5 ... 15.3	16.1 ... 16.0 ... 15.6	18.2 ... 18.5 ... 18.3	18.5 ... 18.7 ... 18.3	18.5 ... 18.7 ... 18.3	
Tilt	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°	
<b>Horizontal Pattern:</b>						
Half-power beam width	68°	65°	65°	65°	61°	
Front-to-back ratio, copolar	> 27 dB	> 28 dB	> 30 dB	> 30 dB	> 30 dB	
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	
Main direction	0°	0°	0°	0°	0°	
Sector	±60°	±60°	±60°	±60°	±60°	
	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	
Tracking, Avg.	1.5 dB		0.5 dB			
Squint	±2.5°		±2.5°			
<b>Vertical Pattern:</b>						
Half-power beam width	10.9°	10°	5.0°	4.8°	4.6°	
Electrical tilt continuously adjustable	0.5°–9.5°	0.5°–9.5°	0°–6°	0°–6°	0°–6°	
Sidelobe suppression for first sidelobe above main beam avg.	0.5° ... 5° ... 9.5° T ≥ 15 ... 16 ... 17 dB	0.5° ... 5° ... 9.5° T ≥ 15 ... 18 ... 19 dB	0° ... 3° ... 6° T ≥ 18 ... 17 ... 15 dB	0° ... 3° ... 6° T ≥ 18 ... 18 ... 16 dB	0° ... 3° ... 6° T ≥ 18 ... 18 ... 16 dB	
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Intermodulation IM3	< –150 dBc					
Max. power per input	250 W*		200 W*			
Total power per combined input	450 W*					
Input	2 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	2x, Position bottom continuously adjustable					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 850 / 380 / 910 N					
Height/width/depth	1933 / 261 / 146 mm					
Category of mounting hardware	M (Medium)					
Weight	20 kg / 22 kg (clamps incl.)					
<b>Scope of supply</b>	Panel and 2 units of clamps for 42 – 115 mm diameter					
Integrated combiner	The insertion loss is included in the given antenna gain values.					



\* (at 50 °C ambient temperature)



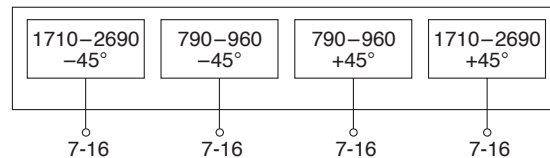
# Dual-band Panel Dual Polarization Half-power Beam Width

790–960	1710–2690
X	X
65°	65°

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## XXPol Panel 790–960/1710–2690 65°/65° 16.5/19dBi 0°–10°/0°–6°T

Type No.	80010665							clamps included
Frequency range	790–960			1710–2690				
	790 – 866 MHz	824 – 896 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz	2490 – 2690 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Average gain (dBi)	15.6 ... 15.6 ... 15.5	15.9 ... 16.0 ... 15.8	16.3 ... 16.4 ... 16.2	18.3 ... 18.5 ... 18.4	18.5 ... 18.7 ... 18.4	18.9 ... 19.2 ... 18.7	18.6 ... 19.0 ... 18.8	
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°	
<b>Horizontal Pattern:</b>								
Half-power beam width	68°	67°	65°	65°	65°	62°	60°	
Front-to-back ratio, copolar (180°±30°)	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	
Cross polar ratio	Typically: 28 dB	Typically: 30 dB	Typically: 32 dB	Typically: 16 dB	Typically: 20 dB	Typically: 18 dB	Typically: 22 dB	
Maindirection	0°							
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	
<b>Vertical Pattern:</b>								
Half-power beam width	9.7°	9.5°	9.0°	4.6°	4.4°	4.2°	3.5°	
Electrical tilt	0°–10°, continuously adjustable			0°–6°, continuously adjustable				
Min. sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T 18 ... 16 ... 14 dB	0° ... 5° ... 10° T 18 ... 16 ... 15 dB	0° ... 5° ... 10° T 18 ... 17 ... 16 dB	0° ... 3° ... 6° T 16 ... 16 ... 15 dB	0° ... 3° ... 6° T 16 ... 16 ... 16 dB	0° ... 3° ... 6° T 16 ... 16 ... 16 dB	0° ... 3° ... 6° T 16 ... 16 ... 16 dB	
VSWR	< 1.5							
Isolation: Intrasystem	> 30 dB			> 30 dB				
Isolation: Intersystem	> 40 dB (790–960 // 1710–2690 MHz)							
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)							
Max. power per input	500 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)				
Total power	1000 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)				
Input	4 x 7-16 female							
Connector position	Bottom							
Adjustment mechanism	2x, Position bottom continuously adjustable							
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1020 / 410 / 1080 N							
Height/width/depth	1997 / 299 / 152 mm							
Weight	26 kg (clamps incl.)							
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter							



800/900 – 1800/2000/2600 XXPol

# Dual-band Panel Dual Polarization Half-power Beam Width

870–960

1710–1880

X

X

65°

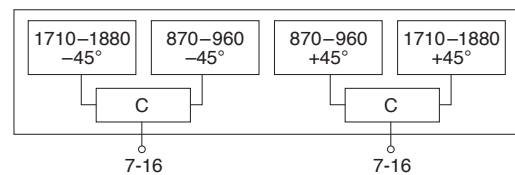
60°

**KATHREIN**

Antennen · Electronic

## XXPol Panel 870–960/1710–1880 C 65°/60° 17/18dBi 2°–8°T/2°T

Type No.	<b>742047v01</b>	
Frequency range	<b>870–960</b> 870 – 960 MHz	<b>1710–1880</b> 1710 – 1880 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 17 dBi (–0.5 dB)	2 x 18 dBi (–0.5 dB)
Tracking, Avg.	1 dB	
Squint	±2.0°	
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 7°	Horizontal: 60° Vertical: 6°
Electrical tilt	2°–8°, adjustable	2°, fixed
Sidelobe suppression for first sidelobe above horizon	2° ... 4° ... 6° ... 8° T 20 ... 18 ... 17 ... 15 dB	2° T 17 dB
Front-to-back ratio, copolar	> 30 dB	> 30 dB
Isolation, between ports	> 30 dB	> 30 dB
VSWR	< 1.5	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	< –150 dBc
Max. power per input	250 W	150 W (at 50 °C ambient temperature)
Input	2 x 7-16 female	
Connector position	Bottom	
Adjustment mechanism	1 x, Position bottom continuously adjustable	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 930/ 400 / 1270 N	
Height/width/depth	2580 / 262 / 116 mm	
Category of mounting hardware	H (Heavy)	
Weight	25 kg / 27 kg (clamps incl.)	
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter	
Integrated combiner	The insertion loss is included in the given antenna gain values.	

clamps  
included

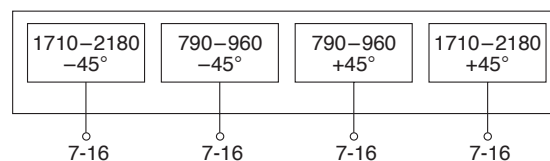
# Dual-band Panel Dual Polarization Half-power Beam Width

790–960	1710–2180
X	X
65°	65°

**KATHREIN**  
Antennen · Electronic

## XXPol Panel 790–960/1710–2180 65°/65° 17/18.5dBi 0°–7°/0°–6°T

Type No.	742266v02						clamps included
Frequency range	790–960			1710–2180			
	790–862 MHz	824 – 894 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1920–2180 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Gain (dBi)	16.6 ... 16.6 ... 16.5	17.0 ... 16.9 ... 16.7	17.0 ... 17.1 ... 16.9	18.2 ... 18.5 ... 18.3	18.5 ... 18.7 ... 18.3	18.5 ... 18.7 ... 18.3	
Tilt	0° ... 3° ... 7°	0° ... 3° ... 7°	0° ... 3° ... 7°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°	
<b>Horizontal Pattern:</b>							
Half-power beam width	68°	67°	65°	65°	65°	61°	
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	
Cross polar ratio	Typically: 30 dB	Typically: 30 dB	Typically: 30 dB	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	
Maindirection	0°						
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	
Tracking, Avg.	1 dB			0.5 dB			
Squint	±2.5°			±2.5°			
<b>Vertical Pattern:</b>							
Half-power beam width	8.0°	7.7°	7.2°	5.0°	4.8°	4.6°	
Electrical tilt, contin. adjust.	0°–7°	0°–7°	0°–7°	0°–6°	0°–6°	0°–6°	
Sidelobe suppression for first sidelobe above main beam avg.	0° ... 3° ... 7° T ≥ 17 ... 17 ... 15 dB	0° ... 3° ... 7° T ≥ 17 ... 17 ... 15 dB	0° ... 3° ... 7° T ≥ 18 ... 17 ... 15 dB	0° ... 3° ... 6° T ≥ 18 ... 17 ... 15 dB	0° ... 3° ... 6° T ≥ 18 ... 18 ... 16 dB	0° ... 3° ... 6° T ≥ 18 ... 18 ... 16 dB	
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	
Isolation: Intersystem	> 45 dB, Typ. > 50 dB (790–960 // 1710–2180 MHz)						
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	500 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)			
Total power	1000 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female (long neck)						
Connector position	Bottom						
Adjustment mechanism	2x, Position bottom continuously adjustable						
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1160 / 500 / 1210 N						
Height/width/depth	2533 / 261 / 146 mm						
Category of mounting hardware	H (Heavy)						
Weight	24 kg / 26 kg (clamps incl.)						
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter						



800/900 –  
1800/2000/2600  
XXPol

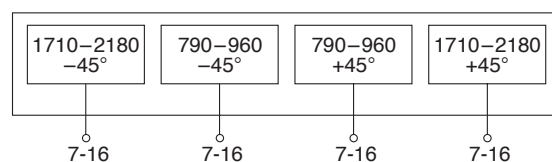
# Dual-band Panel Dual Polarization Half-power Beam Width

790–960	1710–2180
X	X
65°	65°

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Antennen · Electronic

## XXPol Panel 790–960/1710–2180 65°/65° 17.5/18.5dBi 4°–12°/4°–14°T

Type No.	80010486v01						clamps included
Frequency range	790–960			1710–2180			
	790 – 862 MHz	824 – 896 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Average gain (dBi)	16.8 ... 16.7 ... 16.6	17 ... 16.8 ... 16.8	17.2 ... 17.0 ... 16.8	17.8 ... 18.1 ... 17.5	18.3 ... 18.3 ... 17.8	18.7 ... 18.7 ... 18.0	
Tilt	4° ... 8° ... 12°	4° ... 8° ... 12°	4° ... 8° ... 12°	4° ... 9° ... 14°	4° ... 9° ... 14°	4° ... 9° ... 14°	
<b>Horizontal Pattern:</b>							
Half-power beam width	68°	67°	66°	66°	64°	61°	
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	Typically:	
Maindirection	0°	23 dB	24 dB	25 dB	18 dB	18 dB	20 dB
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
<b>Vertical Pattern:</b>							
Half-power beam width	7.5°	7.4°	7.2°	5°	4.8°	4.6°	
Electrical tilt	4°–12°, continuously adjustable			4°–14°, continuously adjustable			
Sidelobe suppression	4° ... 8° ... 12° T	4° ... 8° ... 12° T	4° ... 8° ... 12° T	4° ... 9° ... 14° T	4° ... 9° ... 14° T	4° ... 9° ... 14° T	
– for first sidelobe above main beam	18 ... 17 ... 16 dB	19 ... 18 ... 18 dB	19 ... 18 ... 18 dB	20 ... 18 ... 16 dB	19 ... 19 ... 16 dB	18 ... 18 ... 18 dB	
– within 0°–20° sector above horizon	15 ... 15 ... 14 dB	16 ... 15 ... 14 dB	16 ... 15 ... 14 dB	17 ... 17 ... 15 dB	17 ... 17 ... 15 dB	17 ... 17 ... 15 dB	
VSWR							< 1.5
Isolation: Intrasystem							> 30 dB
Isolation: Intersystem							> 45 dB (790–960 // 1710–2180 MHz)
Intermodulation IM3							< –153 dBc (2 x 43 dBm carrier)
Max. power per input	400 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)			
Total power	800 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)			
Input							4x 7-16 female (long neck)
Connector position							Bottom
Adjustment mechanism							2x, Position bottom continuously adjustable
Wind load (at 150 km/h)							Frontal / lateral / rear side: 920 / 460 / 1150 N
Height/width/depth							2516 / 262 / 139 mm
Category of mounting hardware							H (Heavy)
Weight							28 kg / 30 kg (clamps incl.)
Scope of supply							Panel and 2 units of clamps for 50 – 115 mm diameter



# Dual-band Panel Dual Polarization Half-power Beam Width

790–960	1710–2180
X	X
65°	65°

**KATHREIN**  
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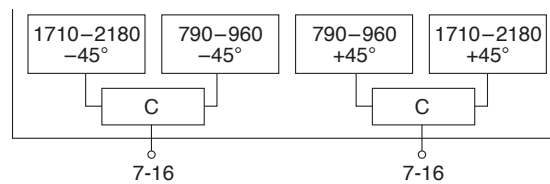
## XXPol Panel 790–960/1710–2180 C 65°/65° 17/18.5dBi 0°–7°/0°–6°T

Type No.	742225v02					clamps included
Frequency range	790–960		1710–2180			
	790–862 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1920–2180 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Gain (dBi)	16.6 ... 16.6 ... 16.5	17.0 ... 17.1 ... 16.9	18.2 ... 18.5 ... 18.3	18.5 ... 18.7 ... 18.3	18.5 ... 18.7 ... 18.3	
Tilt	0° ... 3° ... 7°	0° ... 3° ... 7°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°	
<b>Horizontal Pattern:</b>						
Half-power beam width	68°	65°	65°	65°	61°	
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	
Maindirection	0°	0°	0°	0°	0°	
Sector	±60°	±60°	±60°	±60°	±60°	
	> 30 dB	> 30 dB	> 25 dB	> 25 dB	> 25 dB	
	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	
Tracking, Avg.	1.0 dB			0.5 dB		
Squint	±2.5°			±2.5°		
<b>Vertical Pattern:</b>						
Half-power beam width	7.7°	7.2°	5.0°	4.8°	4.6°	
Electrical tilt	0°–7°	0°–7°	0°–6°	0°–6°	0°–6°	
continuously adjustable						
Sidelobe suppression for first sidelobe above main beam avg.	0° ... 4° ... 7° T	0° ... 4° ... 7° T	0° ... 3° ... 6° T	0° ... 3° ... 6° T	0° ... 3° ... 6° T	
	≥ 17 ... 17 ... 15 dB	≥ 18 ... 17 ... 15 dB	≥ 18 ... 17 ... 15 dB	≥ 18 ... 18 ... 16 dB	≥ 18 ... 18 ... 16 dB	
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Intermodulation IM3	< –150 dBc					
Max. power per input	250 W*		200 W*			
Total power per combined input	450 W*					
Input	2 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	2x, Position bottom continuously adjustable					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1160 / 500 / 1210 N					
Height/width/depth	2533 / 261 / 146 mm					
Category of mounting hardware	H (Heavy)					
Weight	24 kg / 26 kg (clamps incl.)					
<b>Scope of supply</b>	Panel and 2 units of clamps for 42 – 115 mm diameter					
Integrated combiner	The insertion loss is included in the given antenna gain values.					



\* (at 50 °C ambient temperature)

800/900 –  
1800/2000/2600  
XXPol





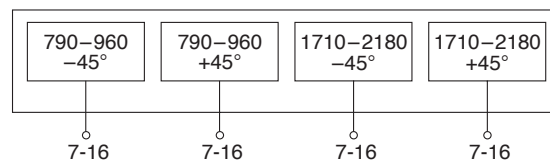
# Dual-band Panel Dual Polarization Half-power Beam Width

790–960	1710–2180
X	X
88°	88°

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## XXPol Panel 790–960/1710–2180 88°/88° 13.5/16.5dBi 0°–12°/0°–10°T

Type No.	80010121v01						clamps included
Frequency range	790–960			1710–2180			
	790 – 862 MHz	824 – 896 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Average gain (dBi)	13.4 ... 13.4 ... 13.1	13.6 ... 13.6 ... 13.4	13.9 ... 13.8 ... 13.5	16.4 ... 16.4 ... 16.2	16.4 ... 16.5 ... 16.0	16.4 ... 15.9 ... 15.3	
Tilt	0° ... 6° ... 12°	0° ... 6° ... 12°	0° ... 6° ... 12°	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°	
<b>Horizontal Pattern:</b>							
Half-power beam width	88°	86°	88°	82°	85°	90°	
Front-to-back ratio, copolar	> 23 dB	> 23 dB	> 23 dB	> 23 dB	> 23 dB	> 23 dB	
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	Typically:	
Maindirection	0°	0°	0°	0°	0°	0°	
Sector	±60°	±60°	±60°	±60°	±60°	±60°	
	> 10 dB	> 10 dB	> 13 dB	> 10 dB	> 12 dB	> 10 dB	
	avg. 16 dB	avg. 16 dB	avg. 19 dB	avg. 17 dB	avg. 19 dB	avg. 19 dB	
<b>Vertical Pattern:</b>							
Half-power beam width	15.0°	14.5°	14°	7.0°	6.6°	6.4°	
Electrical tilt	0.5°–12.5°, continuously adjustable			0.5°–10°, continuously adjustable			
Min. sidelobe suppression for first sidelobe above main beam: average:	0° ... 6° ... 12° T	0° ... 6° ... 12° T	0° ... 6° ... 12° T	0° ... 5° ... 10° T	0° ... 5° ... 10° T	0° ... 5° ... 10° T	
	16 ... 14 ... 14 dB	16 ... 15 ... 14 dB	18 ... 16 ... 16 dB	17 ... 17 ... 16 dB	17 ... 18 ... 16 dB	18 ... 16 ... 16 dB	
	20 ... 19 ... 16 dB	20 ... 18 ... 17 dB	22 ... 20 ... 20 dB	20 ... 20 ... 18 dB	21 ... 22 ... 17 dB	20 ... 20 ... 16 dB	
VSWR	< 1.5						
Isolation: Intrasystem	> 30 dB						
Isolation: Intersystem	> 42 dB (790–960 // 1710–2180 MHz)						
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)						
Max. power per input	500 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)			
Total power	1000 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female (long neck)						
Connector position	Bottom						
Adjustment mechanism	2x, Position bottom continuously adjustable						
Wind load (at 150 km/h)	Frontal / lateral / rearside: 420 / 260 / 620 N						
Height/width/depth	1384 / 262 / 149 mm						
Category of mounting hardware	M (Medium)						
Weight	21 kg / 23 kg (clamps incl.)						
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter						



800/900 – 1800/2000/2600 XXPol

# Dual-band Panel Dual Polarization Half-power Beam Width

790–960

1710–2180

X

X

88°

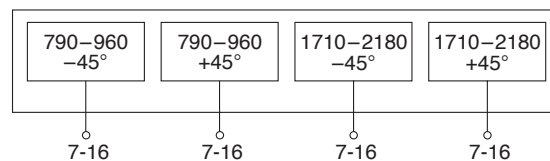
88°

# KATHREIN

Antennen · Electronic

## XXPol Panel 790–960/1710–2180 88°/88° 15.2/18dBi 0°–10°/0°–6°T

Type No.	80010122v01						clamps included
Frequency range	790–960 790 – 862 MHz   824 – 896 MHz   880 – 960 MHz			1710–2180 1710 – 1880 MHz   1850 – 1990 MHz   1920 – 2180 MHz			
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Average gain (dBi)	14.8 ... 14.8 ... 14.8	14.8 ... 15.0 ... 14.8	14.9 ... 15.1 ... 14.9	17.7 ... 17.8 ... 17.7	17.7 ... 18.0 ... 17.6	17.6 ... 17.8 ... 17.4	
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°	
<b>Horizontal Pattern:</b>							
Half-power beam width	88°	87°	88°	82°	85°	90°	
Front-to-back ratio (180°±30°)	> 23 dB	> 23 dB	> 23 dB	> 23 dB	> 23 dB	> 23 dB	
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	Typically:	
Maindirection	0°	0°	0°	0°	0°	0°	
Sector	±60°	±60°	±60°	±60°	±60°	±60°	
	avg. 16 dB	avg. 16 dB	avg. 19 dB	avg. 17 dB	avg. 19 dB	avg. 19 dB	
<b>Vertical Pattern:</b>							
Half-power beam width	11	10.9°	10.5°	5.5°	5.2°	5°	
Electrical tilt	0°–10°, continuously adjustable			0°–6°, continuously adjustable			
Min. sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T 18 ... 16 ... 14 dB	0° ... 5° ... 10° T 16 ... 16 ... 15 dB	0° ... 5° ... 10° T 16 ... 16 ... 15 dB	0° ... 3° ... 6° T 18 ... 18 ... 16 dB	0° ... 3° ... 6° T 18 ... 18 ... 16 dB	0° ... 3° ... 6° T 18 ... 18 ... 16 dB	
VSWR	< 1.5						
Isolation: Intrasystem	> 30 dB						
Isolation: Intersystem	> 42 dB (790–960 // 1710–2180 MHz)						
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)						
Max. power per input	500 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)			
Total power	1000 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female (long neck)						
Connector position	Bottom						
Adjustment mechanism	2x, Position bottom continuously adjustable						
Wind load (at 150 km/h)	Frontal / lateral / rearside: 580 / 360 / 870 N						
Height/width/depth	1917 / 262 / 149 mm						
Category of mounting hardware	M (Medium)						
Weight	27 kg / 29 kg (clamps incl.)						
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter						



800/900 – 1800/2000/2600 XXPol

# Dual-band Panel Dual Polarization Half-power Beam Width

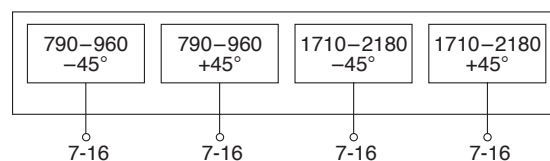
790–960	1710–2180
X	X
88°	88°

**KATHREIN**  
Antennen · Electronic

**XXPol Panel 790–960/1710–2180 88°/88° 16.5/18dBi 0°–7°/0°–6°T**

Type No.	80010123v03					
Frequency range	790–960			1710–2180		
	790 – 862 MHz	824 – 896 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	16.1 ... 16.2 ... 16.1	16.3 ... 16.4 ... 16.3	16.5 ... 16.6 ... 16.5	17.8 ... 17.7 ... 17.4	18.0 ... 17.9 ... 17.4	17.9 ... 17.8 ... 17.3
Tilt	0° ... 4° ... 7°	0° ... 4° ... 7°	0° ... 4° ... 7°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°
<b>Horizontal Pattern:</b>						
Half-power beam width	86°	86°	86°	84°	85°	88°
Front-to-back ratio, copolar	> 25 dB	> 25 dB	> 25 dB	> 23 dB	> 23 dB	> 23 dB
Cross polar ratio	Typically: 18 dB	Typically: 18 dB	Typically: 20 dB	Typically: 16 dB	Typically: 16 dB	Typically: 15 dB
Maindirection	0°	0°	0°	0°	0°	0°
Sector	±60°	±60°	±60°	±60°	±60°	±60°
	> 10 dB	> 10 dB	> 13 dB	> 10 dB	> 12 dB	> 10 dB
	avg. 16 dB	avg. 16 dB	avg. 19 dB	avg. 16 dB	avg. 17 dB	avg. 18 dB
Tracking, Avg.	0.5 dB			0.5 dB		
Squint	±3.0°			±3.0°		
<b>Vertical Pattern:</b>						
Half-power beam width	7.3°	7.2°	6.9°	4.8°	4.5°	4.2°
Electrical tilt	0.5°–7°, continuously adjustable			0°–6°, continuously adjustable		
Min. sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 7° T 15 ... 14 ... 14 dB	0° ... 4° ... 7° T 15 ... 14 ... 14 dB	0° ... 4° ... 7° T 15 ... 14 ... 15 dB	0° ... 3° ... 6° T 18 ... 17 ... 16 dB	0° ... 3° ... 6° T 18 ... 17 ... 17 dB	0° ... 3° ... 6° T 18 ... 16 ... 17 dB
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 45 dB (790–960 // 1710–2180 MHz)					
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)					
Max. power per input	500 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)		
Total power	1000 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	2x, Position bottom continuously adjustable					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 840 / 510 / 1260 N					
Height/width/depth	2635 / 262 / 149 mm					
Category of mounting hardware	H (Heavy)					
Weight	33 kg / 35 kg (clamps incl.)					
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter					

clamps included



800/900 – 1800/2000/2600 XXPol

# Summary – Directional Antennas

## Triple-band

### 800/900 – 1800/2000/2600

#### Dual Polarization +45°/–45°

Type	Type No.	Height [mm]	Connector position	Page	
XXXPol Panel 790–862 880–960 1710–2180	65° 15.5dBi 0°–10°T 65° 16dBi 0°–10°T 65° 18.5dBi 0°–6°T	80010698	1932	bottom	114
XXXPol Panel 790–960 1710–1880 1920–2170	65° 15dBi 0°–14°T 65° 17dBi 0°–8°T 65° 17dBi 0°–8°T	742270v03	1384	bottom	115
XXXPol Panel 790–960 1710–1880 1920–2170	65° 15dBi 0°–12°T 65° 16.5dBi 0°–8°T 65° 17dBi 0°–8°T	80010670v01	1498	bottom	116
XXXPol Panel 806–960 1710–2180 1710–2180	65° 15dBi 0°–14°T 65° 15dBi 0°–14°T 65° 15dBi 0°–14°T	80010290v01	1540	bottom	117
XXXPol Panel 790–960 1710–1880 1920–2170	65° 16.5dBi 0°–10°T 65° 18dBi 0°–6°T 65° 18dBi 0°–6°T	742271v03	1933	bottom	118
XXXPol Panel 806–960 1710–1880 1920–2170	65° 16.5dBi 0°–10°T 65° 17.5dBi 0°–6°T 65° 18dBi 0°–6°T	80010671v01	2058	bottom	119
XXXPol Panel 790–960 1710–2180 1710–2180	65° 16.5dBi 2°–14°T 65° 16.5dBi 0°–14°T 65° 16.5dBi 0°–14°T	80010291v02	2058	bottom	120
XXXPol Panel 790–960 1710–2690 1710–2690	65° 17.5dBi 2°–10°T 65° 17.5dBi 0°–10°T 65° 17.5dBi 0°–10°T	80010692	2593	bottom	121
XXXPol Panel 790–960 1710–1880 1920–2170	66° 17.5dBi 0°–7°T 65° 18dBi 0°–6°T 65° 18dBi 0°–6°T	742272v03	2533	bottom	122
XXXPol Panel 790–960 1710–1880 1920–2170	65° 17.5dBi 0°–7°T 65° 17.5dBi 0°–6°T 65° 18dBi 0°–6°T	80010672v01	2628	bottom	123
XXXPol Panel 790–960 1710–2180 1710–2180	65° 17.5dBi 2°–10°T 65° 17.5dBi 0°–10°T 65° 17dBi 0°–10°T	80010292v02	2694	bottom	124
XXXPol Panel 790–960 1710–2180 1710–2180	65° 17.5dBi 4°–12°T 65° 17dBi 0°–14°T 65° 17dBi 0°–14°T	80010492v01	2694	bottom	125
XXXPol Panel 790–960 1710–2170 2490–2690	65° 16dBi 0°–10°T 65° 18dBi 0°–6°T 65° 18dBi 0°–6°T	80010675	1997	bottom	126

C = integrated Combiner

New or changed product

When deploying  
Triple-band Antennas,  
please also consider using  
special Triple-band Combiners  
(see page 221)

800/900 –  
1800/2000/2600  
XXXPol

# Triple-band Panel

790–862

880–960

1710–2180

**KATHREIN**

# Dual Polarization

X

X

X

Antennen · Electronic

# Half-power Beam Width

65°

65°

65°

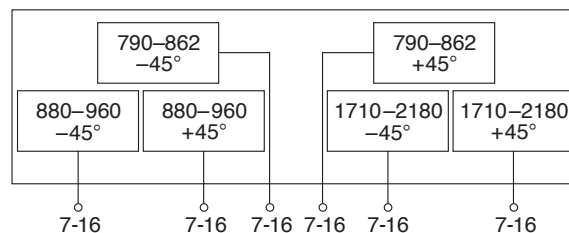
XXXPol Panel 790–862/880–960/1710–2180 65°/65°/65° 15.5/16/18.5dBi 0°–10°/0°–10°/0°–6°T

Type No.	80010698				
Frequency range	790–862 790–862 MHz	880–960 880–960 MHz	1710–1880 MHz	1850–1990 MHz	1920–2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain (dBi)	15.1 ... 15.4 ... 15.1	15.6 ... 15.9 ... 15.4	18.2 ... 18.5 ... 18.3	18.5 ... 18.7 ... 18.3	18.5 ... 18.7 ... 18.3
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°
<b>Horizontal Pattern:</b>					
Half-power beam width	68°	65°	65°	65°	61°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio	Typically: 25 dB	Typically: 27 dB	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Main direction	0°				
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Tracking, Avg.	1.0 dB	1.0 dB	0.5 dB		
Squint	±2.5°	±2.5°	±2.5°		
<b>Vertical Pattern:</b>					
Half-power beam width	11.5°	10.1°	5.0°	4.8°	4.6°
Electrical tilt continuously adjustable	0°–10°	0°–10°	0°–6°	0°–6°	0°–6°
Sidelobe suppression for first sidelobe above main beam: average:	0° ... 5° ... 10° T ≥ 17 ... 17 ... 17 dB	0° ... 5° ... 10° T ≥ 17 ... 17 ... 16 dB	0° ... 3° ... 6° T ≥ 18 ... 17 ... 15 dB	0° ... 3° ... 6° T ≥ 18 ... 18 ... 16 dB	0° ... 3° ... 6° T ≥ 18 ... 18 ... 16 dB
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Isolation: Intersystem	> 38 dB (790...960 // 1710–2180 MHz) > 30 dB (790–862 // 880–960 MHz)				
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	< –150 dBc	< –150 dBc		
Max. power per input	250 W*	250 W*	250 W*		
Total power	500 W*	500 W*	500 W*		
Input	6 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	3x, Position bottom continuously adjustable				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 850 / 380 / 910 N				
Height/width/depth	1932 / 269 / 154 mm				
Category of mounting hardware	M (Medium)				
Weight	23 kg / 25 kg (clamps incl.)				
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter				

clamps included



\* (at 50 °C ambient temperature)



# Triple-band Panel

790–960 1710–1880 1920–2170

# KATHREIN

## Dual Polarization

X X X

Antennen · Electronic

## Half-power Beam Width

65° ° 65° 65°

**XXXPol Panel 790–960/1710–1880/1920–2170 65°/65°/65° 15/17/17dBi 0°–14°/0°–8°/0°–8°T**

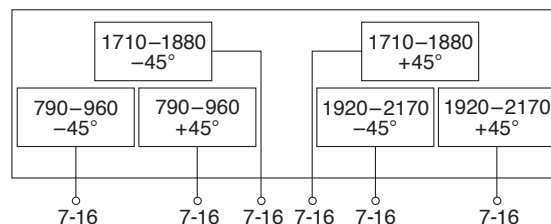
Type No.	<b>742270v03</b>			
Frequency range	790–960 790–862 MHz   880–960 MHz		1710–1880 1710–1880 MHz	1920–2170 1920–2170 MHz
Polarization	+45°, –45°		+45°, –45°	+45°, –45°
Gain (dBi)	14.4 ... 14.3 ... 14.0	14.8 ... 14.7 ... 14.2	16.8 ... 16.9 ... 16.6	16.9 ... 17.0 ... 16.7
Tilt	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 4° ... 8°	0° ... 4° ... 8°
<b>Horizontal Pattern:</b>				
Half-power beam width	68°	65°	65°	61°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 32 dB	> 32 dB
Cross polar ratio	Typically: 25 dB		Typically: 25 dB	Typically: 25 dB
Maindirection 0°	Typically: 25 dB		Typically: 25 dB	Typically: 25 dB
Sector ±60°	Typically: > 10 dB		Typically: > 10 dB	Typically: > 10 dB
Tracking, Avg.	1.0 dB		0.5 dB	0.5 dB
Squint	±2.0°		±3.0°	±3.0°
<b>Vertical Pattern:</b>				
Half-power beam width	16.5°	15.3°	7.4°	6.7°
Electrical tilt, contin. adjust.	0°–14°		0°–8°	0°–8°
Sidelobe suppression for first sidelobe above main beam avg.	0° ... 7° ... 14° T 17 ... 16 ... 15 dB	0° ... 7° ... 14° T 17 ... 18 ... 17 dB	0° ... 4° ... 8° T 17 ... 17 ... 16 dB	0° ... 4° ... 8° T 16 ... 16 ... 15 dB
VSWR	< 1.5		< 1.5	< 1.5
Isolation: Intrasystem	> 30 dB		> 30 dB	> 30 dB
Isolation: Intersystem	Typically: > 50 dB (790–960 // 1710–1880 MHz) Typically: > 50 dB (790–960 // 1920–2170 MHz) > 30 dB (1710–1880 // 1920–2170 MHz)			
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc		< –150 dBc	< –150 dBc
Max. power per input	500 W*		200 W*	200 W*
Total power	1000 W*		400 W*	400 W*
Input	6x 7-16 female (long neck)			
Connector position	Bottom			
Adjustment mechanism	3x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 600 / 270 / 640 N (at 150 km/h)			
Height/width/depth	1384 / 261 / 146 mm			
Category of mounting hardware	M (Medium)			
Weight	19 kg / 21 kg (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter			

clamps included



800/900 – 1800/2000/2600 XXXPol

\* (at 50 °C ambient temperature)



# Triple-band Panel

# Dual Polarization

# Half-power Beam Width

790–960 1710–1880 1920–2170

X X X

65° 65° 65°

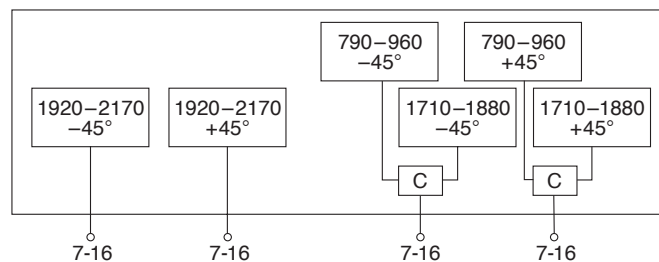
# KATHREIN

Antennen · Electronic

## XXXPol Panel 790–960/1710–1880/1920–2170 C 65°/65°/65° 15/16.5/17dBi 0°–12°/0°–8°/0°–8°T

Type No.	80010670v01				
Frequency range	790–960		1710–1880	1920–2170	
	790–866 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1920–2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 14.8 dBi	2 x 15 dBi	2 x 15.2 dBi	2 x 16.5 dBi	2 x 17.2 dBi
<b>Horizontal Pattern:</b>					
Half-power beam width	69°	67°	65°	66°	65°
Front-to-back ratio, copolar	> 27 dB			> 25 dB	> 25 dB
Cross polar ratio	Typically: 25 dB			Typically: 16 dB	Typically: 18 dB
Main direction	0°			> 10 dB	> 10 dB
Sector	±60°			> 10 dB	> 10 dB
<b>Vertical Pattern:</b>					
Half-power beam width	14°	13.6°	13°	6.7°	6.2°
Electrical tilt, contin. adjust.	0.5°–12°			0.5°–8°	0°–8°
Sidelobe suppression for first sidelobe above main beam	0° ... 6° ... 12° T 17 ... 17 ... 14 dB			0° ... 4° ... 8° T 18 ... 16 ... 14 dB	0° ... 4° ... 8° T 18 ... 16 ... 15 dB
VSWR	< 1.5				
Isolation: Intrasystem	> 30 dB				
Isolation: Intersystem	Typically: > 50 dB (790–960 // 1920–2170 MHz) > 30 dB (1710–1880 // 1920–2170 MHz)				
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc				< –150 dBc
Max. power per input	250 W		200 W	200 W	
	(at 50 °C ambient temperature)				
Max. power per combined input	450 W (at 50 °C ambient temperature)				
Input	4 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	3x, Position bottom continuously adjustable				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 290 / 680 N				
Height/width/depth	1498 / 262 / 149 mm				
Category of mounting hardware	M (Medium)				
Weight	21.5 kg / 23.5 kg (clamps incl.)				
<b>Scope of supply</b>	Panel and 2 units of clamps for 42 – 115 mm diameter				
Integrated combiner	The insertion loss is included in the given antenna gain values.				

clamps included





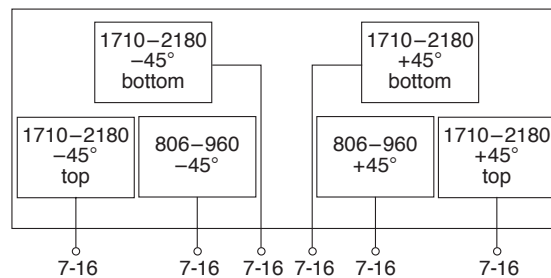
# Triple-multiband Panel Dual Polarization Half-power Beam Width

806–960	1710–2180	1710–2180
X	X	X
65°	65°	65°

**KATHREIN**  
Antennen · Electronic

XXXPol Panel 806–960/1710–2180/1710–2180 65°/65°/65° 15/15/15dBi 0°–14°/0°–14°/0°–14°T

Type No.	80010290v01					
Frequency range	806–960		1710–2180			1710–2180
	806–866 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1920–2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain: (dBi)	14.4 ... 14.3 ... 14	14.6 ... 14.4 ... 14.2	14.9 ... 14.7 ... 14.4	14.5 ... 14.5 ... 14.2	14.8 ... 14.8 ... 14.5	15.1 ... 14.8 ... 14.4
1710–2180 MHz (Syst. bottom)				14 ... 14 ... 13.7	14.4 ... 14.3 ... 13.9	14.9 ... 14.8 ... 14.2
1710–2180 MHz (Syst. top)						
Tilt	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°
<b>Horizontal Pattern:</b>						
Half-power beam width	69°	68°	67°	67°	63°	60°
Front-to-back ratio (180°±30°)	> 25 dB			> 25 dB		
Cross polar ratio	Typically: 25 dB			Typically: 20 dB		
Main direction	0°			0°		
Sector	±60°			> 10 dB		
<b>Vertical Pattern:</b>						
Half-power beam width	14.7°	14.3°	13.9°	13.8°	13.2°	12.6°
Electrical tilt	0°–14°, continuously adjustable			Syst. bottom: 0°–14°, continuously adjustable Syst. top: 0°–14°, continuously adjustable		
Sidelobe suppression	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°
– for first sidelobe above main beam	18 ... 16 ... 16 dB	18 ... 16 ... 16 dB	18 ... 17 ... 16 dB	18 ... 16 ... 15 dB	18 ... 17 ... 17 dB	18 ... 16 ... 17 dB
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 35 dB (806–960 // 1710–2180 MHz) > 30 dB (1710–2180 // 1710–2180 MHz)					
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)					
Max. power per input	400 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)		
Input	6 x 7-16 female					
Connector position	Bottom					
Adjustment mechanism	3x, Position bottom continuously adjustable					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 480 / 300 / 700 N					
Height/width/depth	1540 / 262 / 149 mm					
Category of mounting hardware	M (Medium)					
Weight	21 kg / 23 kg (clamps incl.)					
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter					



800/900 –  
1800/2000/2600  
XXXPol

# Triple-band Panel

790–960 1710–1880 1920–2170

# KATHREIN

## Dual Polarization

X X X

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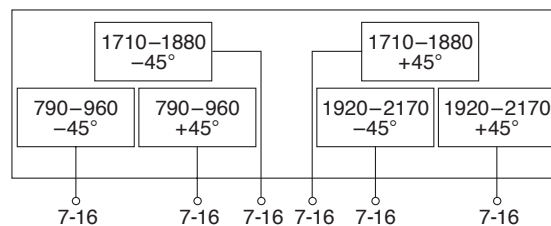
## Half-power Beam Width

65° 65° 65°

XXXPol Panel 790–960/1710–1880/1920–2170 65°/65°/65° 16.5/18/18dBi 0°–10°/0°–6°/0°–6°T

Type No.	742271v03			
Frequency range	790–960		1710–1880	1920–2170
	790–862 MHz	880–960 MHz	1710–1880 MHz	1920–2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain (dBi)	15.9 ... 15.8 ... 15.6	16.4 ... 16.3 ... 15.9	17.8 ... 18.0 ... 17.8	17.9 ... 18.2 ... 17.9
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 3° ... 6°	0° ... 3° ... 6°
<b>Horizontal Pattern:</b>				
Half-power beam width	68°	65°	65°	61°
Front-to-back ratio, copolar	> 27 dB	> 28 dB	> 30 dB	> 30 dB
Cross polar ratio	Typically:	Typically:	Typically:	Typically:
Maindirection	25 dB	25 dB	25 dB	25 dB
Sector	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Tracking, Avg.	1.5 dB		0.5 dB	0.5 dB
Squint	±2.5°		±2.5°	±2.5°
<b>Vertical Pattern:</b>				
Half-power beam width	10.9°	10°	5.0°	4.6°
Electrical tilt, contin. adjust.	0°–10°		0°–6°	0°–6°
Sidelobe suppression for first sidelobe above main beam avg.	0° ... 5° ... 10° T ≥ 15 ... 16 ... 17 dB	0° ... 5° ... 10° T ≥ 15 ... 18 ... 19 dB	0° ... 3° ... 6° T ≥ 18 ... 17 ... 15 dB	0° ... 3° ... 6° T ≥ 18 ... 18 ... 16 dB
VSWR	< 1.5		< 1.5	< 1.5
Isolation: Intrasystem	> 30 dB		> 30 dB	> 30 dB
Isolation: Intersystem	Typically: > 50 dB (790–960 // 1710–1880 MHz) Typically: > 50 dB (790–960 // 1920–2170 MHz) > 30 dB (1710–1880 // 1920–2170 MHz)			
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc		< –150 dBc	< –150 dBc
Max. power per input	300 W*		200 W*	200 W*
Total power	600 W*		400 W*	400 W*
Input	6x 7-16 female (long neck)			
Connector position	Bottom			
Adjustment mechanism	3x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 860 / 380 / 920 N			
Height/width/depth	1933 / 261 / 146 mm			
Category of mounting hardware	M (Medium)			
Weight	24 kg / 26 kg (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter			

\* (at 50 °C ambient temperature)



# Triple-band Panel

# Dual Polarization

# Half-power Beam Width

806–960 1710–1880 1920–2170

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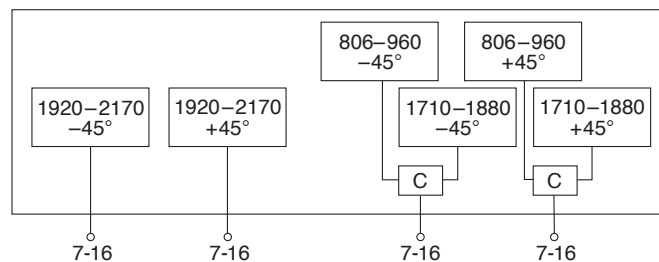
X X X

Antennen · Electronic

657° 65° 65°

XXXPol Panel 806–960/1710–1880/1920–2170 C 65°/65°/65° 16.5/17.5/18dBi 0°–10°/0°–6°/0°–6°T

Type No.	80010671v01				
Frequency range	806–960		1710–1880	1920–2170	
	806–866 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1920–2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16 dBi	2 x 16.1 dBi	2 x 16.3 dBi	2 x 17.5 dBi	2 x 18 dBi
<b>Horizontal Pattern:</b>					
Half-power beam width	69°	68°	67°	65°	65°
Front-to-back ratio, copolar	> 25 dB			> 24 dB	> 25 dB
Cross polar ratio	Typically: 25 dB			Typically: 18 dB	Typically: 20 dB
Maindirection	0°			0°	0°
Sector	±60°			> 10 dB	> 10 dB
<b>Vertical Pattern:</b>					
Half-power beam width	9.5°	9.3°	9.0°	4.7°	4.3°
Electrical tilt, contin. adjust.	0°–10°			0°–6°	0°–6°
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T 15 ... 15 ... 13 dB			0° ... 3° ... 6° T 18 ... 17 ... 16 dB	0° ... 3° ... 6° T 18 ... 16 ... 15 dB
VSWR	< 1.5				
Isolation: Intrasystem	> 30 dB				
Isolation: Intersystem	Typically: > 50 dB (806–960 // 1920–2170 MHz) > 30 dB (1710–1880 // 1920–2170 MHz)				
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc				< –150 dBc
Max. power per input	250 W		200 W	200 W	
	(at 50 °C ambient temperature)				
Max. power per combined input	450 W (at 50 °C ambient temperature)				
Input	4 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	3x, Position bottom continuously adjustable				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 640 / 400 / 950 N				
Height/width/depth	2058 / 262 / 149 mm				
Category of mounting hardware	M (Medium)				
Weight	28 kg / 30 kg (clamps incl.)				
<b>Scope of supply</b>	Panel and 2 units of clamps for 42 – 115 mm diameter				
Integrated combiner	The insertion loss is included in the given antenna gain values.				



800/900 -  
1800/2000/2600  
XXXPol

# Triple-multiband Panel Dual Polarization Half-power Beam Width

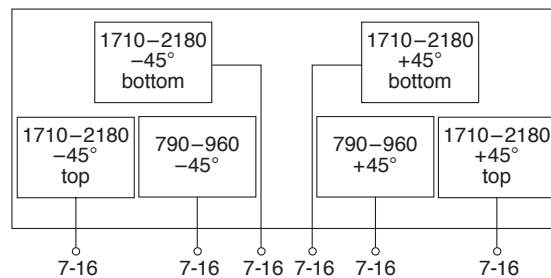
790–960	1710–2180	1710–2180
X	X	X
65°	65°	65°

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XXXPol Panel 790–960/1710–2180/1710–2180 65°/65°/65° 16.5/16.5/16.5dBi 2°–14°/0°–14°/0°–14°T

Type No.	80010291v02					
Frequency range	790–960		1710–2180			1710–2180
	790 – 866 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1920–2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average Gain: (dBi)	16.2 ... 16 ... 15.7	16.3 ... 16.1 ... 15.8	16.4 ... 16.2 ... 15.8	15.9 ... 15.9 ... 15.5	16.2 ... 16.2 ... 15.7	16.3 ... 16.3 ... 15.8
1710–2180 MHz (Syst. bottom)				15.8 ... 15.8 ... 15.4	16.1 ... 16.1 ... 15.4	16.3 ... 16.2 ... 15.5
1710–2180 MHz (Syst. top)						
Tilt	2° ... 8° ... 14°	2° ... 8° ... 14°	2° ... 8° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°
<b>Horizontal Pattern:</b>						
Half-power beam width	68°	67°	65°	65°	64°	60°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	Typically: 18 dB	Typically: 19 dB	Typically: 20 dB
Main direction	0°					
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Tracking	1.0 dB			1.0 dB		
<b>Vertical Pattern:</b>						
Half-power beam width	10°	9.7°	9.3°	9.5°	9°	8.7°
Electrical tilt	2°–14°, continuously adjustable			0°–14°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	2° ... 8° ... 14° T 17 ... 17 ... 15 dB	2° ... 8° ... 14° T 17 ... 17 ... 16 dB	2° ... 8° ... 14° T 17 ... 17 ... 16 dB	0° ... 7° ... 14° T 18 ... 17 ... 17 dB	0° ... 7° ... 14° T 18 ... 17 ... 17 dB	0° ... 7° ... 14° T 18 ... 17 ... 17 dB
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 35 dB (790–960 // 1710–2180 MHz) > 30 dB (1710–2180 // 1710–2180 MHz)					
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)					
Max. power per input	400 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)		
Input	6 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	3x, Position bottom continuously adjustable					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 640 / 400 / 950 N					
Height/width/depth	2058 / 262 / 149 mm					
Category of mounting hardware	M (Medium)					
Weight	27 kg / 29 kg (clamps incl.)					
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter					

clamps  
included



# Triple-band Panel Dual Polarization Half-power Beam Width

790–960 1710–2690 1710–2690

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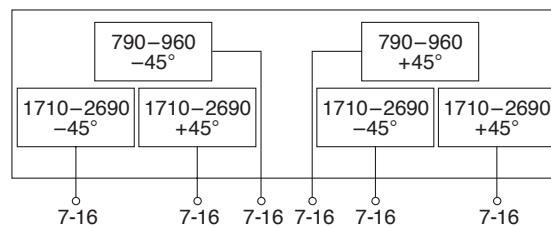
X X X

Antennen · Electronic

65° 65° 65°

XXXPol Panel 790–960/1710–2690/1710–2690 65°/65°/65° 17.5/17.5/17.5dBi 2°–10°/0°–10°/0°–10°T

Type No.	80010692							clamps included
Frequency range	790–960		1710–2690		1710–2690			
	790 – 866 MHz	824 – 896 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz	2490 – 2690 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	
Average Gain: (dBi)	16.6 ... 16.6 ... 16.5	16.9 ... 17.0 ... 16.8	17.3 ... 17.4 ... 17.2	17.0 ... 16.8 ... 16.5	17.5 ... 17.3 ... 17.0	17.7 ... 17.5 ... 17.2	17.5 ... 17.2 ... 17.0	
1710–2180 MHz (Syst. bottom)				16.6 ... 16.4 ... 16.1	17.1 ... 16.9 ... 16.6	17.3 ... 17.1 ... 16.8	17.0 ... 16.7 ... 16.5	
1710–2180 MHz (Syst. top)				0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°	
Tilt	2° ... 5° ... 10°	2° ... 5° ... 10°	2° ... 5° ... 10°					
<b>Horizontal Pattern:</b>								
Half-power beam width	68°	67°	65°	67°	65°	63°	62°	
Front-to-back ratio, copolar (180°±30°)	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	
Cross polar ratio	Typically: 28 dB	Typically: 30 dB	Typically: 32 dB	Typically: 16 dB	Typically: 18 dB	Typically: 18 dB	Typically: 20 dB	
Maindirection	0°							
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	
<b>Vertical Pattern:</b>								
Half-power beam width	7.5°	7.3°	7.0°	7.1°	6.7°	6.3°	5.4°	
Electrical tilt	2°–10°, continuously adjustable			0°–10°, continuously adjustable				
Min. sidelobe suppression for first sidelobe above main beam	2° ... 5° ... 10° T 18 ... 16 ... 14 dB	2° ... 5° ... 10° T 18 ... 16 ... 15 dB	2° ... 5° ... 10° T 18 ... 17 ... 16 dB	0° ... 5° ... 10° T 16 ... 16 ... 15 dB	0° ... 5° ... 10° T 16 ... 16 ... 15 dB	0° ... 5° ... 10° T 16 ... 16 ... 15 dB	0° ... 5° ... 10° T 16 ... 16 ... 15 dB	
VSWR	< 1.5							
Isolation: Intrasystem	> 30 dB			> 28 dB				
Isolation: Intersystem	> 40 dB (790–960 // 1710–2690 MHz) > 30 dB (1710–2690 // 1710–2690 MHz)							
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)							
Max. power per input	500 W (at 50 °C ambient temperature)			200 W (at 50 °C ambient temperature)				
Total power	1000 W (at 50 °C ambient temperature)			400 W (at 50 °C ambient temperature)				
Input	6 x 7-16 female (long neck)							
Connector position	Bottom							
Adjustment mechanism	3x, Position bottom continuously adjustable							
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1320 / 530 / 1400 N							
Height/width/depth	2593 / 299 / 152 mm							
Category of mounting hardware	H (Heavy)							
Weight	33 kg / 35 kg (clamps incl.)							
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter							



800/900 –  
1800/2000/2600  
XXXPol

# Triple-band Panel

790–960 1710–1880 1920–2170

# KATHREIN

## Dual Polarization

X X X

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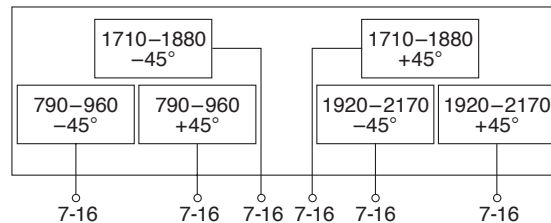
## Half-power Beam Width

65° 65° 65°

XXXPol Panel 790–960/1710–1880/1920–2170 65°/65°/65° 17.5/18/18dBi 0°–7°/0°–6°/0°–6°T

Type No.	742272v03			
Frequency range	790–960		1710–1880	1920–2170
	790–862 MHz	880–960 MHz	1710–1880 MHz	1920–2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain (dBi)	16.9 ... 16.9 ... 16.8	17.3 ... 17.4 ... 17.2	17.8 ... 18.0 ... 17.8	17.9 ... 18.2 ... 17.9
Tilt	0° ... 3° ... 7°	0° ... 3° ... 7°	0° ... 3° ... 6°	0° ... 3° ... 6°
<b>Horizontal Pattern:</b>				
Half-power beam width	68°	65°	65°	61°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio	Typically:	Typically:	Typically:	Typically:
Maindirection	30 dB	30 dB	25 dB	25 dB
Sector ±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Tracking, Avg.	1.0 dB		0.5 dB	0.5 dB
Squint	±2.5°		±2.5°	±2.5°
<b>Vertical Pattern:</b>				
Half-power beam width	8.0°	7.2°	5.0°	4.6°
Electrical tilt, contin. adjust.	0°–7°		0°–6°	0°–6°
Sidelobe suppression for first sidelobe above main beam avg.	0° ... 4° ... 7° T ≥ 17 ... 17 ... 15 dB	0° ... 4° ... 7° T ≥ 18 ... 17 ... 15 dB	0° ... 3° ... 6° T ≥ 18 ... 17 ... 15 dB	0° ... 3° ... 6° T ≥ 18 ... 18 ... 16 dB
VSWR	< 1.5		< 1.5	< 1.5
Isolation: Intrasystem	> 30 dB		> 30 dB	> 30 dB
Isolation: Intersystem	Typically: > 50 dB (790–960 // 1710–1880 MHz) Typically: > 50 dB (790–960 // 1920–2170 MHz) > 30 dB (1710–1880 // 1920–2170 MHz)			
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc		< –150 dBc	< –150 dBc
Max. power per input	500 W*		250 W*	250 W*
Total power	1000 W*		500 W*	500 W*
Input	6x 7-16 female (long neck)			
Connector position	Bottom			
Adjustment mechanism	3x, Position bottom continuously adjustable			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1160 / 500 / 1210 N			
Height/width/depth	2533 / 261 / 146 mm			
Category of mounting hardware	H (Heavy)			
Weight	29 kg / 31 kg (clamps incl.)			
Scope of supply	Panel and 2 units of clamps for 42 – 115 mm diameter			

\* (at 50 °C ambient temperature)



# Triple-band Panel

# Dual Polarization

# Half-power Beam Width

790–960 1710–1880 1920–2170

X X X

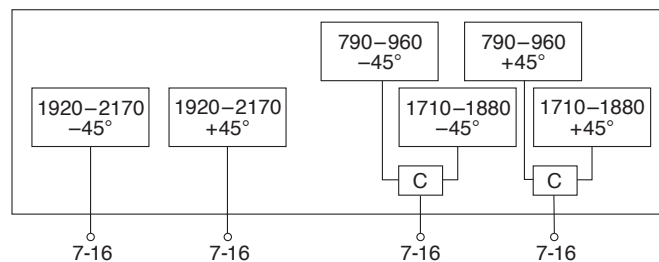
65° 65° 65°

# KATHREIN

Antennen · Electronic

XXXPol Panel 790–960/1710–1880/1920–2170 C 65°/65°/65° 17.5/17.5/18dBi 0°–7°/0°–6°/0°–6°T

Type No.	80010672v01				
Frequency range	790–960		1710–1880	1920–2170	
	790–866 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1920–2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17 dBi	2 x 17.2 dBi	2 x 17.5 dBi	2 x 17.5 dBi	2 x 18 dBi
<b>Horizontal Pattern:</b>					
Half-power beam width	69°	68°	66°	65°	63°
Front-to-back ratio, copolar	> 25 dB			> 25 dB	> 25 dB
Cross polar ratio	Typically: 25 dB			Typically: 14 dB	Typically: 17 dB
Maindirection	0°			0°	0°
Sector	±60°			> 10 dB	> 10 dB
<b>Vertical Pattern:</b>					
Half-power beam width	7.4°	7.2°	6.8°	4.7°	4.4°
Electrical tilt, contin. adjust.	0.5°–7°			0°–6°	0°–6°
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 7° T 15 ... 16 ... 16 dB			0° ... 3° ... 6° T 17 ... 17 ... 16 dB	0° ... 3° ... 6° T 17 ... 15 ... 14 dB
VSWR	< 1.5				
Isolation: Intrasystem	> 30 dB				
Isolation: Intersystem	Typically: > 50 dB (790–960 // 1920–2170 MHz) > 30 dB (1710–1880 // 1920–2170 MHz)				
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc				< –150 dBc
Max. power per input	250 W		200 W	200 W	
	(at 50 °C ambient temperature)				
Max. power per combined input	450 W (at 50 °C ambient temperature)				
Input	4 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	3x, Position bottom continuously adjustable				
Wind load	Frontal / lateral / rearside: 850 / 510 / 1270 N (at 150 km/h)				
Height/width/depth	2628 / 262 / 149 mm				
Category of mounting hardware	H (Heavy)				
Weight	32 kg / 34 kg (clamps incl.)				
<b>Scope of supply</b>	Panel and 2 units of clamps for 42 – 115 mm diameter				
Integrated combiner	The insertion loss is included in the given antenna gain values.				



800/900 – 1800/2000/2600 XXXPol



# Triple-multiband Panel Dual Polarization Half-power Beam Width

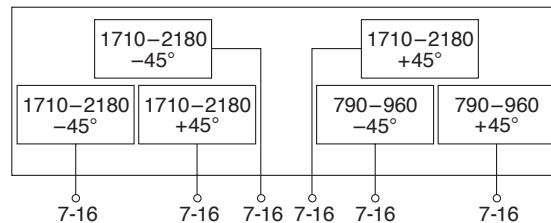
790–960	1710–2180	1710–2180
X	X	X
65°	65°	65°

**KATHREIN**  
Antennen · Electronic

XXXPol Panel 790–960/1710–2180/1710–2180 65°/65°/65° 17.5/17.5/17dBi 2°–10°/0°–10°/0°–10°T

Type No.	80010292v02					
Frequency range	790–960		1710–2180			
	790 – 862 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1920–2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average Gain: (dBi) 1710–2180 MHz (Syst. bottom) 1710–2180 MHz (Syst. top)	16.8 ... 17.0 ... 16.8	17.0 ... 17.1 ... 17.0	17.4 ... 17.4 ... 17.1	16.5 ... 16.7 ... 16.5	17.0 ... 17.1 ... 16.7	17.3 ... 17.4 ... 16.8
Tilt	2° ... 6° ... 10°	2° ... 6° ... 10°	2° ... 6° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°
<b>Horizontal Pattern:</b>						
Half-power beam width	69°	68°	66°	65°	64°	60°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB	> 26 dB	> 26 dB	> 26 dB
Cross polar ratio Maindirection Sector	Typically: 0° ±60° ±60° > 10 dB avg. 20 dB	Typically: 25 dB > 10 dB avg. 20 dB	Typically: 25 dB > 10 dB avg. 17 dB	Typically: 18 dB > 10 dB avg. 14 dB	Typically: 18 dB > 10 dB avg. 16 dB	Typically: 18 dB > 10 dB avg. 16 dB
Tracking, Avg. 1710–2180 MHz (Syst. bottom) 1710–2180 MHz (Syst. top)	1.0 dB			1.0 dB 0.5 dB		
Squint	±3.5°			±3.5°		
<b>Vertical Pattern:</b>						
Half-power beam width	7.8°	7.6°	7.1°	7.4°	7.2°	6.8°
Electrical tilt	2.5°–9.5°, continuously adjustable			0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	2° ... 6° ... 10° T 17 ... 16 ... 14 dB	2° ... 6° ... 10° T 17 ... 16 ... 14 dB	2° ... 6° ... 10° T 17 ... 16 ... 14 dB	0° ... 5° ... 10° T 16 ... 16 ... 16 dB	0° ... 5° ... 10° T 16 ... 17 ... 16 dB	0° ... 5° ... 10° T 16 ... 16 ... 14 dB
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Isolation: Intersystem	> 36 dB (790–960 // 1710–2180 MHz) > 36 dB (1710–2180 // 1710–2180 MHz)					
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	250 W (at 50 °C ambient temperature)			200 W (at 50 °C ambient temperature)		
Input	6 x 7-16 female					
Connector position	Bottom					
Adjustment mechanism	3x, Position bottom continuously adjustable					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 870 / 520 / 1320 N					
Height/width/depth	2694 / 262 / 149 mm					
Category of mounting hardware	H (Heavy)					
Weight	36 kg / 38 kg (clamps incl.)					
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter					

clamps  
included



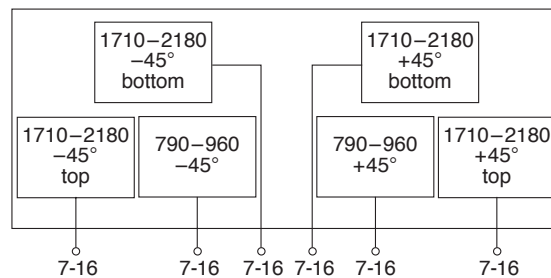
# Triple-multiband Panel Dual Polarization Half-power Beam Width

790–960	1710–2180	1710–2180
X	X	X
65°	65°	65°

**KATHREIN**  
Antennen · Electronic

XXXPol Panel 790–960/1710–2180/1710–2180 65°/65°/65° 17.5/17/17dBi 4°–12°/0°–14°/0°–14°T

Type No.	80010492v01					
Frequency range	790–960		1710–2180			1710–2180
	790 – 866 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1920–2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average Gain: (dBi)	16.6 ... 16.5 ... 16.3	17.0 ... 16.9 ... 16.5	17.2 ... 17.0 ... 16.7	16.1 ... 16.3 ... 16.0	16.7 ... 16.8 ... 16.3	17.0 ... 17.0 ... 16.6
1710–2180 MHz (Syst. bottom)				16.1 ... 16.1 ... 15.8	16.7 ... 16.5 ... 16.2	17.0 ... 16.9 ... 16.4
1710–2180 MHz (Syst. top)						
Tilt	4° ... 8° ... 12°	4° ... 8° ... 12°	4° ... 8° ... 12°	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°
<b>Horizontal Pattern:</b>						
Half-power beam width	68°	67°	66°	65°	63°	60°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	Typically: 23 dB	Typically: 24 dB	Typically: 25 dB	Typically: 18 dB	Typically: 18 dB	Typically: 19 dB
Main direction	0°					
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
<b>Vertical Pattern:</b>						
Half-power beam width	7.5°	7.4°	7.2°	7.8°	7.6°	7.2°
Electrical tilt	4°–12°, continuously adjustable			0°–14°, continuously adjustable		
Sidelobe suppression	4° ... 8° ... 12° T	4° ... 8° ... 12° T	4° ... 8° ... 12° T	0° ... 7° ... 14° T	0° ... 7° ... 14° T	0° ... 7° ... 14° T
– for first sidelobe above main beam	19 ... 17 ... 16 dB	19 ... 18 ... 18 dB	19 ... 18 ... 18 dB	18 ... 17 ... 15 dB	18 ... 17 ... 15 dB	18 ... 17 ... 15 dB
– within 0°–20° sector above horizon	15 ... 15 ... 14 dB	16 ... 15 ... 14 dB	16 ... 15 ... 14 dB	18 ... 17 ... 15 dB	17 ... 17 ... 15 dB	15 ... 14 ... 14 dB
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 36 dB (790–960 // 1710–2180 MHz) > 36 dB (1710–2180 // 1710–2180 MHz)					
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)					
Max. power per input	400 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)		
Input	6 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	3x, Position bottom continuously adjustable					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 870 / 520 / 1320 N					
Height/width/depth	2694 / 262 / 149 mm					
Category of mounting hardware	H (Heavy)					
Weight	34 kg / 36 kg (clamps incl.)					
<b>Scope of supply</b>	Panel and 2 units of clamps for 50 – 115 mm diameter					



800/900 –  
1800/2000/2600  
XXXPol

# Triple-band Panel Dual Polarization Half-power Beam Width

790–960 1710–2170 2490–2690

**KATHREIN**

X X X

Antennen · Electronic

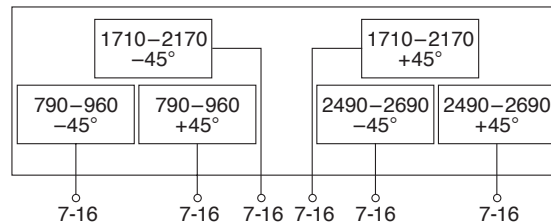
65° ° 65° 65°

XXXPol Panel 790–960/1710–2170/2490–2690 65°/65°/65° 16/18/18dBi 0°–10°/0°–6°/0°–6°T

Type No.	80010675						
Frequency range	790–960		1710–2170			2490–2690	
	790 – 866 MHz	824 – 896 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	2490 – 2690 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	16.0 ... 16.0 ... 15.5	16.1 ... 16.1 ... 15.6	16.0 ... 16.2 ... 15.6	18.0 ... 18.0 ... 17.6	18.0 ... 18.0 ... 17.5	18.1 ... 18.1 ... 17.4	17.8 ... 17.8 ... 17.6
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°
<b>Horizontal Pattern:</b>							
Half-power beam width	68°	67°	65°	62°	63°	62°	63°
Front-to-back ratio, copolar (180°±30°)	> 27 dB	> 27 dB	> 27 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	Typically: 22 dB	Typically: 22 dB	Typically: 22 dB	Typically: 18 dB	Typically: 22 dB	Typically: 23 dB	Typically: 25 dB
Main direction	0°						
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
<b>Vertical Pattern:</b>							
Half-power beam width	10.3°	10.1°	9.8°	4.8°	4.6°	4.4°	3.5°
Electrical tilt, continuously adjust.	0°–10°			0°–6°			0°–6°
Min. sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T 18 ... 17 ... 15 dB	0° ... 5° ... 10° T 18 ... 18 ... 16 dB	0° ... 5° ... 10° T 18 ... 18 ... 16 dB	0° ... 3° ... 6° T 18 ... 16 ... 16 dB	0° ... 3° ... 6° T 18 ... 18 ... 17 dB	0° ... 3° ... 6° T 18 ... 17 ... 17 dB	0° ... 3° ... 6° T 18 ... 18 ... 18 dB
VSWR	< 1.5			< 1.5			< 1.5
Isolation: Intrasystem	> 30 dB			> 28 dB			> 28 dB
Isolation: Intersystem	> 30 dB (790–960 // 1710–2170 // 2490–2690 MHz)						
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)						
Max. power per input	500 W*			200 W*			200 W*
Total power	1000 W*			400 W*			400 W*
Input	6 x 7-16 female (long neck)						
Connector position	Bottom						
Adjustment mechanism	3x, Position bottom continuously adjustable						
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1020 / 390 / 1050 N						
Height/width/depth	1997 / 300 / 152 mm						
Category of mounting hardware	M (Medium)						
Weight	26 kg / 28 kg (clamps incl.)						
Scope of supply	Panel and 2 units of clamps for 50 – 115 mm diameter						

clamps included

\* (at 50 °C ambient temperature)



800/960 –  
1800/2000/2600  
XXXPol

## Vertical Polarization – 800/900

Type	Type No.	Connector female	Height [mm]	Remarks	Page	
VPol Omni	870–960 360° 2dBi 0°T	738450	N	180	indoor/outdoor	128
VPol Omni	806–960 360° 2dBi 0°T	K751161	N	348		129
VPol Omni	890–960 360° 5dBi 0°T	K7515641	N	715		130
VPol Omni	870–960 360° 8dBi 0°T	736350	7-16	1543		131
VPol Omni	806–894 360° 11dBi 0°T	738192	7-16	3237		132
VPol Omni	870–960 360° 11dBi 0°T	736347	7-16	3033		133
VPol Omni	870–960 360° 10.5dBi 5°T	736349	7-16	2954		134

## Vertical Polarization – Dual-band

VVPol Omni	790–862 360° 8dBi 0°T 870–960 360° 9dBi 0°T	<b>80010747</b>	7-16	3237	separate inputs	135
VPol Omni	870–960/1710–1880 360° 2dBi 0°T	738449	N	216	indoor/outdoor	151
VPol Omni	824–960/1805–2170 360° 2dBi 0°T	80010147	N	216	indoor/outdoor	153
VVPol Omni	870–960 360° 9dBi 0°T 1920–2170 360° 10dBi 0°T	80010274	7-16	3033	separate inputs	136
VVPol Omni	870–960/1710–1880 360° 2dBi 0°T 1920–2170 360° 2dBi 0°T	80010111	N	493	separate inputs	137

## Vertical Polarization – 1800

VPol Omni	1710–1880 360° 11dBi 0°T	738187	7-16	1568		138
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## Vertical Polarization – 1800/2000/2500/3500

VPol Omni	1710–2700 360° 2 dBi 0°T	80010431	N	115	indoor/outdoor	152
VPol Omni	1920–2170 360° 11 dBi 0°T	741790	7-16	1387		139
VPol Omni	2500–2700 360° 11dBi 0°T	80010442	7-16	1132		140

New or changed product

# Omnidirectional Antenna Vertical Polarization Indoor and outdoor use

870–960

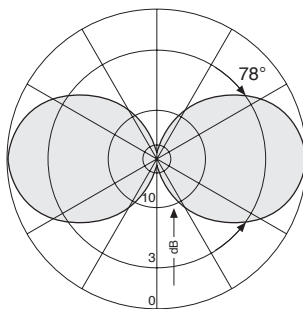
V

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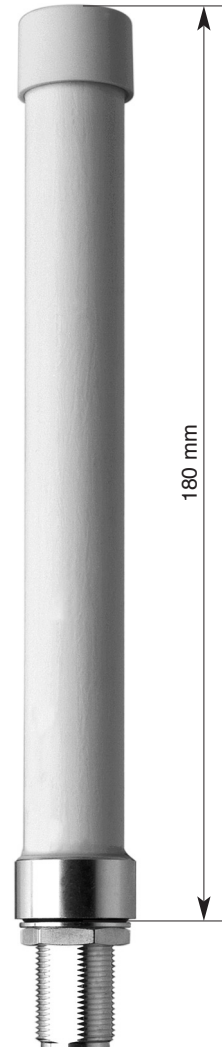
## VPol Omni 870–960 360° 2dBi

Type No.	738450
Input	N female
Connector position	Bottom or top
Frequency range	870 – 960 MHz
VSWR	< 1.5
Gain	2 dBi
Impedance	50 Ω
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Polarization	Vertical
Max. power	100 W (at 50 °C ambient temperature)
Weight	200 g
Radome diameter	20 mm
Height	180 mm

- Material: Radiator: Brass.  
Radome: Fiberglass, colour: White.
- Mounting: One hole mounting (16 mm diameter) to surfaces of max. 10 mm thickness.
- Grounding: All metal parts of the antenna as well as the inner conductor and the mounting kit are DC grounded.



Vertical Pattern



# Omnidirectional Antenna Vertical Polarization

806–960

V

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## VPol Omni 806–960 360° 2dBi

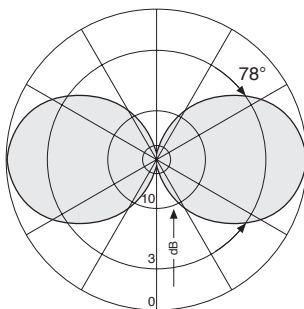
Type No.	K751161
Frequency range	806 – 960 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 37 dBm carrier)
Max. power	100 W (at 50 °C ambient temperature)

**Mounting:** The antenna can be attached in two ways with the supplied mounting kit:

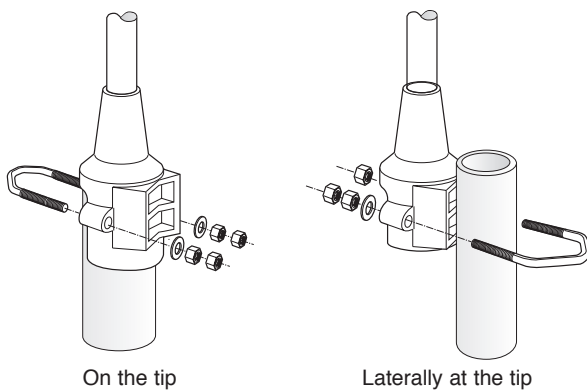
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 54 mm diameter (connecting cable runs outside the mast).

**Material:** Radiator: Brass.  
Radome: Fiberglass, colour: Grey.  
Base: Weather-proof aluminum.  
Mounting kit, screws and nuts: Stainless steel.

**Grounding:** All metal parts of the antenna as well as the inner conductor and the mounting kit are DC grounded.



Vertical Pattern



Mechanical specifications	
Input	N female
Connector position	Bottom
Weight	0.74 kg
Radome diameter	21 mm
Wind load	17 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	455 x 112x 97 mm
Height	348 mm

# Omnidirectional Antenna Vertical Polarization

890–960

V

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## VPol Omni 890–960 360° 5dBi

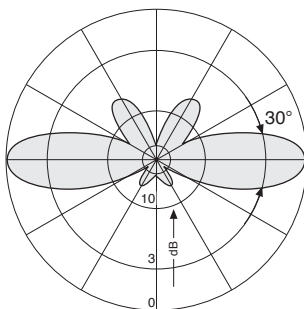
Type No.	<b>K7515641</b>
Frequency range	890 – 960 MHz
Polarization	Vertical
Gain	5 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 37 dBm carrier)
Max. power	250 W (at 50 °C ambient temperature)

**Mounting:** The antenna can be attached in two ways with the supplied mounting kit:

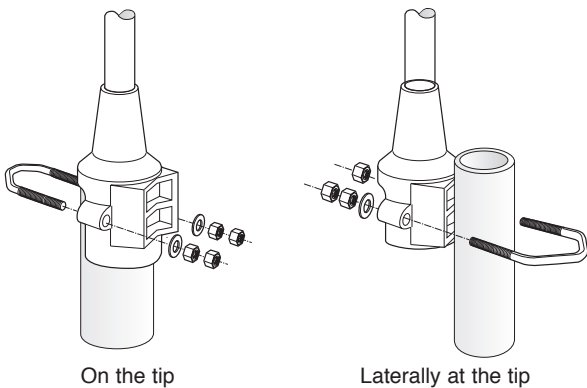
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 54 mm diameter (connecting cable runs outside the mast).

**Material:** Radiator: Brass.  
Radome: Fiberglass, colour: Grey.  
Base: Weather-proof aluminum.  
Mounting kit, screws and nuts: Stainless steel.

**Grounding:** All metal parts of the antenna as well as the inner conductor and the mounting kit are DC grounded.



Vertical Pattern



Mechanical specifications	
Input	N female
Connector position	Bottom
Weight	0.90 kg
Radome diameter	21 mm
Wind load	20 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	825 x 112 x 97 mm
Height	715 mm

Omni  
VPol



# Omnidirectional Antenna Vertical Polarization

870–960

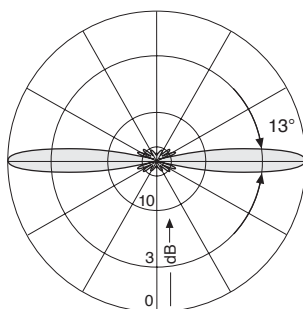
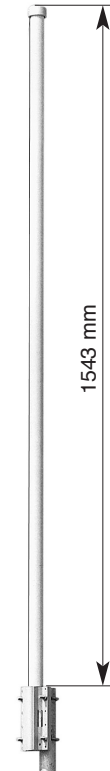
V

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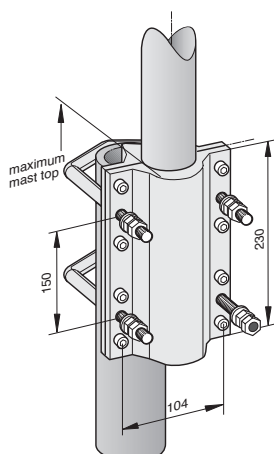
## VPol Omni 870–960 360° 8dBi

Type No.	<b>736350</b>
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	8 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

- Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).
- Material:** Radiator: Copper and brass. Radome: Fiberglass, colour: Grey. Base: Weather-proof aluminum. Mounting kit, screws and nuts: Stainless steel.
- Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded. The inner conductor is capacitively coupled.
- Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 KA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm<sup>2</sup> copper.



Vertical Pattern



Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	5.5 kg
Radome diameter	51 mm
Wind load	130 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1846 x 148 x 112 mm
Height	1543 mm

# Omnidirectional Antenna Vertical Polarization

806–894

V

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## VPol Omni 806–894 360° 11dBi

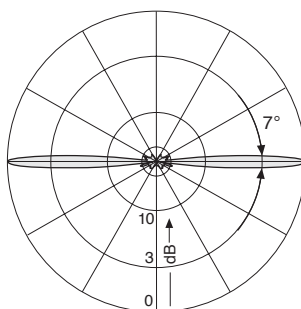
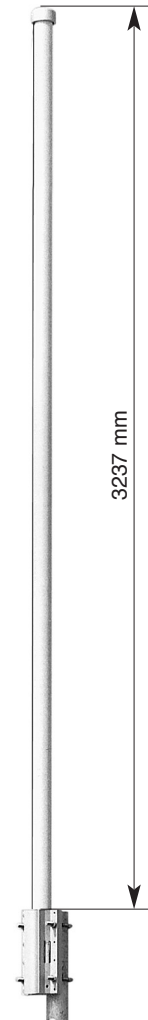
Type No.	<b>738192</b>
Frequency range	806 – 894 MHz
Polarization	Vertical
Gain	11 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

**Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).

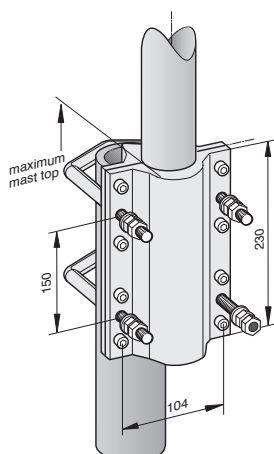
**Material:** Radiator: Copper and brass.  
Radome: Fiberglass, colour: Grey.  
Base: Weather-proof aluminum.  
Mounting kit, screws and nuts: Stainless steel.

**Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded.  
The inner conductor is capacitively coupled.

**Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 KA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm<sup>2</sup> copper.



Vertical Pattern



Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	8.5 kg
Radome diameter	51 mm
Wind load	230 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	3516 x 148 x 112 mm
Height	3237 mm

# Omnidirectional Antenna Vertical Polarization

870–960

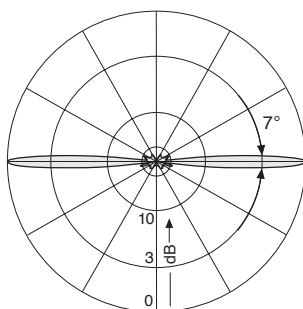
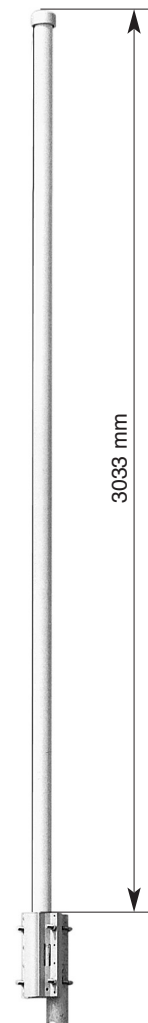
V

**KATHREIN**  
Antennen · Electronic

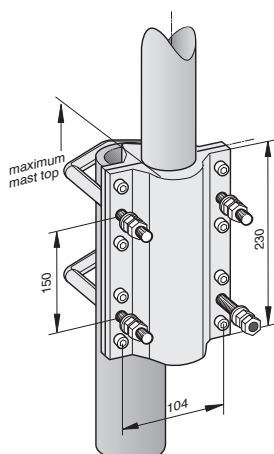
## VPol Omni 870–960 360° 11dBi

Type No.	<b>736347</b>
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	11 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

- Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).
- Material:** Radiator: Copper and brass.  
Radome: Fiberglass, colour: Grey.  
Base: Weather-proof aluminum.  
Mounting kit, screws and nuts: Stainless steel.
- Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded.  
The inner conductor is capacitively coupled.
- Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 KA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm<sup>2</sup> copper.



Vertical Pattern



### Mechanical specifications

Input	7-16 female
Connector position	Bottom
Weight	8 kg
Radome diameter	51 mm
Wind load	210 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	3316 x 148 x 112 mm
Height	3033 mm

# Omnidirectional Antenna Vertical Polarization Fixed Electrical Downtilt

870–960

V

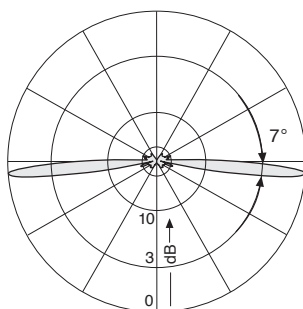
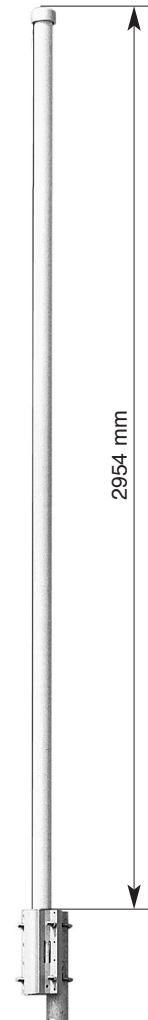
5°

**KATHREIN**  
Antennen · Electronic

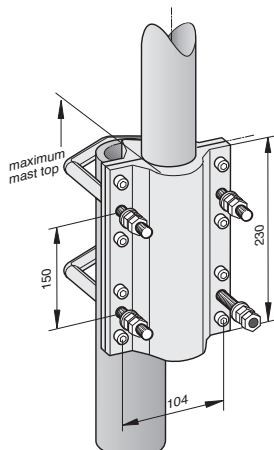
## VPol Omni 870–960 360° 10.5dBi 5°T

Type No.	<b>736349</b>
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	10.5 dBi
Electrical tilt	5°, fixed
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

- Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).
- Material:** Radiator: Copper and brass.  
Radome: Fiberglass, colour: Grey.  
Base: Weather-proof aluminum.  
Mounting kit, screws and nuts: Stainless steel.
- Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded. The inner conductor is capacitively coupled.
- Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 kA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm<sup>2</sup> copper.



Vertical Pattern  
5° electrical downtilt



Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	8 kg
Radome diameter	51 mm
Wind load	210 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	3316 x 148 x 112 mm
Height	2954 mm

# Dual-band OmniAntenna Vertical Polarization

870–960

790–862

V

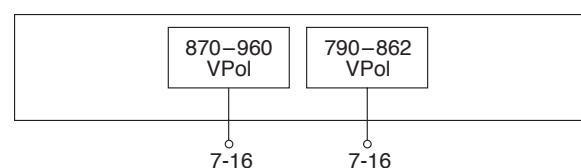
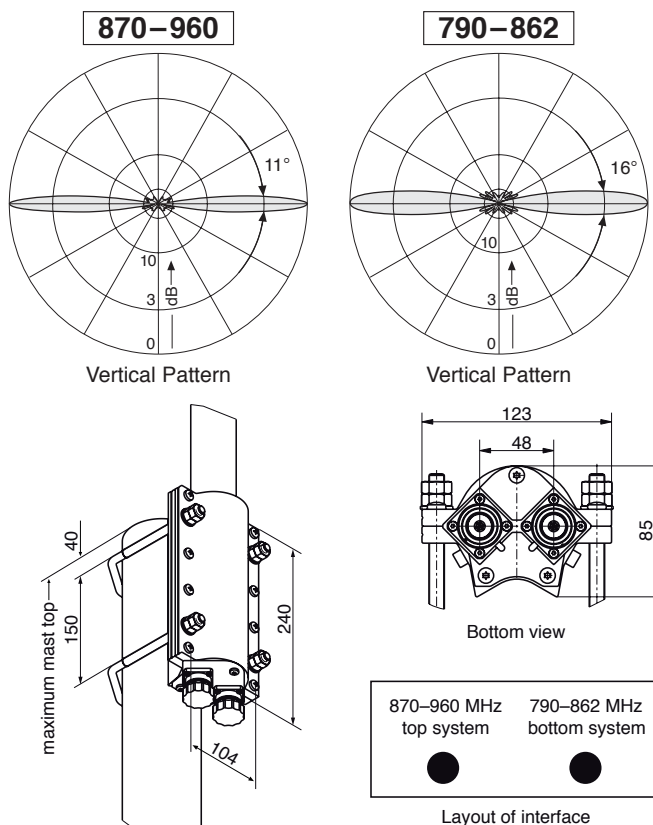
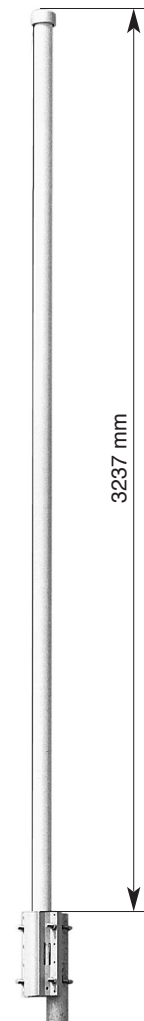
V

**KATHREIN**  
Antennen · Electronic

## VVPol Omni 870–960/790–862 360°/360° 9/8dBi

Type No.	<b>80010747</b>	
Frequency range	Top system 870 – 960 MHz	Bottom system 790 – 862 MHz
Polarization	Vertical	Vertical
Gain	9 dBi	8 dBi
Half-power beam width	Horizontal: Omni Vertical: 11°	Horizontal: Omni Vertical: 16°
Isolation, between ports	> 30 dB	
Impedance	50 Ω	
VSWR	< 1.5	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)	
Max. power per input	150 W	100 W (at 50 °C ambient temperature)

- Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).
- Material:** Radiator: Copper and brass.  
Radome: Fiberglass, colour: Grey.  
Base: Weather-proof aluminum.  
Mounting kit, screws and nuts: Stainless steel.
- Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded. The inner conductors of both systems are coupled capacitively.
- Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 kA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm<sup>2</sup> copper.



Mechanical specifications	
Input	2 x 7-16 female
Connector position	Bottom
Weight	8 kg
Wind load	230 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	3516 x 148 x 112 mm
Height	3237 mm
Radome diameter	51 mm

# Dual-band Omni Antenna 870–960 1920–2170

## Vertical Polarization V V

### VVPol Omni 870–960/1920-2170 360°/360° 9/10dBi

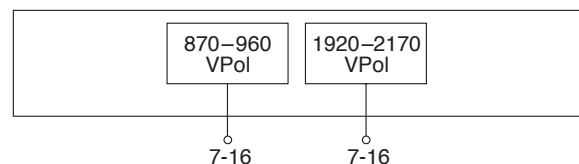
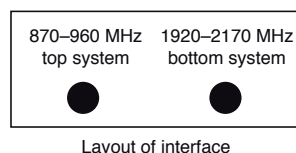
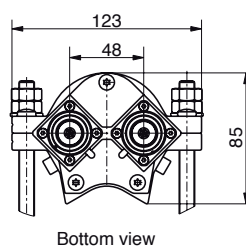
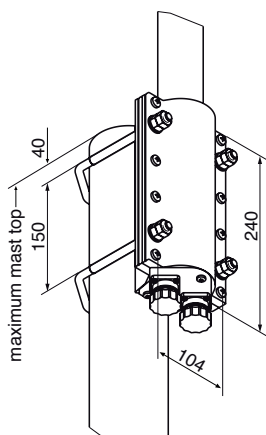
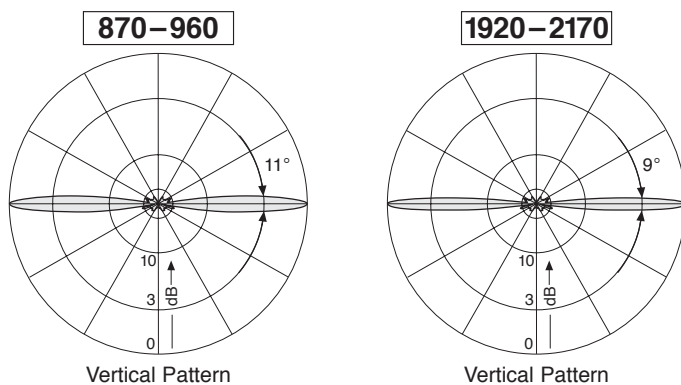
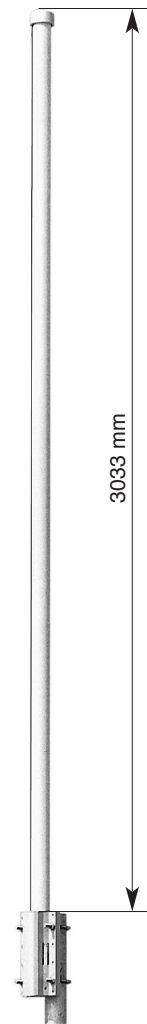
Type No.	<b>80010274</b>	
Frequency range	Top system 870 – 960 MHz	Bottom system 1920 – 2170 MHz
Polarization	Vertical	Vertical
Gain	9 dBi	10 dBi
Half-power beam width	Horizontal: Omni Vertical: 11°	Horizontal: Omni Vertical: 9°
Isolation, between ports	> 30 dB	
Impedance	50 Ω	
VSWR	< 1.5	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)	
Max. power per input	150 W	100 W (at 50 °C ambient temperature)

**Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).

**Material:** Radiator: Copper and brass.  
Radome: Fiberglass, colour: Grey.  
Base: Weather-proof aluminum.  
Mounting kit, screws and nuts: Stainless steel.

**Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded. The inner conductors of both systems are coupled capacitively.

**Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 kA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm<sup>2</sup> copper.



Mechanical specifications	
Input	2 x 7-16 female
Connector position	Bottom
Weight	8 kg
Wind load	210 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	3380 x 148 x 112 mm
Height	3033 mm
Radome diameter	51 mm

# Multi-band Omni Antenna

870–960  
1710–1880

1920–2170

# KATHREIN

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## Vertical Polarization

V

V

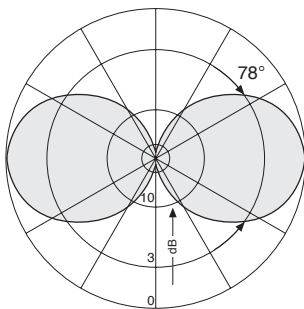
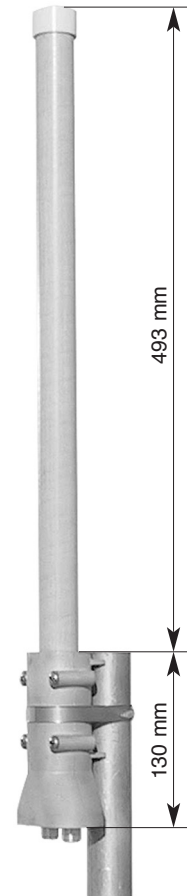
### VVPol Omni 870–960/1710–1880/1920-2170 360°/360° 2/2dBi

Type No.	80010111	
Frequency range	System Top: 870 – 960 MHz 1710 – 1880 MHz	System Bottom: 1920 – 2170 MHz
Polarization	Vertical	Vertical
Gain	2 dBi	2 dBi
Isolation, between ports	> 25 dB	> 25 dB
Impedance	50 Ω	50 Ω
VSWR	< 1.7	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)	
Max. power per input	50 W (at 50 °C ambient temperature)	

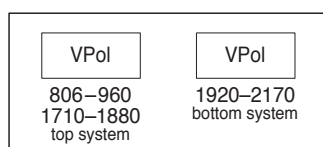
**Material:** Radiator: Copper and brass.  
Radome: Fiberglass, colour: Grey.  
Base: Weather-proof aluminum.  
Mounting kit and screws: Stainless steel.

**Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 40 – 70 mm diameter with a mounting clamp supplied with the antenna. The connecting cables (not supplied) run outside the mast.

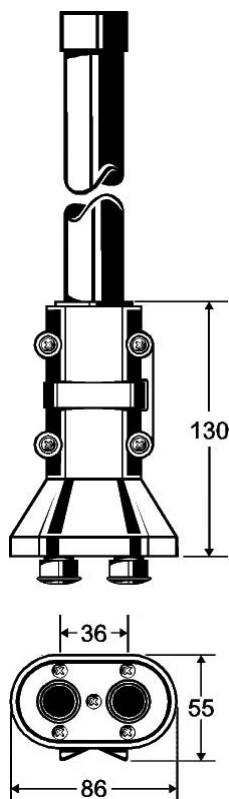
**Excellent grounding:** The metal parts of the antenna and the mounting kit (exclusive the inner conductor of the upper unit) are DC grounded.



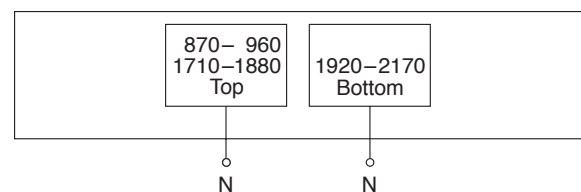
Vertical Pattern



Layout of interface



Bottom view



#### Mechanical specifications

Input	2 x N female
Connector position	Bottom
Weight	0.85 kg
Wind load	30 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	665 x 112 x 97 mm
Height	493 mm
Radome diameter	30 mm



# Omnidirectional Antenna Vertical Polarization

1710–1880

V

**KATHREIN**  
Antennen · Electronic

## VPol Omni 1710–1880 360° 11dBi

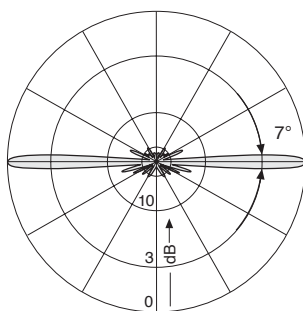
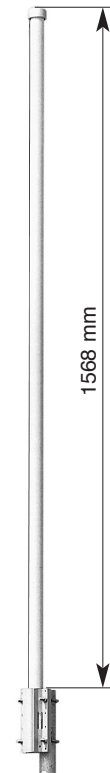
Type No.	<b>738187</b>
Frequency range	1710 – 1880 MHz
Polarization	Vertical
Gain	11 dBi
Impedance	50 Ω
VSWR	< 1.3
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	200 W (at 50 °C ambient temperature)

**Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).

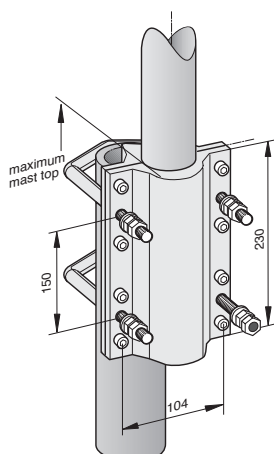
**Material:** Radiator: Copper and brass.  
Radome: Fiberglass, colour: Grey.  
Base: Weather-proof aluminum.  
Mounting kit, screws and nuts: Stainless steel.

**Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded.  
The inner conductor is capacitively coupled.

**Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 kA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm<sup>2</sup> copper.



Vertical Pattern



### Mechanical specifications

Input	7-16 female
Connector position	Bottom
Weight	5.5 kg
Radome diameter	51 mm
Wind load	130 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1846 x 148 x 112 mm
Height	1568 mm

# Omnidirectional Antenna Vertical Polarization

1920–2170

V

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Antennen · Electronic

## VPol Omni 1920–2170 360° 11dBi

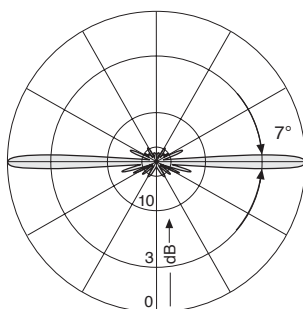
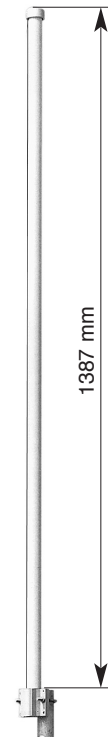
Type No.	<b>741790</b>
Frequency range	1920 – 2170 MHz
Polarization	Vertical
Gain	11 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	150 W (at 50 °C ambient temperature)

**Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with one U-bolt bracket supplied with the antenna (connecting cable runs outside the mast).

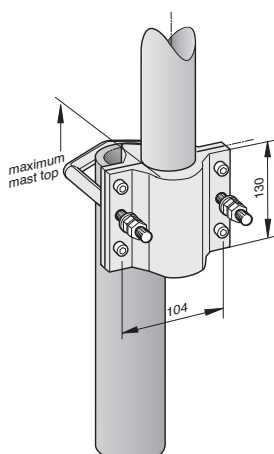
**Material:** Radiator: Copper and brass.  
Radome: Fiberglass, colour: Grey.  
Base: Weather-proof aluminum.  
Mounting kit, screws and nuts: Stainless steel.

**Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded.  
The inner conductor is capacitively coupled.

**Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 kA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm<sup>2</sup> copper.



Vertical Pattern



### Mechanical specifications

Input	7-16 female
Connector position	Bottom
Weight	5 kg
Radome diameter	51 mm
Wind load	120 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1570 x 148 x 112 mm
Height	1387 mm

# Omnidirectional Antenna Vertical Polarization

2500–2700

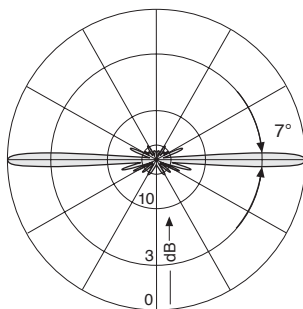
V

**KATHREIN**  
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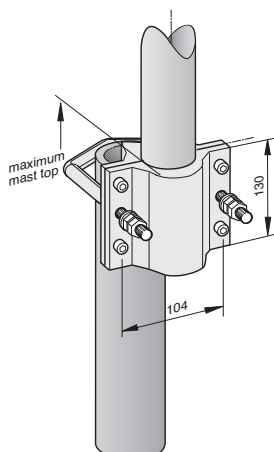
## VPol Omni 2500–2700 360° 11dBi 0°T

Type No.	<b>80010442</b>
Frequency range	2500 – 2700 MHz
Polarization	Vertical
Gain	11 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	200 W (at 50 °C ambient temperature)

- Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with one U-bolt bracket supplied with the antenna (connecting cable runs outside the mast).
- Material:** Radiator: Copper and brass.  
Radome: Fiberglass, colour: Grey.  
Base: Weather-proof aluminum.  
Mounting kit, screws and nuts: Stainless steel.
- Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded. The inner conductor is capacitively coupled.
- Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 kA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm<sup>2</sup> copper.



Vertical Pattern



Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	4.5 kg
Radome diameter	51 mm
Wind load	110 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1232 x 148 x 112 mm
Height	1132 mm

### Vertical Polarization Indoor – Directional

Type			Type No.	Frequency range	Connector female	Page
VPol BiDir	65°	5dBi	738446	790–960/1710–2170	N	50
VVPol Indoor	90°	7dBi	80010465	790–960/1710–2700	N	142
VPol Indoor	90°	7dBi	80010433	3300–3800	SMA	143

### Indoor – Directional Dual Polarization

VXPol Indoor	90°	C	7dBi	80010677	790–960/1710–2700	2 x N	144
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### Indoor – Multi-band Omnidirectional

VPol Indoor	360°	2dBi	<b>80010748</b>	876–960/1710–2700	N	145
VPol Indoor	360°	2dBi	<b>80010749</b>	876–960/1710–2700	N	146
VPol Indoor	360°	2dBi	80010249	790–960/1425–3800/5150–6000	N	147
VPol Indoor	360°	2dBi	741573	1710–2700	N	148
VPol Indoor	360°	2dBi	80010430	1710–6000	N	149

### Indoor – Omnidirectional Dual Polarization

VHPol Indoor	360°	2dBi	<b>80010709</b>	790–960/1710–2700/2500–2700	2 x N	150
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### Indoor / Outdoor – Single-band

VPol Omni	360°	2dBi	738450	870–960	N	128
VPol Panel	90°	7.5dBi	736854	872–960	N	54

### Indoor / Outdoor – Dual-band / Multi-band

VPol Omni	360°	2dBi	738449	870–960/1710–1880	N	151
VPol Omni	360°	2dBi	80010431	1710–2700	N	152
VPol Omni	360°	2dBi	80010147	824–960/1805–2170	N	153

New or changed product

**Indoor Multi-band  
Directional Antenna  
Vertical Polarization  
Half-power Beam Width  
Integrated Combiner**

790–960 1710–2700

V V

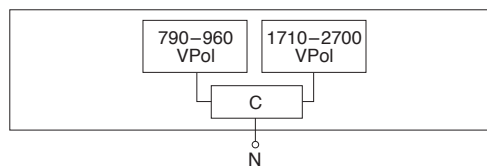
90° 90°

C

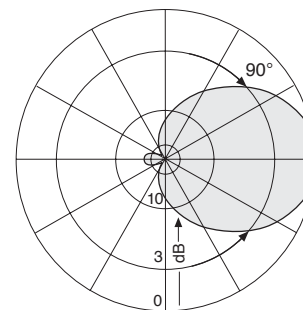
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Antennen · Electronic

**VVPol Indoor 790–960/1710–2700 C 90° 7dBi**

Type No.	<b>80010465</b>
Frequency range	790 – 960 MHz / 1710 – 2700 MHz
Polarization	Vertical
Gain	Approx. 7 dBi
Half-power beam width	Horizontal: Approx. 90°
Impedance	50 Ω
VSWR	790 – 806 MHz: < 2.2 806 – 960 MHz: < 2.0 1710 – 2700 MHz: < 2.0
Max. power	50 W (at 50 °C ambient temperature)
Input	Cable RG 223/CU of 1m length, white, with N female connector
Protection class	IP 30
Weight	500 g
Packing size	363 x 152 x 62 mm
Height/width/depth	231 / 140 / 50 mm

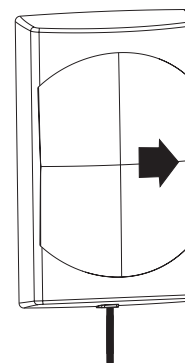
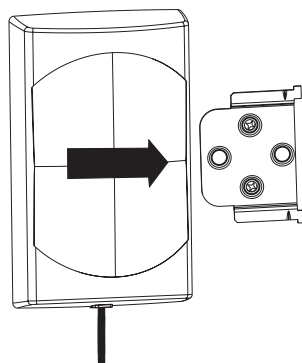
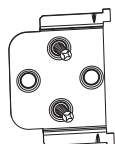


- Material:** Reflector: Aluminum.  
Radome: High impact polystyrol, colour: White.  
Additional painting is possible.  
Mounting plates: Stainless steel.
- Mounting:** Two holes of 6 mm diameter in the mounting plate.  
Screws are not supplied.  
Avoid stressing the cable.  
No stress on the hexagonal crimp.  
Minimum cable bending radius: 30 mm without tensile load.
- Grounding:** All metal parts inclusive the inner conductor are DC grounded.
- Available accessories:** Broadband power splitters (694 – 3800 MHz) and tappers (790 – 2500 MHz).



Horizontal Pattern

**Mounting:**



Mount the attachment plate to the wall using two screws of 4 mm diameter in the position as indicated.

Align the antenna over the attachment plate.

Pull the antenna to the stop.

**Indoor Directional Antenna  
Vertical Polarization  
Half-power Beam Width**

3300–3800

V

90°

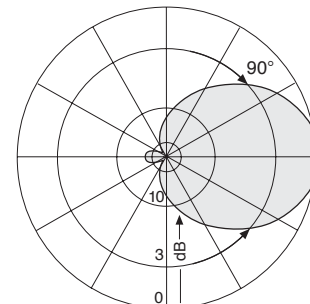
**VPol Indoor 3300–3800 90° 7dBi**

Type No.	<b>80010433</b>
Frequency range	3300 – 3800 MHz
Polarization	Vertical
Gain	Approx. 7 dBi
Half-power beam width	Horizontal: Approx. 90°
Impedance	50 Ω
VSWR	< 2.0
Max. power	50 W (at 50 °C ambient temperature)
Input	Cable of 1 m length with SMA female connector
Diameter / depth	111 x 23 mm

**Material:** Radome: High impact polystyrol, colour: White. Additional painting is possible. Mounting plates: Stainless steel.

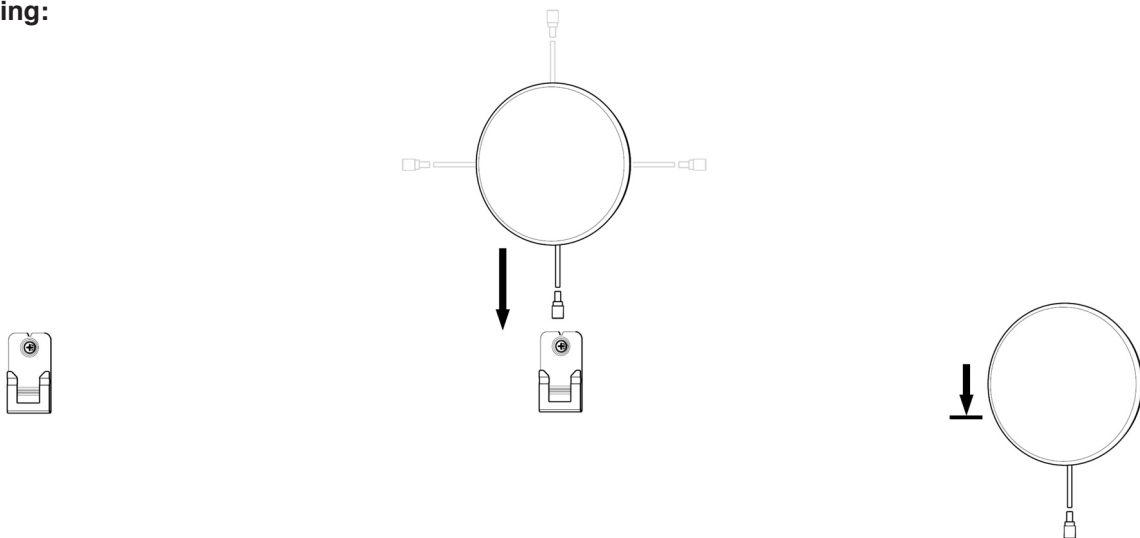
**Mounting:** One hole of 6 mm diameter in the mounting plate. Screws are not supplied. Avoid stressing the cable.

**Cable:** Minimum bending radius: Single bending 10 mm, repeated bending 20 mm.



Horizontal Pattern

**Mounting:**



Attach the mounting plate to the wall using one screw of 6 mm diameter in the position as indicated.

Align the antenna over the mounting plate. Antenna can be mounted in 90 degree steps as indicated.

Pull the antenna to the stop.

# Indoor Multi-band Directional Antenna

790–960 1710–2700 1710–2700

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Vertical / Dual Polarization

V

X (−45°)

X (+45°)

Half-power Beam Width

90°

90°

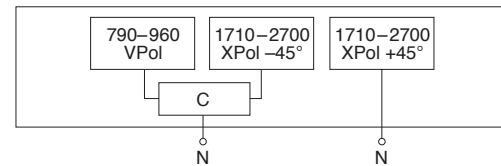
90°

Integrated Combiner

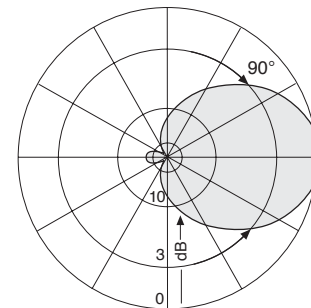
C

## VXPol Indoor 790–960/1710–2700 C 90° 7dBi

Type No.	<b>80010677</b>	
Frequency range	790 – 960 MHz	1710 – 2700 MHz
Polarization	Vertical	+45°, −45°
Gain	Approx. 7 dBi	Approx. 2 x 7 dBi
Half-power beam width	Horizontal: Approx. 90°	
Impedance	50 Ω	
VSWR	< 2.0	
Isolation, between ports	> 25 dB	
Max. power	50 W (at 50 °C ambient temperature)	
Input	2x Cable RG 223/CU of 1m length, white, with N female connector	
Protection class	IP 30	
Weight	600 g	
Packing size	363 x 152 x 62 mm	
Height/width/depth	232 / 140 / 50 mm	

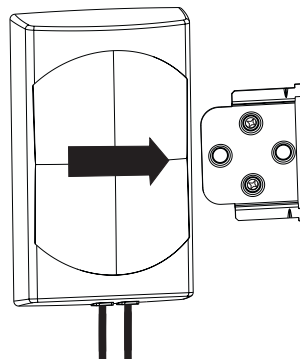
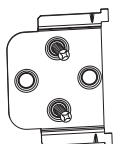


- Material:** Reflector: Aluminum.  
Radome: High impact polystyrol, colour: White.  
Additional painting is possible.  
Mounting plates: Stainless steel.
- Mounting:** Two holes of 6 mm diameter in the mounting plate.  
Screws are not supplied.  
Avoid stressing the cable.  
No stress on the hexagonal crimp.  
Minimum cable bending radius: 30 mm without tensile load.
- Available accessories:** Broadband power splitters and tappers (790 – 2700 MHz).

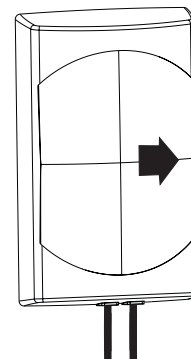


Horizontal Pattern

### Mounting:



Align the antenna over the attachment plate.



Pull the antenna to the stop.

Mount the attachment plate to the wall using two screws of 4 mm diameter in the position as indicated.



# Indoor Multi-band Omni Antenna Vertical Polarization

876–960

1710–2700

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V

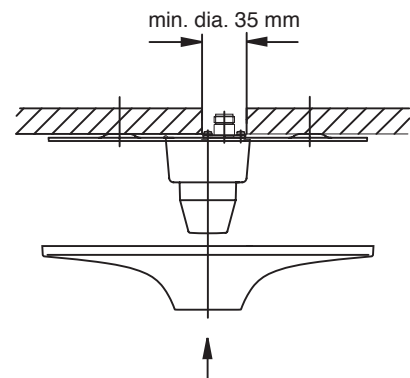
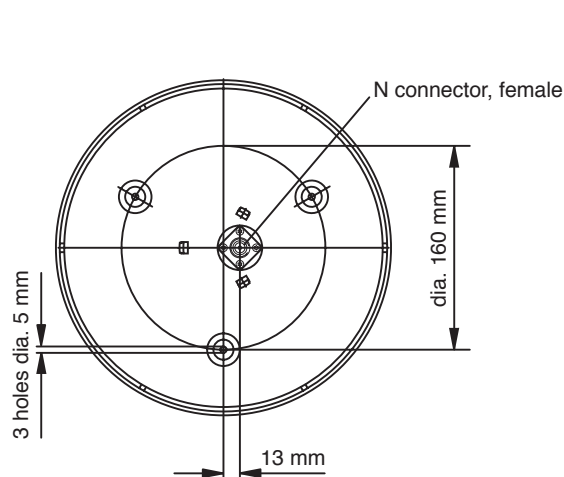
- The antenna needs no additional groundplane.

## VPol Indoor 876–960/1710–2700 360° 2dBi

Type No.	80010748
Frequency range	876 – 960 MHz 1710 – 2700 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	876 – 890 MHz: < 2.0 890 – 960 MHz: < 1.7 1710 – 2170 MHz: < 1.6 2170 – 2700 MHz: < 2.0
Max. power (per band)	50 W (at 50 °C ambient temperature)
Input	1 x N female
Weight	300 g
Diameter	210 mm
Height	78 mm (without connector)



- Material:** Base: Aluminum.  
Protective housing: High impact polystyrol, colour: White.  
Additional painting is possible.
- Mounting:** Three holes in the base enable a mounting on the ceiling. Two types of screws are supplied. For the N connector a hole in the ceiling with a diameter of 35 mm is required.
- Grounding:** All metal parts including the inner conductor are DC grounded.
- Available accessories:** Broadband power splitters and tappers (800 – 2700 MHz).



Clip the protective housing into position after the antenna has been mounted with the help of the three supplied screws.

# Indoor Multi-band Omni Antenna Vertical Polarization

876–960

1710–2700

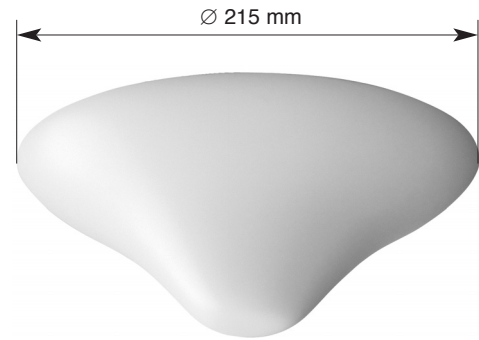
**KATHREIN**  
Antennen · Electronic

V

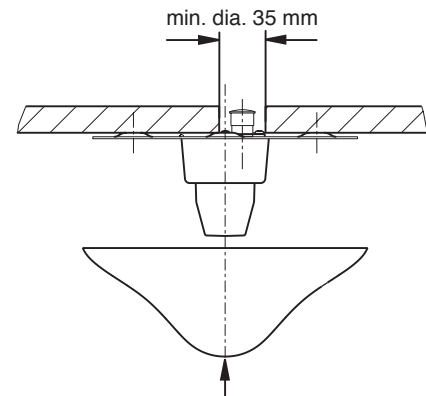
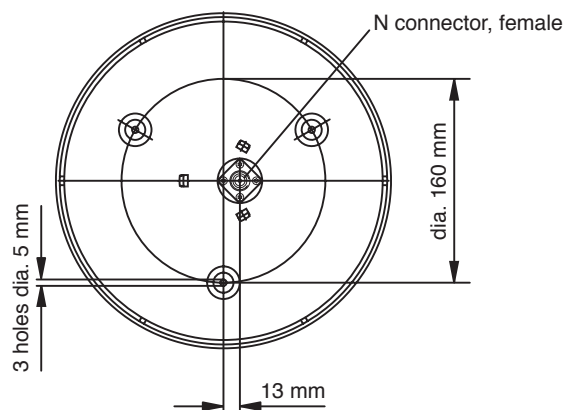
- The antenna needs no additional groundplane.

## VPol Indoor 876–960/1710–2700 360° 2dBi

Type No.	80010749
Frequency range	876 – 960 MHz 1710 – 2700 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	876 – 890 MHz: < 2.0 890 – 960 MHz: < 1.7 1710 – 2170 MHz: < 1.6 2170 – 2700 MHz: < 2.0
Max. power (per band)	50 W (at 50 °C ambient temperature)
Input	1 x N female
Weight	340 g
Diameter	215 mm
Height	85 mm (without connector)



- Material:** Base: Aluminum.  
Protective housing: High impact polystyrol, colour: White.  
Additional painting is possible.
- Mounting:** Three holes in the base enable a mounting on the ceiling. Two types of screws are supplied. For the N connector a hole in the ceiling with a diameter of 35 mm is required.
- Grounding:** All metal parts including the inner conductor are DC grounded.
- Available accessories:** Broadband power splitters and tappers (800 – 2700 MHz).



Clip the protective housing into position after the antenna has been mounted with the help of the three supplied screws.

# Indoor Multi-band Omni Antenna Vertical Polarization

790–960

1425–3800

5150–6000

**KATHREIN**

Antennen · Electronic

V

- The antenna can be operated in all frequency ranges simultaneously.
- The antennas need no additional groundplane.

## VPol Indoor 790–960/1425–3800/5150–6000 360° 2dBi

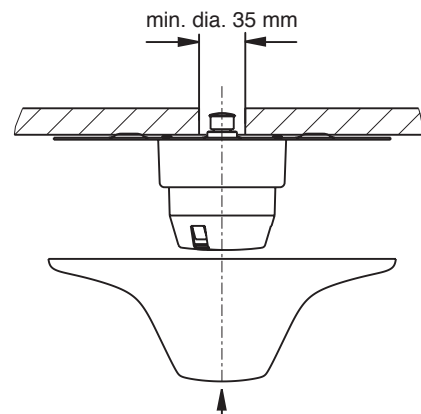
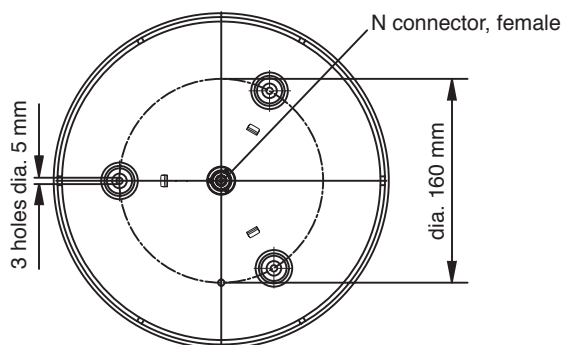
Type No.	<b>80010249</b>
Frequency range	790 – 960 MHz 1425 – 3800 MHz 5150 – 6000 MHz
Polarization	Vertical
Gain	≈ 2 dBi
Impedance	50 Ω
VSWR	790 – 806 MHz: < 1.7 806 – 960 MHz: < 1.5 1425 – 1710 MHz: < 2.0 1710 – 2200 MHz: < 1.4 2200 – 3800 MHz: < 1.6 5150 – 6000 MHz: < 2.2
Max. power	50 W (at 50 °C ambient temperature)
Input	1 x N female
Protection class	IP 30
Weight	466 g
Packing size	277 x 277 x 169 mm
Diameter	258 mm
Height	94 mm (without connector)



**Material:** Reflector: Aluminum.  
Radome: High impact polystyrol, colour: White.  
Additional painting is possible.

**Mounting:** Three holes in the base enable a mounting on the ceiling. Two types of screws are supplied. For the N connector a hole in the ceiling with a diameter of 35 mm is required.

**Available accessories:** Broadband power splitters (694 – 3800 MHz) and tappers (790 – 2500 MHz).



Clip the protective housing into position after the antenna has been mounted with the help of the three supplied screws.

# Indoor Omnidirectional Antenna Vertical Polarization Multi-band

1710–2700

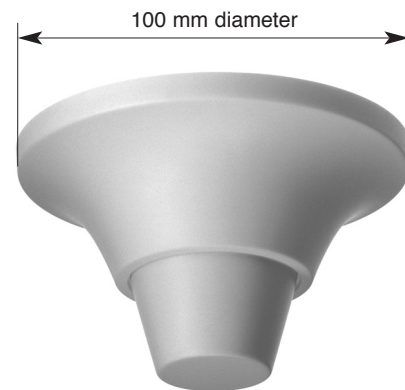
V

**KATHREIN**  
Antennen · Electronic

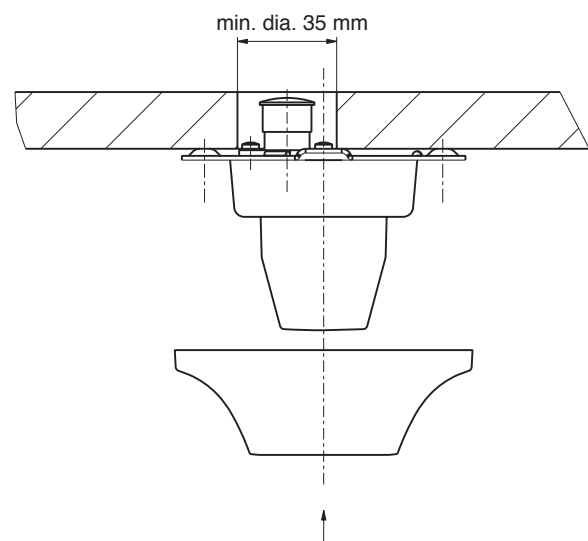
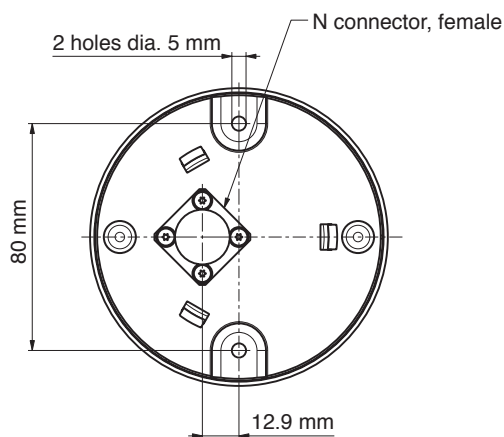
- The antenna can be operated in the total frequency range simultaneously.
- The antenna needs no additional groundplane.

## VPol Indoor 1710–2700 360° 2dBi

Type No.	<b>741573</b>
Frequency range	1710 – 2700 MHz
VSWR	1710 – 1880 MHz: < 1.6 1850 – 1990 MHz: < 1.6 1920 – 2170 MHz: < 1.6 2170 – 2500 MHz: < 2.0 2500 – 2700 MHz: < 2.2
Input	1 x N female
Gain	2 dBi
Impedance	50 Ω
Polarization	Vertical
Max. power (per band)	50 W (at 50 °C ambient temperature)
Weight	150 g
Diameter	100 mm
Height	50 mm (without connector)



- Material:** Base: Aluminum.  
Protective housing: High impact polystyrol, colour: White.  
Additional painting is possible.
- Mounting:** Holes in the base enable a mounting on the ceiling. Screws are supplied.  
For the N connector a hole in the ceiling with a diameter of 35 mm is required.
- Grounding:** All metal parts including the inner conductor are DC grounded.
- Available accessories:** Broadband power splitters (694 – 3800 MHz) and tappers (790 – 2500 MHz).



Clip the protective housing into position after the antenna has been mounted with the help of the three supplied screws.

# Indoor Omnidirectional Antenna Vertical Polarization Multi-band

1710–6000

V

**KATHREIN**

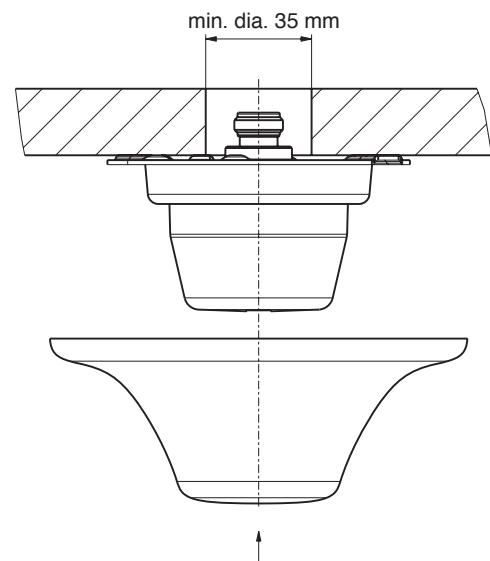
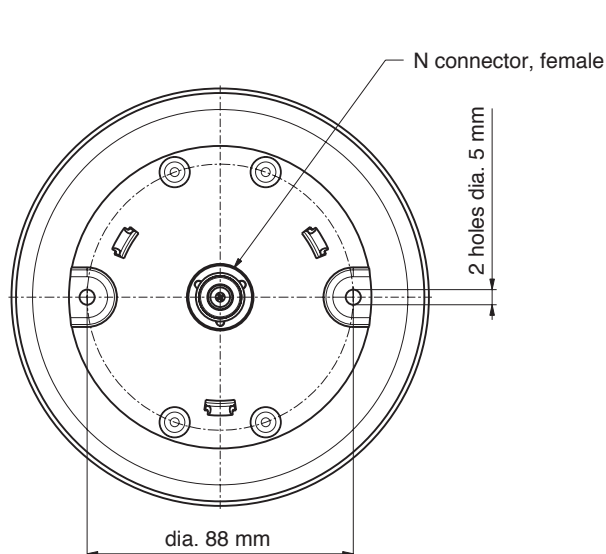
Antennen · Electronic

- The antenna can be operated in all frequency ranges simultaneously.
- The antenna needs no additional groundplane.

## VPol Indoor 1710–6000 360° 2dBi

Type No.	80010430
Frequency range	1710 – 6000 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	< 1.5
Max. power	50 W (at 50 °C ambient temperature)
Input	1 x N female
Protection class	IP 30
Weight	133 g
Diameter	138 mm
Height	56 mm (without connector)

- Material:** Base: Aluminum.  
Protective housing: High impact polystyrol, colour: White.  
Additional painting is possible.
- Mounting:** Holes in the base enable a mounting on the ceiling. Screws are supplied.  
For the N connector a hole in the ceiling with a diameter of 35 mm is required.
- Available accessories:** Broadband power splitters and tappers (800 – 2500 MHz).



Clip the protective housing into position after the antenna has been mounted with the help of two supplied screws.

# Indoor Multi-band Omni Antenna Dual Polarization

790–960

1710–2700

2500–2700

**KATHREIN**

Antennen · Electronic

V

H

- The antenna can be operated in all frequency ranges simultaneously.
- The antennas need no additional groundplane.

## VHPol Indoor 790–960/1710–2700/2500–2700 360° 2dBi

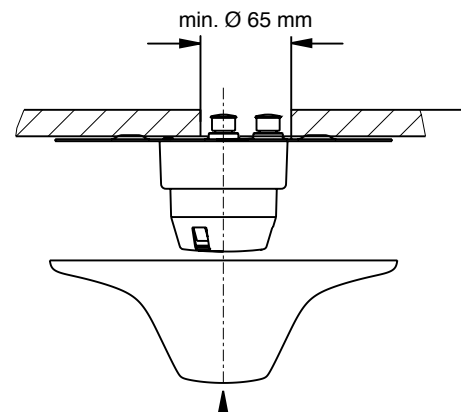
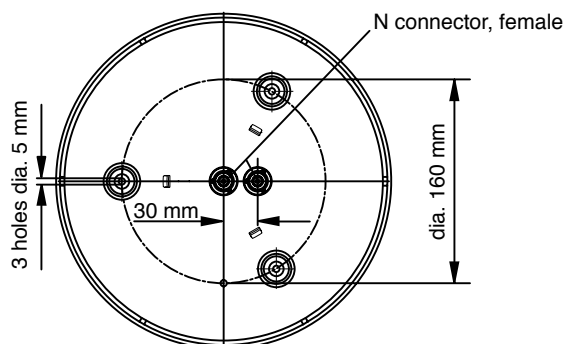
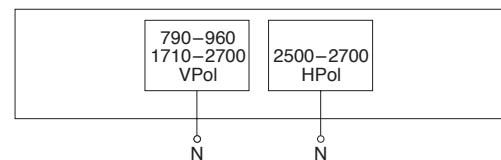
Type No.	<b>80010709</b>	
Frequency range	790 – 960 MHz 1710 – 2700 MHz	2500 – 2700 MHz
Polarization	Vertical	Horizontal
Gain	≈ 2 dBi	
Impedance	50 Ω	
VSWR	790 – 960 MHz: < 2.0 1710 – 2700 MHz: < 2.0	2500 – 2700 MHz: < 2.0
Isolation	> 30 dB	
Max. power	50 W (at 50 °C ambient temperature)	
Input	2 x N female	
Protection class	IP 30	
Weight	Approx. 500 g	
Packing size	277 x 277 x 169 mm	
Diameter	258 mm	
Height	94 mm (without connector)	



**Material:** Reflector: Aluminum.  
Radome: High impact polystyrol, colour: White.  
Additional painting is possible.

**Mounting:** Three holes in the base enable a mounting on the ceiling. Two types of screws are supplied. For the N connectors a hole in the ceiling is required.

**Available accessories:** Broadband power splitters (694 – 3800 MHz) and tappers (694 – 2700 MHz).



Clip the protective housing into position after the antenna has been mounted with the help of the three supplied screws.

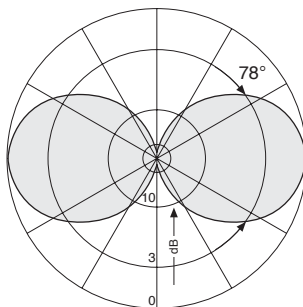
# Dual-band Omni Antenna 870–960/1710–1880 Vertical Polarization V Indoor and outdoor use

## VPol Omni 870–960/1710–1880 360° 2dBi

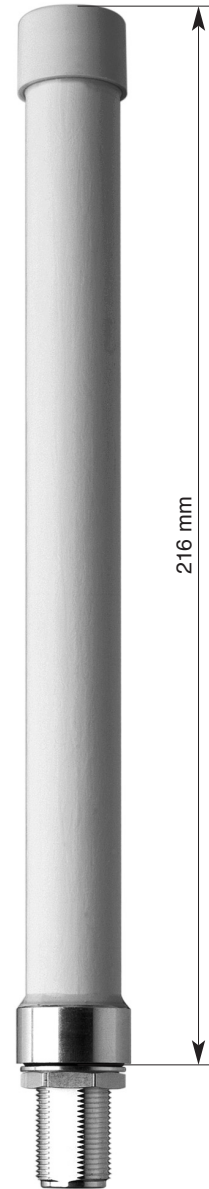
Type No.	<b>738449</b>
Input	1 x N female
Connector position	Bottom or top
Frequency range	870 – 960 MHz / 1710 – 1880 MHz
VSWR	< 1.7
Gain	2 dBi
Impedance	50 Ω
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Polarization	Vertical
Max. power	50 W: 870 – 960 MHz 50 W: 1710 – 1880 MHz (at 50 °C ambient temperature)
Weight	250 g
Radome diameter	20 mm
Height	216 mm

Material: Radiator: Brass.  
Radome: Fiberglass, colour: White.

Mounting: One hole mounting (16 mm diameter) to surfaces of max. 10 mm thickness.



Vertical Pattern





# Omnidirectional Antenna Vertical Polarization Indoor and outdoor use

1710–2700

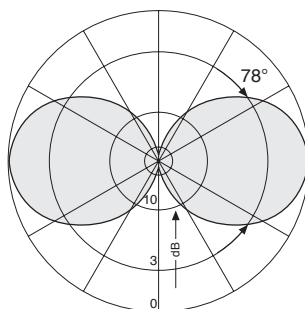
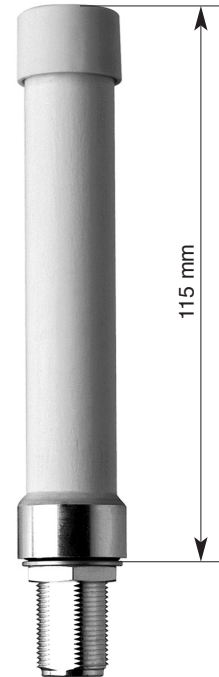
V

**KATHREIN**  
Antennen · Electronic

## VPol Omni 1710–2700 360° 2dBi

Type No.	80010431
Input	N female
Connector position	Bottom or top
Frequency range	1710 – 2700 MHz
VSWR	< 1.8
Gain	2 dBi
Impedance	50 Ω
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Polarization	Vertical
Max. power	50 W (at 50 °C ambient temperature)
Weight	150 g
Radome diameter	20 mm
Height	115 mm

- Material: Radiator: Brass.  
Radome: Fiberglass, colour: White.
- Mounting: One hole mounting (16 mm diameter) to surfaces of max. 10 mm thickness.
- Grounding: All metal parts of the antenna and the mounting kit are DC grounded. The inner conductor is not DC grounded.



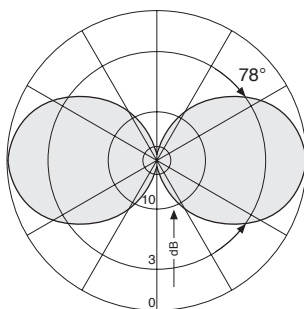
Vertical Pattern

# Dual-band Omni Antenna 824–960/1805–2170 Vertical Polarization V Indoor and outdoor use

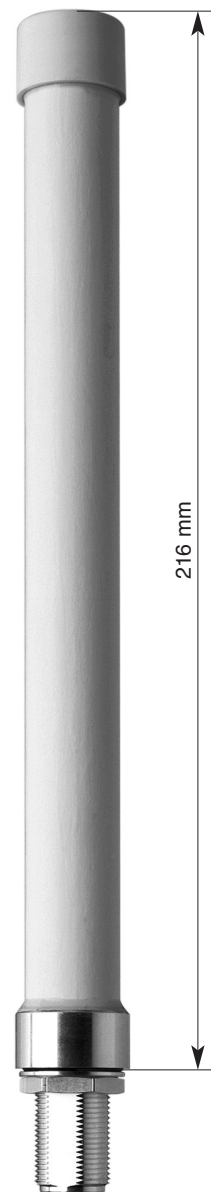
## VPol Omni 824–960/1805–2170 360° 2dBi

Type No.	<b>80010147</b>
Input	1 x N female
Connector position	Bottom or top
Frequency range	824 – 960 MHz / 1805 – 2170 MHz
VSWR	< 2.0
Gain	2 dBi
Impedance	50 Ω
Polarization	Vertical
Max. power	50 Watt: 824 – 960 MHz 50 Watt: 1805 – 2170 MHz (at 50 °C ambient temperature)
Weight	250 g
Radome diameter	20 mm
Height	216 mm

- Material:** Radiator: Brass.  
Radome: Fiberglass, colour: White.
- Mounting:** One hole mounting (16 mm diameter) to surfaces of max. 10 mm thickness.
- Grounding:** All metal parts of the antenna as well as the inner conductor and the mounting kit are DC grounded.



Vertical Pattern





Type	Type No.	Page
<b>Kathrein's Remote Electrical Tilt System</b>		
General information		156
<b>Data sheets of RET components</b>		
Slimline Remote Control Unit (RCU)	<b>86010147 / 86010148</b>	158
Central Control Unit (CCU) for indoor use	86010006 / 86010026	159
Central Control Unit (CCU) for indoor use (cost efficient version)	86010140 / 86010141	160
Portable Control Adapter (PCA)	86010046	161
Power Supply and Signal Cable	86010007, ...	162
DC Power and Signal Splitter	86010002	163
Lightning Protection Device	86010030	164
Earthing Clamp	86010031	165
Smart Bias Tee	78210253 / ..54 / ..55 / ..56	290
	78210453 / ..54 / ..55 / ..56	290
Bias Tee	78210429	286

**New or changed products**

## The answer to all current and future network demands

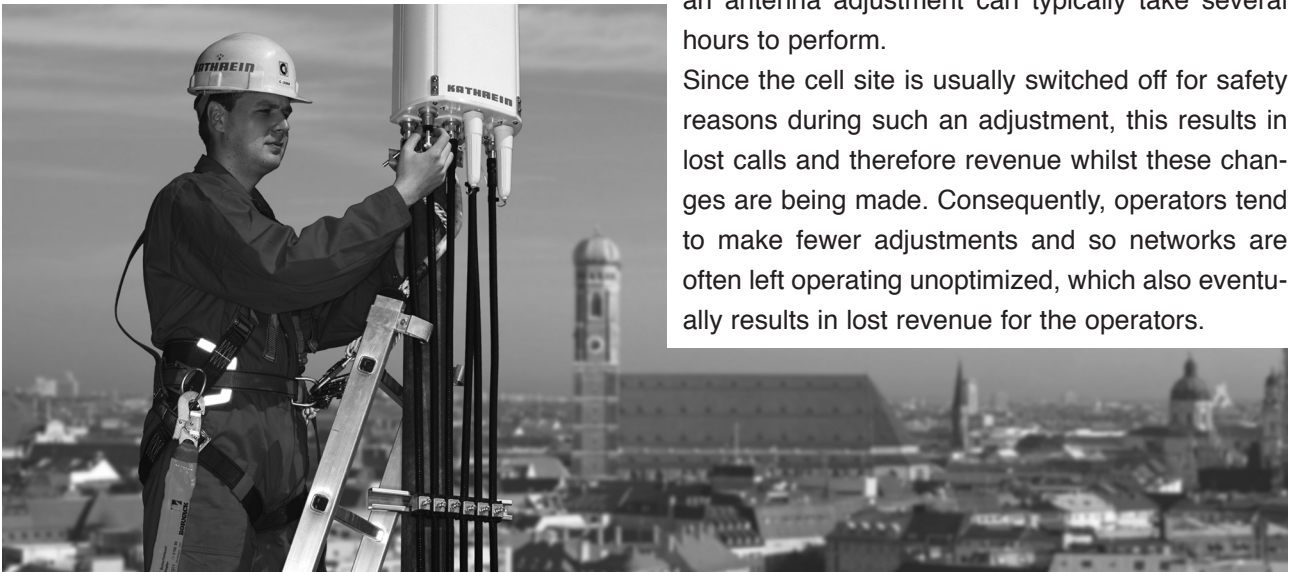
Network planning is becoming ever more complicated, especially with the advent of 3G.

The challenge for wireless network operators is to balance coverage, capacity, call quality and costs in order to gain maximum revenue from their network. Each of the above factors affects the others and so network engineers use many different techniques

for establishing the right balance they are trying to achieve.

One of these methods is adjusting the antenna's downtilt. Here, the engineer must take into consideration certain facts, such as the weather, access to the cell site, availability of specialized installation teams and special equipment etc. Moreover, such an antenna adjustment can typically take several hours to perform.

Since the cell site is usually switched off for safety reasons during such an adjustment, this results in lost calls and therefore revenue whilst these changes are being made. Consequently, operators tend to make fewer adjustments and so networks are often left operating unoptimized, which also eventually results in lost revenue for the operators.



However, with Kathrein's Remote Electrical Tilt unit engineers can make the necessary adjustments without shutting down the whole system!

### Further advantages of using Kathrein's Remote Electrical Tilt (RET) system:

- No need for specialized teams trained in altitude work or with special safety skills
- Limited site access and/or time restrictions are not so important
- No special platforms or other means of access to the antenna are required
- Adjustments can be made and the relevant measurements performed speedily
- Network alterations can be carried out irrespective of weather conditions
- No reduction in coverage – cells remain fully operational whilst changes are being made
- Operators estimate that approx. 20% of UMTS equipment can be saved by using such a RET system.

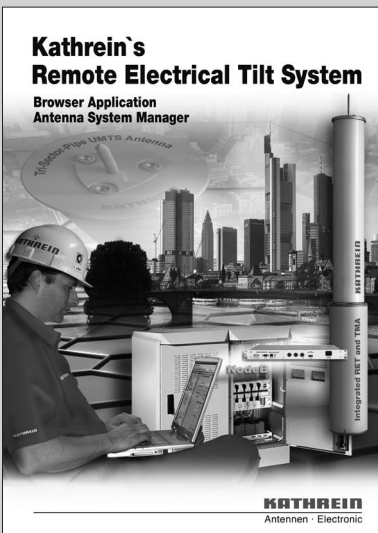


## RET components



Kathrein's overall RET system works in accordance with the AISG (Antenna Interface Standards Group) standard and 3 GPP (3rd Generation Partnership Project).

*For details of RET system please see Kathrein RET system brochure*



**Slimline RCU**  
(Remote Control Unit)



**Optional:**

Smart Bias Tee



DTMA (Double Tower Mounted Amplifier)



Bias Tee



CCU (Central Control Unit)



CCU (Central Control Unit)



PCA  
(Portable Control Adapter)



DC Power and Signal Splitter



Control Cable



SMB Control Cable



Lightning Protection Device



Earthing Clamp



RET

Remote Control Unit (RCU) for Kathrein base station antennas with adjustable electrical down-tilt and appropriate mechanical interface.

- Compliant to AISG 1.1 and 3GPP/AISG 2.0
- Compact size
- Daisy Chain feasibility
- Suitable for operation under outdoor condition



Type No.	86010147	86010148
Protocols	compliant to AISG 1.1 and 3GPP/AISG 2.0	
Logical interface ex factory <sup>1)</sup>	AISG 1.1	3GPP/AISG 2.0
Input voltage range	10 ... 30 V (pin 1, pin 6)	
Power consumption	< 1 W (stand by); < 10 W (motor activated)	
Connectors <sup>2)</sup>	2 x 8 pin connector according to IEC 60130-9; according to AISG Daisy chain in: male; Daisy chain out: female	
Hardware interfaces	RS 485A/B (pin 5, pin 3); power supply (pin 1, pin 6); DC return (pin 7); according to AISG / 3GPP	
Adjustment time (full range)	40 sec (typically, depending on antenna type)	
Adjustment cycles	> 50,000	
Temperature range	-40 °C ... +60 °C	
Protection class	IP 24	
Lightning protection	AISG interface (each pin) 2.5 kA (10/350 μs) 8 kA (8/20 μs)	
Housing material	Profile: Aluminum coated; cover: Aluminum	
Weight	525 g (1.16 lbs)	
Packing size	245 x 93 x 102 mm, (9.6 x 3.6 x 4 inches)	
Dimensions (H x W x D)	177.5 x 59.5 x 49.5 mm, (7.0 x 2.3 x 1.9 inches)	



<sup>1)</sup> The protocol of the logical interface can be switched from AISG 1.1 to 3GPP/AISG 2.0 and vice versa with a vendor specific command. Start-up operation of the RCU 86010147 is only possible in a RET system supporting AISG 1.1 and start-up operation of the RCU 86010148 is only possible in a RET system supporting 3GPP/AISG 2.0!

The protocol can also be changed as follows: *AISG 1.1 to 3 GPP*: Enter "3GPP" into the additional data filed "Installer's ID" and perform a layer 7 reset or a power reset. *3GPP to AISG 1.1*: Enter "AISG1" into the additional data field "Installer's ID" and perform a layer 2 reset or a power reset. After switching the protocol any other information can be entered into the "Installer's ID" field

**Please note:**

If the Primary of the RET system doesn't support the standard of the 'logical interface ex factory', the RCU must be switched to the appropriate standard of the Primary before installation. Please contact Kathrein for further information.

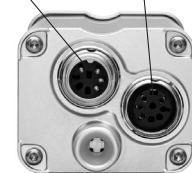
<sup>2)</sup> The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened'). The connector should be tightened by hand only!

Standards: EN 60950-1 (Safety)  
EN 55022 (Emission)  
EN 55024 (Immunity)  
ETS 300019-1-4 (Environmental)  
UL 60950-1; 1<sup>st</sup> edition

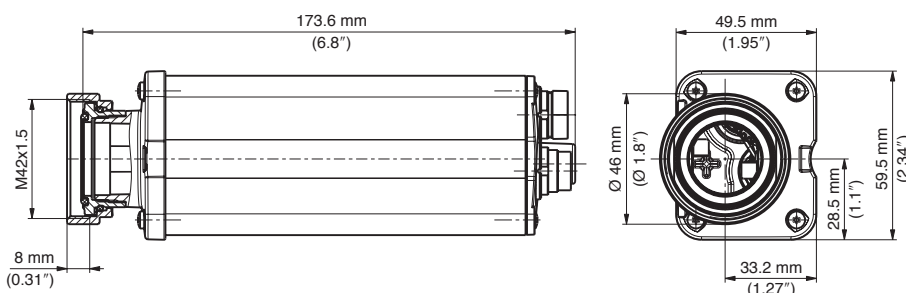
Certification: CE, FCC

Scope of supply: Remote Control Unit  
Assembly paste

Daisy chain in (male)      Daisy chain out (female)



Bottom view of RCU





# Central Control Unit (CCU) For Remote Electrical Tilt (RET) and Tower Mounted Amplifier (TMA) Control



For indoor use

## Central Control Unit

Type No.	86010006	86010026
Connectors <sup>1)</sup> to RCU	3 x 8 pin connector acc. to IEC 60130-9, female, acc. to AISG	
Power supply from BTS	DC: -48 V / max. 1.7 A AC: 100 ... 240 V / 50 ... 60 Hz / max. 1.6 A	DC: -48 V / max. 1.7 A
Power supply to RCU	3 x +29 V DC / max. 1.7 A (in total) 3 x +13 V DC / max. 3.8 A (in total)	
Total output power	Max. 50 W	
Interface to RCU and TMA	RS 485 / power supply	
Protocol to RCU and TMA	HDLC hex-coded command set, acc. to AISG	
Interface to BTS	Ethernet (10 Base-T) and RS 232	
Protocols to BTS	TCP/IP, PPP, HTTP/HTML, UDP, DHCP, FTP, SNMP, ICMP/PING	
Alarm interface to BTS	8 x open collector output, user programmable	
Max. number of RCU's and/or TMA's	Up to 27 RCU's in daisy chain and up to 6 DTMA's; depending on cable configuration and max. power	
Max. length of control cable	200 m (9 RCU's in daisy chain configuration)	
Temperature range	-25 °C ... +55 °C ambient temperature	
Packing size	597 mm x 367 mm x 148 mm	
Dimensions (h / w / d)	19" 1 HU* (43.6 mm / 483 mm / 250 mm)	

\* HU = Height Unit

<sup>1)</sup> The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand tightened').  
The connector should be tightened by hand only.

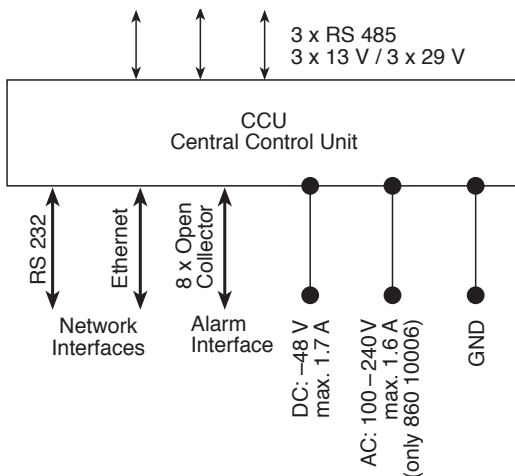
Standards: EN 60950-1  
EN 55022  
EN 55024  
UL 60950-1, 1<sup>st</sup> edition

Certifications: CE, FCC part 15 class B; UL

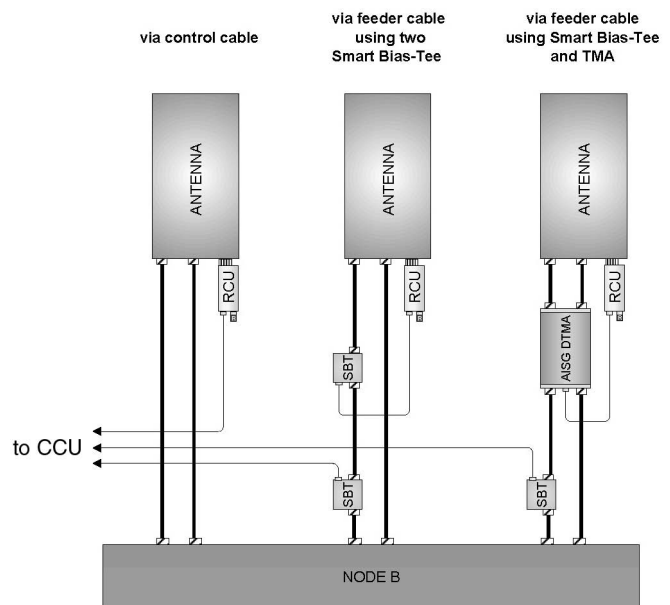
Scope of supply: CCU  
RET Manual  
DC Cable  
AC Power Cords for USA, UK and Germany  
Ethernet cable, crossed



## CCU Interfaces



## Examples of CCU – RCU connections





# Central Control Unit (CCU) For Remote Electrical Tilt (RET) and Tower Mounted Amplifier (TMA) Control

For indoor use

## Central Control Unit

Type No.	86010140	86010141
Connector <sup>1)</sup> to RCU	8 pin connector acc. to IEC 60130-9, female, acc. to AISG	
Power supply from BTS	AC: 100 ... 240 V / 50 ... 60 Hz / max. 1.6 A	DC: -48 V / max. 1.7 A
Power supply to RCU	+29 V DC / max. 1.7 A	
Total output power	Max. 50 W	
Interface to RCU and TMA	RS 485 / power supply	
Protocol to RCU and TMA	HDLC hex-coded command set, acc. to AISG	
Interface to BTS	Ethernet (10 Base-T) and RS 232	
Protocols to BTS	TCP/IP, PPP, HTTP/HTML, UDP, DHCP, FTP, SNMP, ICMP/PING	
Alarm interface to BTS	8 x open collector output, user programmable	
Lightning protection	No lightning protection for AISG interface <sup>2)</sup> 8/20 $\mu$ s, 2.5 KA Ethernet-, DC- and Alarm Interface	
Max. number of RCU's and/or TMA's	Up to 27 RCU's in daisy chain and up to 6 DTMA's; depending on cable configuration and max. power	
Max. length of control cable	200 m (9 RCU's in daisy chain configuration)	
Temperature range	-25 °C ... +55 °C ambient temperature	
Packing size	597 mm x 367 mm x 148 mm	
Dimensions (h / w / d)	19" 1 HU* (43.6 mm / 483 mm / 250 mm)	



\* HU = Height Unit

<sup>1)</sup> The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand tightened').  
The connector should be tightened by hand only.

<sup>2)</sup> **Please note:** In order to achieve lightning protection acc. to IEC 61643-1/-3 (10/350  $\mu$ s), please install the Kathrein Lightning Protection Device (type no. 860 10030). For additional information about lightning protection of the CCU, we kindly refer to RET Installation Manual.

Standards: EN 60950-1  
EN 55022  
EN 55024  
UL 60950-1, 1<sup>st</sup> edition

Certifications: CE, FCC part 15 class B; UL

Scope of supply: CCU  
RET Manual  
DC Cable (only 860 10141)  
AC Power Cords for USA,  
UK and Germany (only 860 10140)  
Ethernet cable, crossed

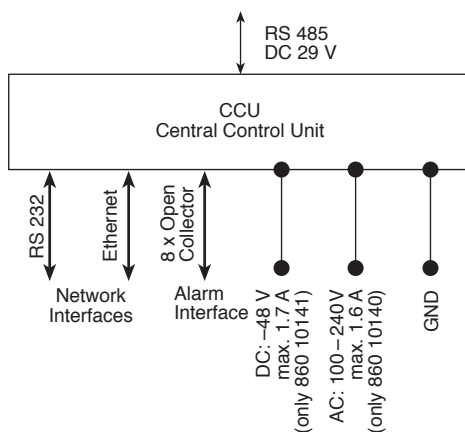


860 10140

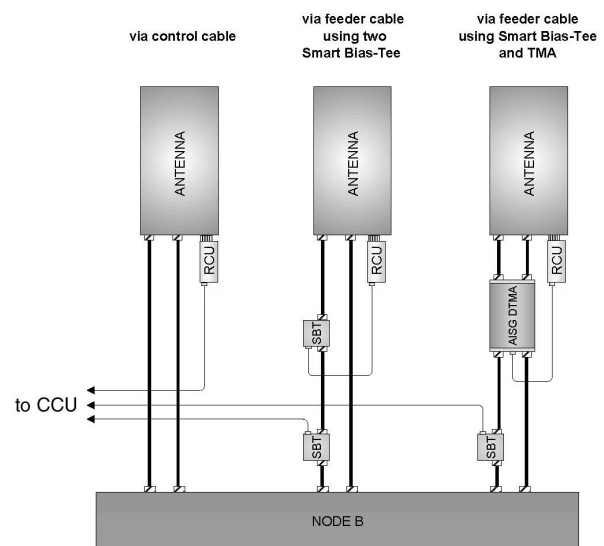


860 10141

## CCU Interfaces



## Examples of CCU – RCU connections



# Portable Control Adapter (PCA) For Remote Control Unit (RCU)



## Portable Control Adapter

Type No.	86010046
Connector * to RCU/TMA	1 x 8-pin connector according to IEC 60130-9, female, conforming to AISG RF-connector (SMB male)
Input voltage of PCA	24 V DC
Output voltage to RCU's/TMA's	AISG female pin 6 (24 V DC): 24 V DC $\pm$ 10% AISG female pin 1 (12 V DC): 14 V DC $\pm$ 7% RF male (at 24 V DC): 24 V DC $\pm$ 10% *** RF male (at 12 V DC): 14 V DC $\pm$ 7% ***
Output power (power supply to RCU's/TMA's)	AISG female pin 6 (24 V DC) without load on pin 1 (12 V DC) and on RF-plug: $\leq$ 60 W AISG female Pin 1 (12 V DC) with max. 30 W load on pin 6 (24 V DC) and/or on RF plug: $\leq$ 30 W
Current monitoring measurement level	Per branch (12 V, 24 V, RF): 10 – 2500 mA
Over-current protection	Per branch (12 V, 24 V, RF): $<$ 2500 mA
Interface to RCU/TMA	RS 485 / power supply / RF connector (SMB male)
Protocol to RCU/TMA	HDLC hex-coded command set, conforming to AISG 1.1 and 3GPP / AISG 2.0
Interface to PC	USB 1.1/2.0
Max. number of RCU's/TMA's	27/3 pcs., depending on system configuration and length of control cable
Max. length of control cable	200 m / 9 RCU's (in daisy chain configuration) 150 m / 6 RCU's (in splitter configuration)
Weight	535 g (incl. external power adapter)
Temperature range	0 ... +55 °C ambient temperature
Height x width x depth	40 mm x 95 mm x 160 mm
External power supply **	Input: 90 – 264 V AC, 47 – 63 Hz 24 V DC / 3.0 A

\* Tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened').

The connector should be tightened by hand only!

\*\* If powered via AISG-interface, no external power supply is required.

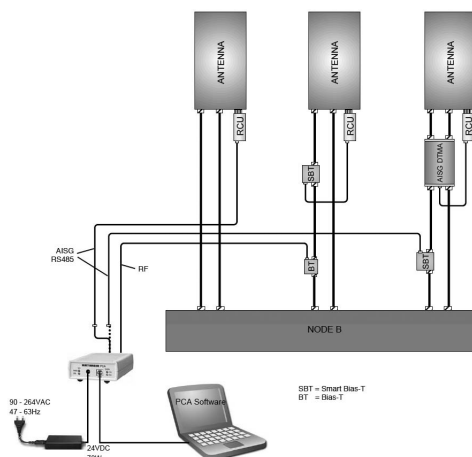
\*\*\* Switchable with software

Certificate: CE  
FCC part 15 class B  
UL (for external power adapter)

Standards: EN 60950-1  
EN 55022  
EN 55024

System requirements for PCA Software: Windows 2000; Windows XP (32 bit version)

Scope of supply: PCA  
External power supply (24 V DC / 70 W)  
USB cable  
AC power cable  
CD-ROM with PCA software, drivers and manual  
Installation guide  
Transport case



# Connecting Cable For Remote Electrical Tilt (RET) System

For indoor and outdoor use



## RET Cable for power supply and control

Type No.	<b>86010007 ...</b>
Connectors	2 x 8 pin connector according IEC 60130-9, female/male
Tightening torque for fixing the connectors	<b>0.5 – 1 Nm</b> <b>(The connector should be tightened by hand only)</b>
Construction	Screen 1x twisted pair 100 Ω/1 MHz 2x power supply, 1x ground AWM style 20317 I/II A/B + 20549 + 20233
Rated current	4 A (power supply) (at 50 °C air temperature)
Temperature range	–40 °C to +80 °C, (fixed position)
Protection class	IP 67 (connected)
Cable diameter	8 mm
Flammability	VL 1581 VW-1 CSA FT 1
Colour	Black, similar to RAL 9005

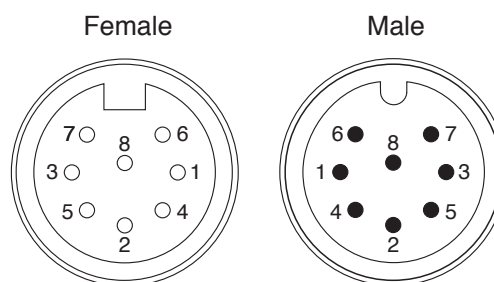


Minimum bending radius: One time 60 mm,  
several times 120 mm.

The male and female connectors of all Kathrein RET products are compatible components which are designed to operate under the environmental conditions as described in ETS 300 019-1-4 class 4.1 E.

## Control Cable

Length	Type No.
0.5 m	86010054
1 m	86010007
2 m	86010008
3 m	86010029
5 m	86010009
10 m	86010010
20 m	86010032
25 m	86010011
40 m	86010012
50 m	86010033
60 m	86010013
80 m	86010014
100 m	86010015



### PIN assignment according AISG:

- 1 +13 V DC (+12 V DC nominal)
- 2 not connected
- 3 RS485 B
- 4 not connected
- 5 RS485 A
- 6 +29 V DC (+24 V DC nominal)
- 7 DC Return
- 8 not connected

# DC-Power and Signal Splitter For Remote Electrical Tilt (RET) Indoor and Outdoor Use



AISG compliant device for splitting of DC-power and control signals from one input to three outputs.

## 3-way-Splitter for RET

Type No.	<b>86010002</b>
Connectors <sup>1)</sup>	4 x 8 pin connector according IEC 60130-9, 1 x male, 3 x female
Rated current (power supply)	3 A (at 50 °C)
Max. voltage	60 V
Protection class	IP 65
Weight	250 g
Packing size	114 mm x 117 mm x 117 mm
Height/width/depth	91 mm / 103 mm / 72 mm

<sup>1)</sup> The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened'). The connector should be tightened by hand only!

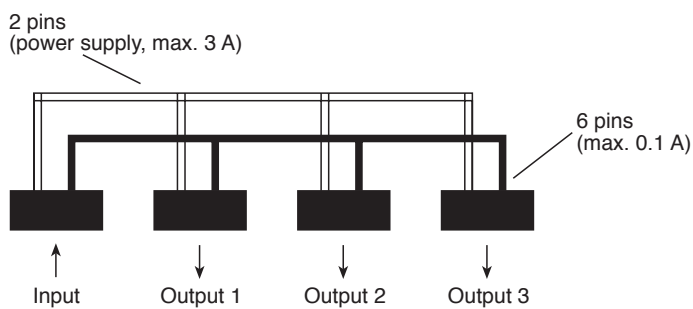


Material: Connector plate: Aluminum.  
Cap: Plastic.

Mounting: Mast mounting (50 – 145 mm diameter) by clamp.  
Wall mounting by screws (not supplied).

**Note:** Connectors must be situated at the bottom.  
No inverted mounting possible.

Scope of supply: 3-way Splitter  
Clamp (Art.-No. 1311847)



Clamp, Art. No. 1311847

# Lightning Protection Device (LPD) For Remote Electrical Tilt (RET) Indoor and Outdoor Use



The device is designed for lightning protection of control cables carrying partial lightning currents up to 25 kA (shield) and 2.5 kA (inner conductor), according IEC 61643-1, IEC 61312-3. Each pin is protected individually.

## Lightning Protection Device for RET

Type No.	<b>86010030</b>
Connectors <sup>1)</sup>	2 x 8 pin connector according IEC 60130-9, input: male, output: female
SPD-Type	8 x bipolar gas tube
Max. impuls current	25 kA (housing, shield) (10/350 $\mu$ s) inner conductors: 2.5 kA/pin (10/350 $\mu$ s)
Max. dynamic overvoltage at spark gap (1 kV/ $\mu$ s)	< 700 V
Static overvoltage (100 V/s)	< 100 V
Grounding	Via mounting plate / clamps at metallic surfaces or via separate cable, min. cross-section 5 mm <sup>2</sup> Cu (screw M6)
Max. operation current	4 A at 50 °C
Max. operation voltage	60 V
Weight	250 g
Packing size	114 mm x 117 mm x 117 mm
Height/width/depth	91 mm / 103 mm / 72 mm

<sup>1)</sup> The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened'). The connector should be tightened by hand only!



**Material:** Connector plate: Aluminum.  
Cap: Plastic.

**Mounting:** Mast mounting (50 – 145 mm diameter) by clamp.  
Wall mounting by screws (not supplied).

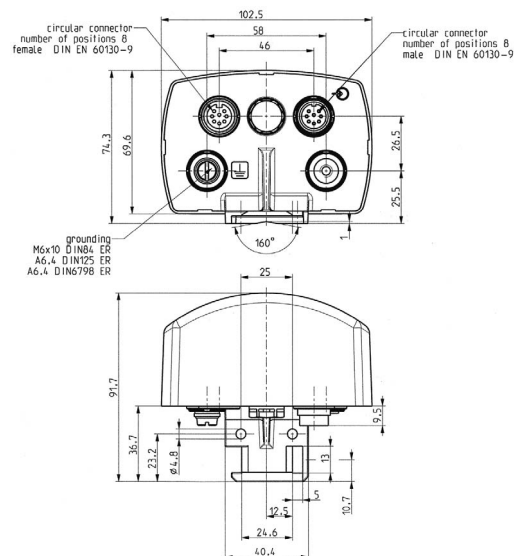
**Note:** **No decoupling elements are integrated. The coordination with additional LPD's (device input) should be checked according to IEC 61312.**

**Grounding of the device via the mounting plate at metallic surfaces or via additional grounding cable (not included in the delivery extend).**

**Connectors must be situated at the bottom. No inverted mounting possible.**

**Important: A control cable with a minimum length of 2 meters is required between Lightning Protection Device and Central Control Unit at the BTS to achieve the required decoupling.**

**Scope of supply:** Lightning Protection Device  
Clamp (50 ... 145 mm)



# Earthing Clamp For Power Supply and Control Cable For Remote Control Unit (RCU)

The clamp is designed for lightning protection of control cables according to EN 50164-1

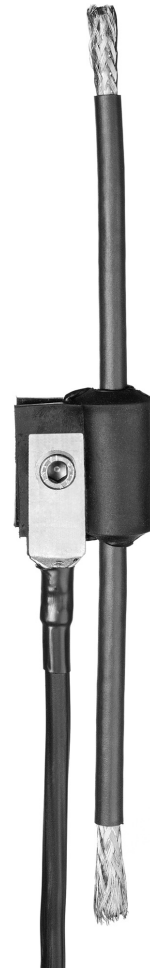
## Earthing clamp for RCU power supply and signal cable

Type No.	<b>86010031</b>
Max. lightning current	20 kA (pulse 10/350 $\mu$ sec)
Contact resistance	< 3 m $\Omega$
Protection class	IP 68
Grounding	Via stranded grounding wire, 16 mm <sup>2</sup> , length 0.5 m, one end terminated with cable eye (10 mm lug)
Packing size	Plastic bag: 210 mm x 210 mm
Weight	160 g

**Material:**  
 Body: Stainless steel with vulcanized Ethylene-Propylene-Caoutchouc  
 Screw: Stainless steel  
 Skin: Copper alloy  
 Grounding wire: Copper

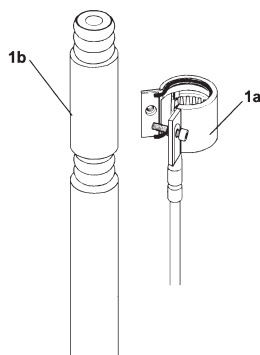
**Please note:**  
 The earthing clamp is suitable only for the Kathrein Power Supply and Signal Cables, Type No. 860 10007 to 860 10015, 860 10029, 860 10032, 860 10033, 860 10054 to 860 10060 or shielded cables with  
 – shield diameter 6.1 mm  
 – jacket diameter 7.8 mm  $\pm$ 0.3 mm

**The kit contains:**  
 1 x Grounding kit body incl. Butyl sealing rope covered with paper  
 1 x Screw M6 DIN 912  
 1 x Grounding wire



## Mounting instructions:

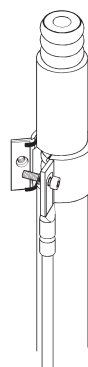
This instruction is written for qualified and experienced personnel. Please read it carefully before starting work. Any liability or responsibility for the result of improper or unsafe installation is disclaimed!



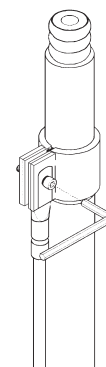
**Attention!**  
 Install grounding kit only where the cable runs straight.

**Fig. 1a** Preassembled grounding kit.

**Fig. 1b** Clean the plastic jacket at the desired grounding point and cut out a strip of 15 mm with aid of a suitable stripping tool.



Remove covering paper from Butyl sealing. Wrap the grounding kit body around the cable and align it.



Tighten the screw (> 6 Nm)





### Splitters

Type	Type No.	Frequency range	Remark	Max. power	Connector female	Page
2-way Splitter 380–3800	<b>86010130</b>	380 – 3800 MHz	Indoor/Outdoor	200 W	N	168
2-way Splitter 380–3800	86010131	380 – 3800 MHz	Indoor/Outdoor	700 W	7-16	168
2-way Splitter 694–2700	86010017	694 – 2700 MHz	Indoor	100 W	N	169
3-way Splitter 694–2700	86010018	694 – 2700 MHz	Indoor	100 W	N	169
4-way Splitter 694–2700	86010019	694 – 2700 MHz	Indoor	100 W	N	169
2-way Splitter 694–3800	86010100	694 – 3800 MHz	Indoor/Outdoor	200 W	N	170
2-way Splitter 694–3800	86010101	694 – 3800 MHz	Indoor/Outdoor	700 W	7-16	170
3-way Splitter 694–3800	86010102	694 – 3800 MHz	Indoor/Outdoor	200 W	N	170
3-way Splitter 694–3800	86010103	694 – 3800 MHz	Indoor/Outdoor	700 W	7-16	170
4-way Splitter 694–3800	86010104	694 – 3800 MHz	Indoor/Outdoor	200 W	N	170
4-way Splitter 694–3800	86010105	694 – 3800 MHz	Indoor/Outdoor	700 W	7-16	170

### Tappers

2-way Tapper 694–2700 7.0/1.0 dB	86010136	694 – 2700 MHz	Indoor	100 W	N	171
2-way Tapper 694–2700 10.4/0.4 dB	86010137	694 – 2700 MHz	Indoor	100 W	N	171
2-way Tapper 694–2700 15.1/0.1 dB	86010138	694 – 2700 MHz	Indoor	100 W	N	171
2-way Tapper 694–2700 7.0/1.0 dB	<b>86010150</b>	694 – 2700 MHz	Indoor/Outdoor	500 W	7-16	172
2-way Tapper 694–2700 10.4/0.4 dB	<b>86010151</b>	694 – 2700 MHz	Indoor/Outdoor	500 W	7-16	172
2-way Tapper 694–2700 15.1/0.1 dB	<b>86010152</b>	694 – 2700 MHz	Indoor/Outdoor	500 W	7-16	172

### Continuously adjustable ratio

2-way Tapper 790–960/1710–2170 5.0–15.0dB	<b>K63236001</b>	790 – 960 MHz 1710 – 2170 MHz	Indoor	100 W	N	173
2-way Tapper 870–960/1710–2500 5.0–15.0dB	86010023	870 – 960 MHz 1710 – 2500 MHz	Indoor	100 W	N	173

**New or changed product**

### Antenna Measurement Tools (from Schomandl)

SWR Instrument FAT 2710	174
WLAN Power Meter (VSWR)	175

### Power Meter

WLAN Power Meter (Power)	175
Broadcast RF Power Monitor	176
Safe One Resonal RF Safety Monitor	177



# Low-loss Power Splitters Multi-band

380–3800

**KATHREIN**  
Antennen · Electronic

For indoor and outdoor use.

## 2-way Splitter 380–3800

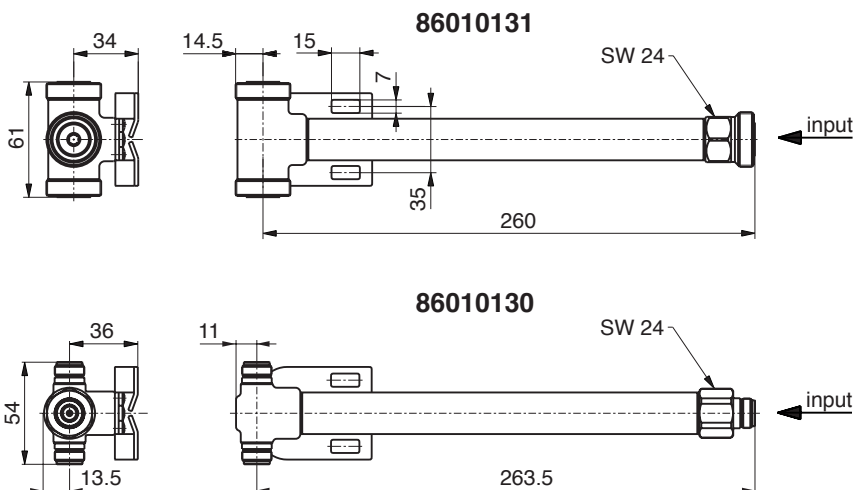
Type No.	86010130	86010131
Connector (female)	N	7-16
Max. power (at 50 °C ambient temperature)	200 W	700 W
For connecting ... antennas	2	
Frequency range	380 – 3800 MHz	
VSWR	< 1.5	
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)	
Impedance	50 Ω	
Insertion loss	< 0.05 dB	
Weight	750 g	870 g
Packing size	300 x 75 x 75 mm	

Material: Brass. Surface treatment: CuSnZn3  
 Mounting: Bracket for wall mounting included in the scope of supply.  
 For pipe mast mounting use clamps listed below (order separately).  
 DC capability: DC transmission between all terminations (suitable for remote power supply systems).  
 Environmental conditions: ETS 300 019-1-4 class 4.1 E  
 – Low temperature: -55 °C  
 – High temperature (dry): +60 °C  
 IP 65



86010131

86010130



## Clamps (order separately)

Type No.	Description	Remarks
736801	1 clamp	Mast: 34 – 60 mm diameter
736802	1 clamp	Mast: 60 – 80 mm diameter
736803	1 clamp	Mast: 80 – 100 mm diameter
736804	1 clamp	Mast: 100 – 120 mm diameter
736805	1 clamp	Mast: 120 – 140 mm diameter



736805

For indoor use.

**2-way Splitter 694–2700**

**3-way Splitter 694–2700**

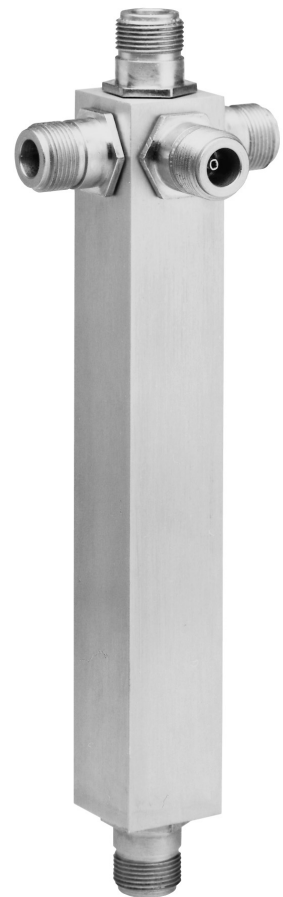
**4-way Splitter 694–2700**


Type No.	86010017	86010018	86010019
Frequency range	694 – 2700 MHz		
For connecting ... antennas	2	3	4
Insertion loss	< 0.05 dB		
Impedance	50 Ω		
VSWR	694 – 894 MHz: 790 – 2500 MHz: 2500 – 2700 MHz:	< 1.5 < 1.25 < 2.0	< 1.5 < 1.25 < 2.0
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power	100 W (at 50 °C ambient temperature)		
Connector	N female		
Weight	approx. 0.6 kg		
Profile cross-section	25 x 25 mm		
Packing size	242 x 110 x 95 mm		
Max. size	204 / 63 / 41 mm		

Material:                   Housing: Aluminum.  
                                  Inner conductor: Brass.

DC capability:            DC transmission between all terminations  
                                  (suitable for remote power supply systems).

Environmental conditions: IP 52



Input   
860 10019

For indoor and outdoor use.

**2-way Splitter 694–3800**

**3-way Splitter 694–3800**

**4-way Splitter 694–3800**

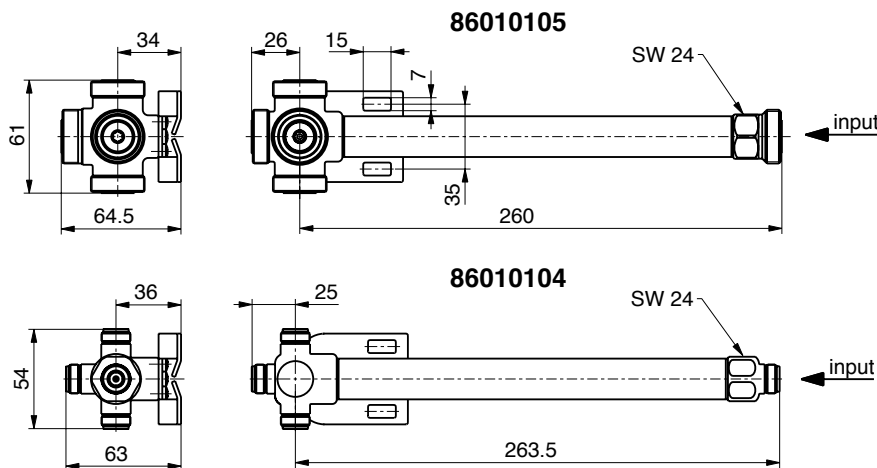
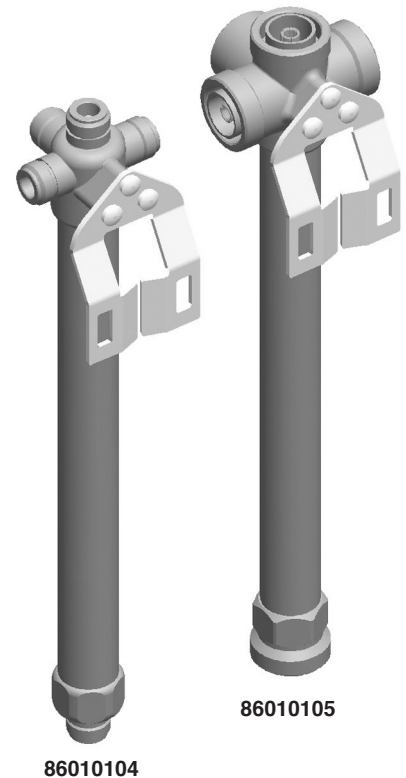
Type No.	86010100	86010101	86010102	86010103	86010104	86010105
Connector (female)	N	7-16	N	7-16	N	7-16
Max. power (at 50 °C ambient temperature)	200 W	700 W	200 W	700 W	200 W	700 W
For connecting ... antennas	2		3		4	
Frequency range	694 – 3800 MHz					
VSWR	694 – 894 MHz: < 1.3 790 – 3800 MHz: < 1.15					
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)					
Impedance	50 Ω					
Insertion loss	< 0.05 dB					
Weight	750 g	870 g	760 g	900 g	775 g	960 g
Packing size	300 x 75 x 75 mm					

**Material:** Brass. Surface treatment: CuSnZn3

**Mounting:** Bracket for wall mounting included in the scope of supply.  
For pipe mast mounting use clamps listed below (order separately).

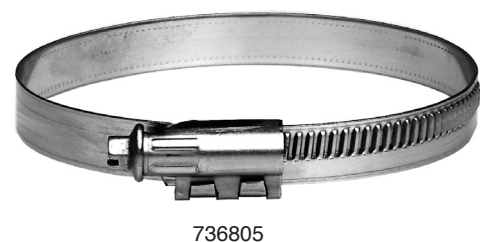
**DC capability:** DC transmission between all terminations (suitable for remote power supply systems).

**Environmental conditions:** ETS 300 019-1-4 class 4.1 E  
– Low temperature: –55 °C  
– High temperature (dry): +60 °C  
IP 65



### Clamps (order separately)

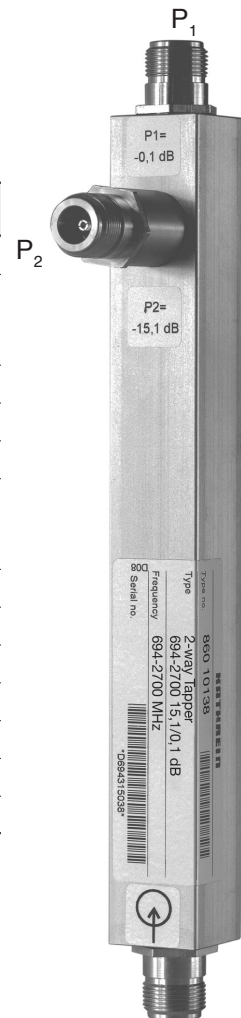
Type No.	Description	Remarks
736801	1 clamp	Mast: 34 – 60 mm diameter
736802	1 clamp	Mast: 60 – 80 mm diameter
736803	1 clamp	Mast: 80 – 100 mm diameter
736804	1 clamp	Mast: 100 – 120 mm diameter
736805	1 clamp	Mast: 120 – 140 mm diameter



For indoor use

2-way Tapper 694–2700 7.0 /1.0dB  
 2-way Tapper 694–2700 10.4/0.4dB  
 2-way Tapper 694–2700 15.1/0.1dB

Type No.	86010136	86010137	86010138
Frequency range	694 – 2700 MHz		
Tap Loss Input ↔ P <sub>1</sub>	– 1.0 dB	– 0.4 dB	– 0.1 dB
Input ↔ P <sub>2</sub>	– 7.0 dB	– 10.4 dB	– 15.1 dB
For connecting ... antennas	2		
Insertion loss	< 0.05 dB		
Impedance	50 Ω		
VSWR	694 – 790 MHz: < 2.0 790 – 2500 MHz: < 1.5 2500 – 2700 MHz: < 2.0		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power	100 W (at 50 °C ambient temperature)		
Connector	N female		
Weight	500 g		
Profile cross-section	25 x 25 mm		
Packing size	267 x 95 x 111 mm		
Max. size	244 / 64 / 25 mm		



Input 860 10138

Material: Housing: Aluminum.  
Inner conductor: Brass.

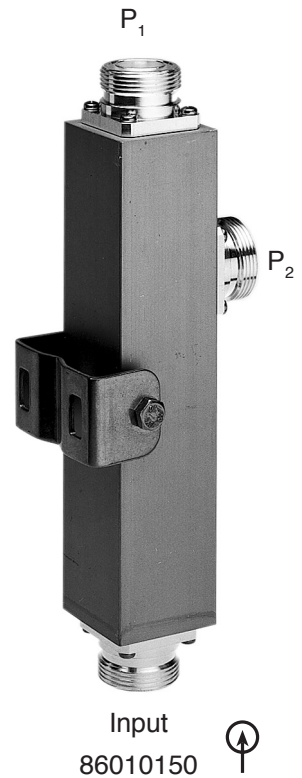
DC capability: DC transmission only between input and port P<sub>1</sub>.  
P<sub>2</sub> is coupled capacitively.

Environmental conditions: IP 52

For indoor and outdoor use.

**2-way Tapper 694–2700 7.0 /1.0dB**  
**2-way Tapper 694–2700 10.4/0.4dB**  
**2-way Tapper 694–2700 15.1/0.1dB**

Type No.	86010150	86010151	86010152
Frequency range	694 – 2700 MHz		
Tap Loss			
Input ↔ P <sub>1</sub>	– 1.0 dB	– 0.4 dB	– 0.1 dB
Input ↔ P <sub>2</sub>	– 7.0 dB	– 10.4 dB	– 15.1 dB
For connecting ... antennas	2		
Insertion loss	< 0.05 dB		
Impedance	50 Ω		
VSWR	694 – 790 MHz: < 2.0 790 – 2500 MHz: < 1.5 2500 – 2700 MHz: < 2.0		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power	500 W (at 50 °C ambient temperature)		
Connector	7-16 female		
Weight	Approx. 1.3 kg		
Packing size	310 x 93 x 112 mm		
Max. size	244 / 90 / 55 mm		



**Material:** Housing: Aluminum.  
Inner conductor: Brass.

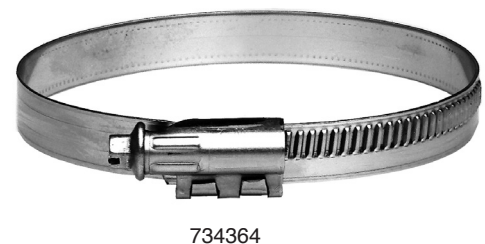
**DC capability:** DC transmission only between input and port P<sub>1</sub>.  
P<sub>2</sub> is coupled capacitively.

**Mounting:** Bracked for wall mounting included in the scope of supply.  
For pipe mast mounting use clamps listed below (order separately).

**Environmental conditions:** IP 65

### Clamps (order separately)

Type No.	Description	Remarks
734360	1 tension band	Mast: 34 – 60 mm diameter
734361	1 tension band	Mast: 60 – 80 mm diameter
734362	1 tension band	Mast: 80 – 100 mm diameter
734363	1 tension band	Mast: 100 – 120 mm diameter
734364	1 tension band	Mast: 120 – 140 mm diameter
734365	1 tension band	Mast: 45 –125 mm diameter



# Multi-band 790–960 / 1710–2170 Low-loss Power Tapper Continuously Adjustable 5.0 – 15.0 dB

**KATHREIN**  
 Antennen · Electronic

For indoor use.

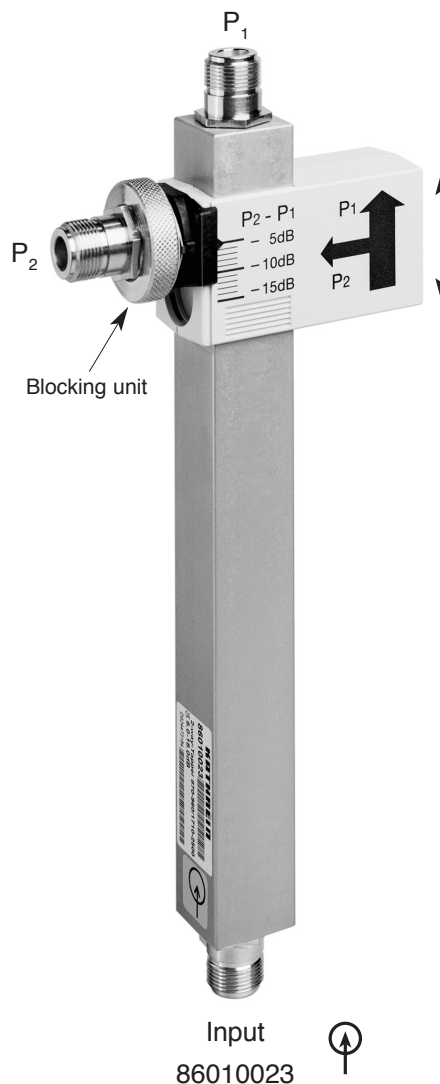
**K63236001: 2-way Tapper 790–960/1710–2170 5.0–15.0dB**  
**86010023: 2-way Tapper 870–960/1710–2500 5.0–15.0dB**

Type No.	K63236001	86010023
Frequency range	790 – 960 MHz and 1710 – 2170 MHz	870 – 960 MHz and 1710 – 2500 MHz
Power ratio between outputs ( $P_2 - P_1$ )	–5.0 dB to –15.0 dB continuously adjustable	
For connecting ... antennas	2	
Insertion loss	< 0.1 dB	
Impedance	50 Ω	
VSWR	790 – 824 MHz: < 2.1 824 – 960 MHz: < 1.7 1710 – 2170 MHz: < 1.7	< 1.7
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power	100 W (at 50 °C ambient temperature)	
Connector	N female	
Weight	0.5 kg	
Profile cross-section	25 x 25 mm	
Packing size	249 x 111 x 40 mm	277 x 111 x 40 mm
Max. size	235 / 100 / 25 mm	263 / 100 / 25 mm

Material: Housing: Aluminum.  
 Inner conductor: Brass.  
 Adjustment mechanism: ASA.

DC capability: DC transmission only between input and port  $P_1$ .  
 $P_2$  is coupled capacitively.

Environmental conditions: IP 52



## Splitting table

$P_2 / P_1$ [dB]	Splitting ratio $P_1 / P_2$	Splitting attenuation	
		$P_{\text{Input}} - P_1$ [dB]	$P_{\text{Input}} - P_2$ [dB]
–5	3.2	–1.2	–6.2
–6	4	–1.0	–7.0
–7	5	–0.8	–7.8
–8	6.3	–0.6	–8.6
–9	8	–0.5	–9.5
–10	10	–0.4	–10.4
–11	12.6	–0.3	–11.3
–12	15.8	–0.3	–12.3
–13	20	–0.2	–13.2
–14	25.1	–0.2	–14.2
–15	31.6	–0.1	–15.1

- LCD Display works in direct sunlight and with backlight in dark areas.
- Built-in synthesized RF sweeping source.
- Measured results can be stored for further analysing and documentation on internal and external storage media
- Time stamp and operator ID is possible
- All in one analysing for antenna tuning and control
- FAT 2710 measures antenna, frequency, SWR and bandwidth by sweeping band of interest
- A cost-effective SWR Analyzer covering all major Cellular and mobile radio communication bands
- FAT 2710 gives you quick and reliable trouble-shooting



## Specifications

Model	FAT 2710 (BN: 86817.001)
Application	Measurement of SWR in 50 $\Omega$ transmission lines
Frequency range	30->2700 MHz entered as centre and span
Center Frequency	30 to 2700 MHz.
Span	0 to 2670 MHz.
Frequency stability	$\pm 50$ ppm
Measurement range	1.0<SWR<9.9, 0<dB<-30dB
Impedance	Nom. 50 $\Omega$
Generator output	Approx. -4dBm
Max. input on test terminal	100 mW
Tolerance on SWR reading	30-650MHz $\pm 5\%$ ; 650-1450MHz $\pm 10\%$ ; and 1450-2700MHz $\pm 15\%$
Operating temperature range	0° C-> + 50° C
Storage temperature range	-30°C -> + 50° C
Connectors	"N"-female RF test connector. USB A type for memory key. USB B type for serial PC communication. Mini DIN for RS232 communication up to 38400 Baud
Power supply	4 NiMH type AA rechargeable batteries (Batteries, NiMH rechargeable and 230VAC/7.5VDC charger supplied)
Auto Power off NOT OK	For battery economy, FAT 2710 automatically turns off 3 min. after last entry
Normal operating use	Fully charged: More than 10 hours.
Colour	Silver/blue
Width	82 mm
Depth	31 mm
Height	165 mm
Weight	500 gram (incl. Batteries)
EMC	Complies with directive 89/336EEC as amended by 92/31EEC and 93/68/EEC
Standards	Emissions: EN 61000-6-4: 2001 Immunity: EN 61000-6-2: 2005
Accessory	Soft carrying bag with RF-adaptor set, car charging cable and two 7/16 connectors
Order Number for Accessory:	BN: 86817.101

Please contact for technical information and orders:

SCHOMANDL-Vertriebs-GmbH  
Bahnhofstraße 108 · D-83224 Grassau/Germany  
Telephone: 08641-403-140 · Telefax: 08641-403-264  
e-mail: info@schomandl.de · Internet: <http://www.schomandl.de>



Display forward, reflected power and VSWR

2 GHz to 6 GHz

Diagnose 802.11a,b and g WLAN

**Accessory:**

Soft carrying bag with SMA 50 Ohm load 6 GHz, RPSMA male BN 86817.104 to SMA female Adaptor, SMA male to RPSMA, SMA male to SMA male Adaptor and special 2,4 GHz SMA Antenna



## Specifications

Model No.:	86817.004
Frequency range:	2 – 6 GHz
Insertion loss:	<0.4dB
Absolute accuracy :	±1dB
Power range indicated:	1µW – 999mW
VSWR indicated:	1.01 – 9.99 : 1
Directivity:	>30dB
Peak Detect of:	<1mS pulse
Auto Power off	1 minute
Power Supply:	3Volt (2 X AAA Alkaline)
Max power consumption:	50 mA
Operating time (no backlight)	20 Hours
Optional Accessories:	SMA to RPSMA adaptors
Belt clip	Option
EMI/RFI	EN55022 /B
Dimensions:	– Width: 58 mm – Depth: 23 mm – Height: 105 mm
Weight incl. Batteries:	approx. 130g
Temperature:	– Operating 0 to 40°C – Storage –20 to 80°C
Colour:	– Standard White/Grey

**Please contact for technical information and orders:**  
 SCHOMANDL-Vertriebs-GmbH  
 Bahnhofstraße 108 · D-83224 Grassau/Germany  
 Telephone: 08641-403-140 · Telefax: 08641-403-264  
 e-mail: info@schomandl.de · Internet: http://www.schomandl.de



# Broadcast RF Power Monitor

## Digital RF Power Meter



**KATHREIN**  
Antennen · Electronic

Also available as 19" Rack mount Version:

1U Rack mount Power Monitor

including all options BN 86818.000

additional power, reflected power, VSWR calculation



Accessory:

UHF Probe 1 or 2 required BN 86818.101

VHF Probe 1 or 2 required BN 86818.102

### Specifications for Broadcast Power Monitor with external coupler

Model No.:	86818.002
Frequency range: (Coupler dependent)	50 – 860 MHz
Coupling Flatness , from 6dB/octave Probes 3015,3016	±0,2dB
Absolute accuracy after offset adjustment:	±0,2dB (±4%)
True RMS Power range:	-34 dBm to +10 dBm
Peak Power range:	+24 dBm
Dynamic range:	> 50 dB
Power readout: Auto range 1KW – 999KW	1024 steps
Coupler attenuation VHF @ 100MHz:	43 dB to 73 dB
Coupler attenuation UHF @ 500MHz:	50 dB to 80 dB
VSWR readout:	1,00:1-9,99:1
Remote Temperature Sensing	0 – 99°C
Remote Voltage Sensing	0-100VDC
Remote Current Sensing	0-3V DC (1024 bits)
Relay Out/Digital Out:	Open Collector 50V/0,5A
Controller out for SNMP or dialup	RS232 1200- 9600 Bps
Power Supply: – AC power:	90-264V @ 50-60Hz
Max power consumption: – AC	10V/A
EMI/RFI	EN55022 /B
Connectors: – RF sensors – Power AC in rear Options: – Analogue/digital – RS232	DB9 Female IEC DB9 Female DB9 Male
Dimensions: – Width: 19" unit – Depth: 1HU	482.5 mm 180 mm 44 mm
Dimensions: – Width: Stand alone unit – Depth: – Height:	216 mm 180 mm 53 mm
Weight:	approx. 1.8 kg
Temperature: – Operating -Storage	5 to 50°C 20 to 80°C
Colour: – standard	Silver Anodised

**Please contact for technical information and orders:**

SCHOMANDL-Vertriebs-GmbH  
Bahnhofstraße 108 · D-83224 Grassau/Germany  
Telephone: 08641-403-140 · Telefax: 08641-403-264  
e-mail: info@schomandl.de · Internet: <http://www.schomandl.de>

- Monitors RF fields
- Indicates RF pollution
- Alarm and Silent modes
- Broadband coverage
- General Safety According to WHO ICNIRP
- Alarm 2W/m<sup>2</sup> or 10W/m<sup>2</sup>



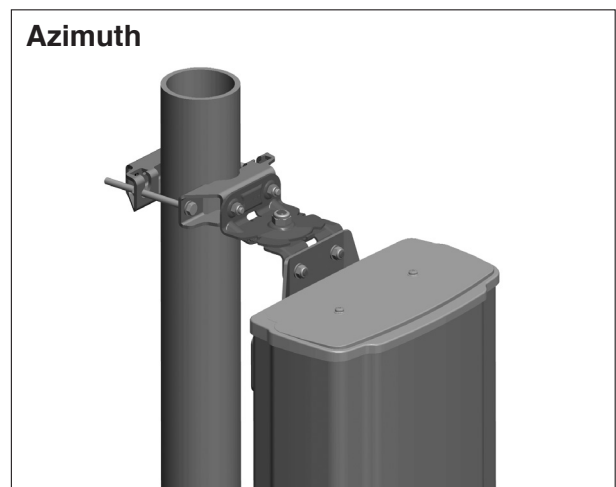
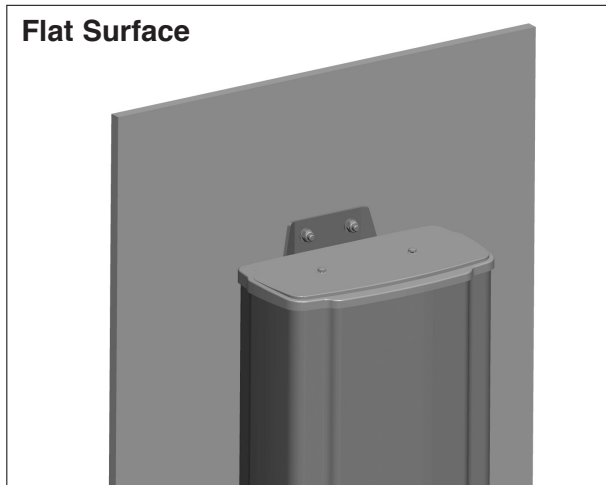
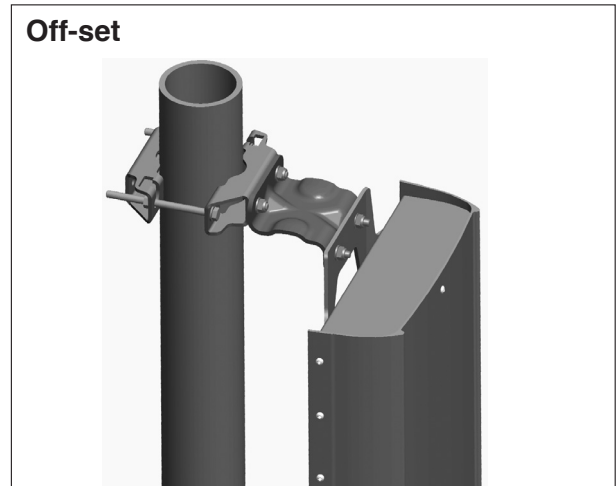
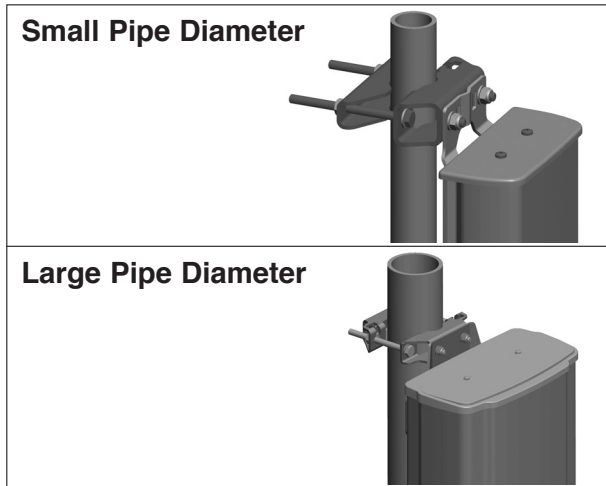
## Specifications for Safe One Personal Safety Monitor

Model No.:	86817.003
Frequency range:	10 – 10000 MHz
Frequency response	ICNIRP
Absolute accuracy 400–2500MHz:	±6dB
Power range indicated:	0.1 – 100 W/m <sup>2</sup>
Field strength indicated:	19 – 137 V/m
Dynamic range:	>30dB
Audio Alarm	80dBa
LED Alarm always enabled	15mcd
Normal Mode Audio and LED Alarm: ( – )	2W/m <sup>2</sup> – 28V/m or 10W/m <sup>2</sup> – 137V/m
Timed Mode Silent in: ( – – )	5 minutes
Audible Alarm Off Mode: ( – – – )	Never
Power Supply:	3Volt (2 X AAA Alkaline)
Max power consumption no alarm:	110µA
Operating time (no Audio Alarm)	+500 Days
Belt clip included	
EMI/RFI	EN55022 /B
Dimensions:	
– Width:	58 mm
– Depth:	23 mm
– Height:	105 mm
Weight incl. Batteries:	approx. 88g
Temperature:	
– Operating	–10 to 40°C
– Storage	–20 to 80°C
Colour:	
– Standard	Black/Grey



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The hereinafter referred to “wind load category L - M - H” correspond to the defined “category of mounting hardware” given in the respective data sheets.



# Panels XPol 800/900

## 30° Half-power Beam Width

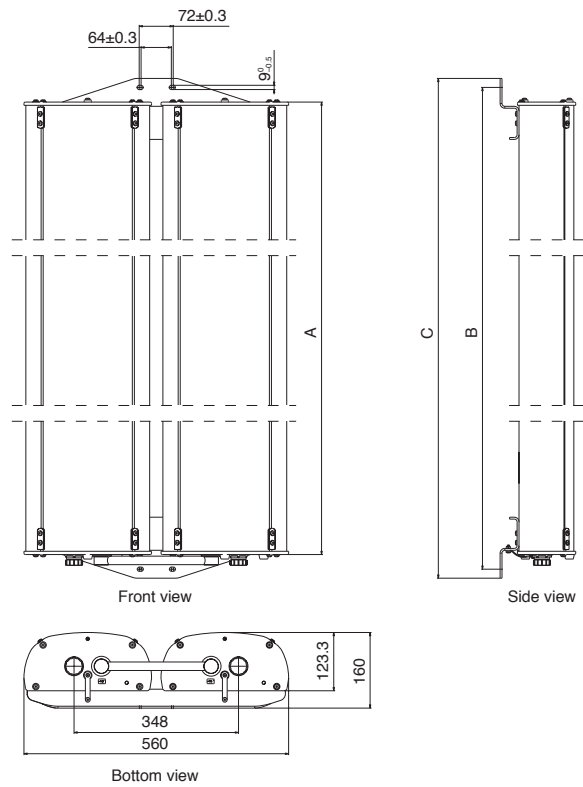
### Antenna Dimensions

#### XPol Panels 800/900 with 30° Half-power Beam Width

width 560 mm

A	1296 mm
B	1358 mm
C	1396 mm

A Corresponds with the antenna height mentioned in the technical data.

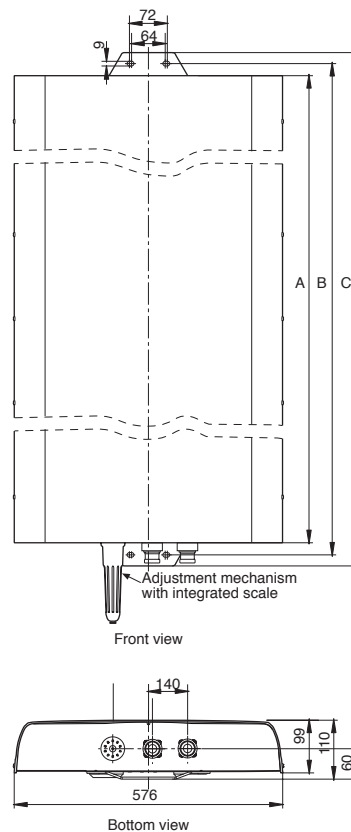


#### XPol Panels 800/900 with 30° Half-power Beam Width

width 576 mm

A	2254 mm
B	2284 mm
C	2326 mm

A Corresponds with the antenna height mentioned in the technical data.



# Panels VPol / XPol / XXPol 800/900

## 60°/65°/88°/90° Half-power Beam Width

### Antenna Dimensions

#### VPol Panel 800/900

width 258 mm

A	264 mm	1294 mm	1934 mm	2574 mm
B	—	1350 mm	1990 mm	2630 mm
C	—	1390 mm	2030 mm	2670 mm

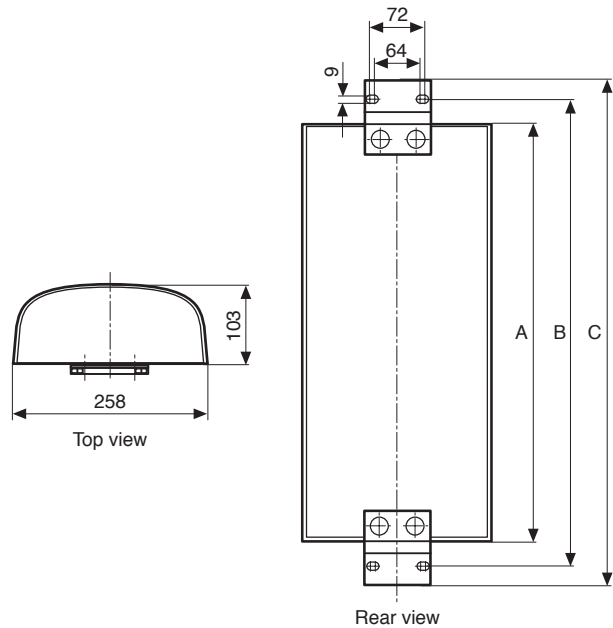
A Corresponds with the antenna height mentioned in the technical data.

#### XPol Panel 800/900

width 258 mm

A	1294 mm	1934 mm	2254 mm	2574 mm
B	1340 mm	1980 mm	2300 mm	2604 mm
C	1382 mm	2022 mm	2342 mm	2674 mm

A Corresponds with the antenna height mentioned in the technical data.

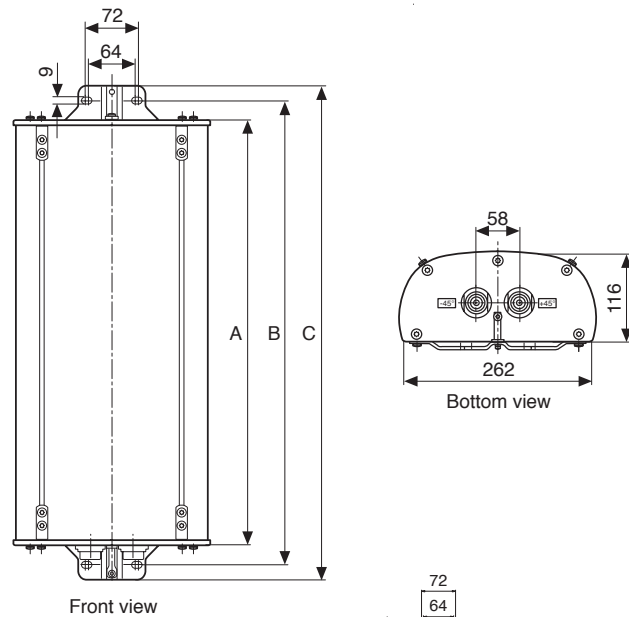


#### XPol Panel 800/900 XXPol Panel 900/1800 with 65° and 90° Half-power Beam Width

width 262 mm

A	256 mm	656 mm	1936 mm
B	310 mm	710 mm	1990 mm
C	350 mm	750 mm	2030 mm

A Corresponds with the antenna height mentioned in the technical data.

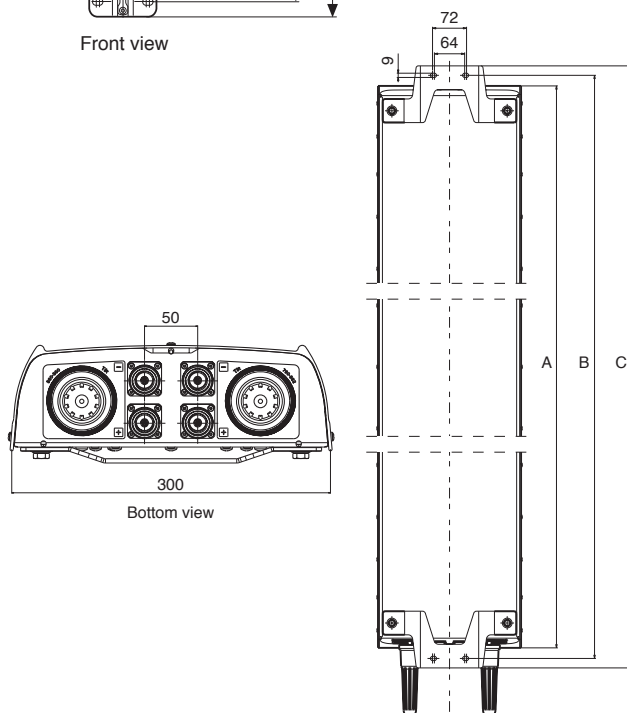


#### XXPol Panel 800/900 with 60°, 65° and 88° Half-power Beam Width

width 374 mm

A	2024 mm	2631 mm
B	1490 mm	2020 mm
C	221 mm	301 mm
D	617 mm	921 mm

A Corresponds with the antenna height mentioned in the technical data.

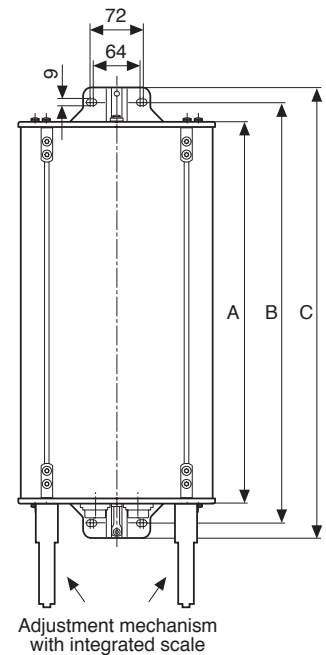
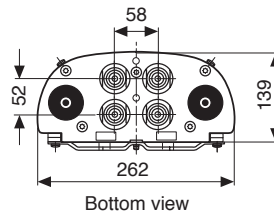


# Panels Dual-band / Triple-band Antenna Dimensions

## Dual-band XXPoI 800/900 / 1800/2000 with 65° Half-power Beam Width

A	270 mm	579 mm	770 mm	1316 mm	1916 mm	2038 mm	2516 mm	2580 mm
B	322 mm	630 mm	824 mm	1367 mm	1967 mm	2089 mm	2567 mm	2634 mm
C	362 mm	670 mm	864 mm	1407 mm	2007 mm	2129 mm	2607 mm	2674 mm

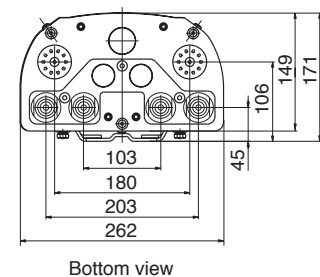
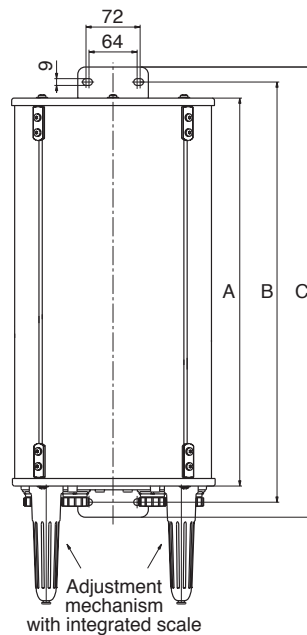
A Corresponds with the antenna height mentioned in the technical data.



## Dual-band XXPoI Panel 800/900 / 1800/2000 with 90° Half-power Beam Width

A	1384 mm	1917 mm	2635 mm
B	1427 mm	1960 mm	2677 mm
C	1467 mm	2000 mm	2717 mm

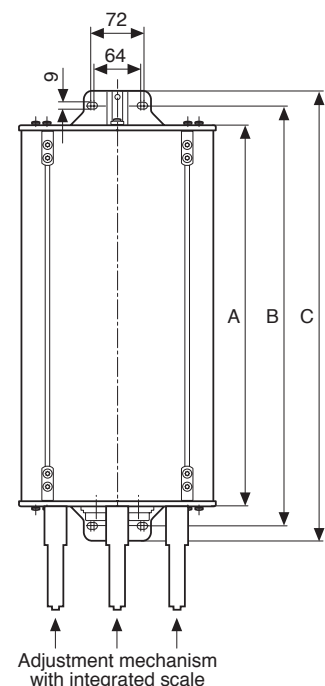
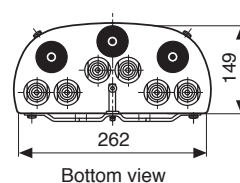
A Corresponds with the antenna height mentioned in the technical data.



## Triple-band XXXPoI Panel 800/900 – 1800 – 2000 with 65° Half-power Beam Width

A	1498 mm	1540 mm	1932 mm	1997 mm	2058 mm	2593 mm	2628 mm	2694 mm
B	1541 mm	1583 mm	1967 mm	2027 mm	2101 mm	2627 mm	2671 mm	2737 mm
C	1581 mm	1623 mm	2005 mm	2067 mm	2141 mm	2667 mm	2711 mm	2777 mm

A Corresponds with the antenna height mentioned in the technical data.





# Panels 1800 – 2700 MHz with 33° / 45° / 65° / 88° Half-power Beam Width Antenna Dimensions

## Dimensions [mm]

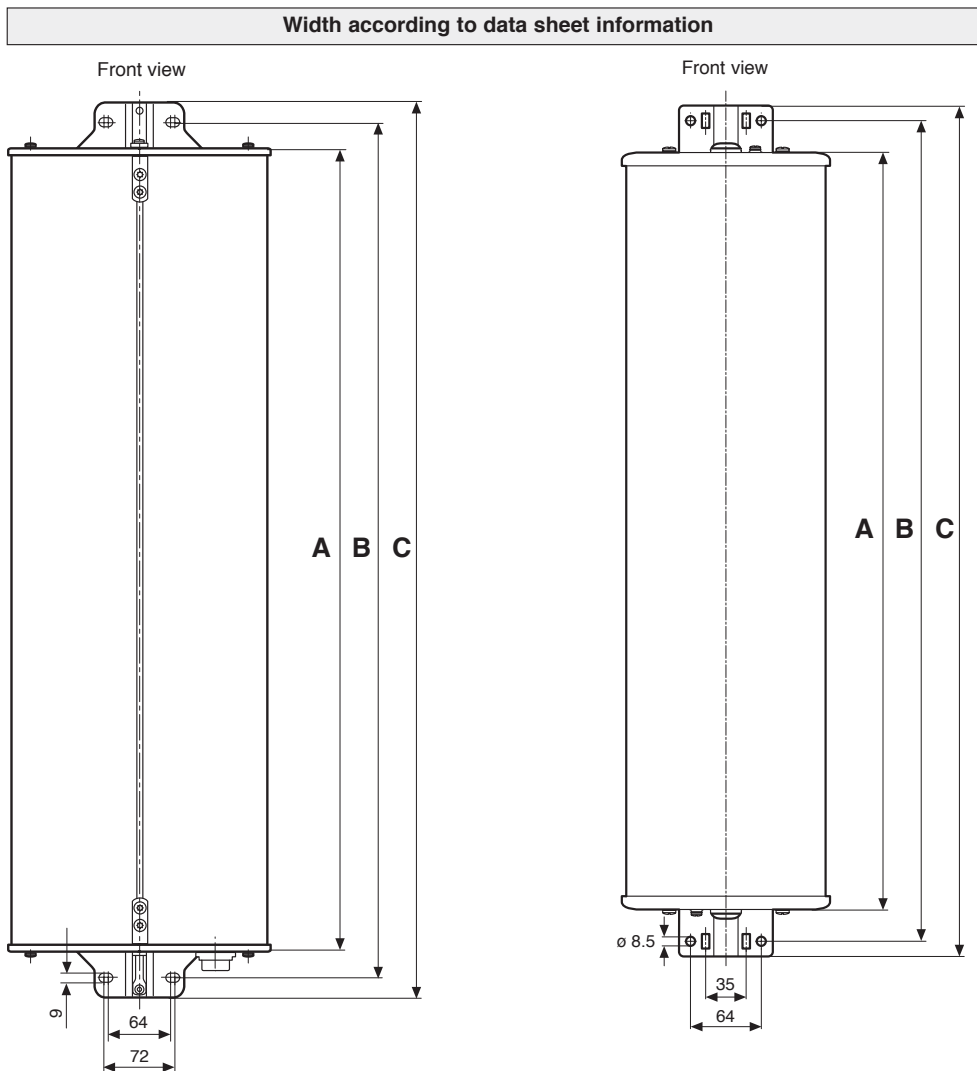
('A' corresponds to the antenna height given on the data sheet)

### 33° – 45° Half-power Beam Width

A	B	C
1032	1109	1149
1304	1381	1421
1306	1412	1442
1942	1996	2036
1946	2052	2082

### 65° – 88° Half-power Beam Width

A	B	C
155	209	239
342	396	426
662	716	746
735	789	819
851	896	926
1142	1186	1216
1302	1356	1386
1314	1356	1386
1387	1429	1459
1400	1454	1484
1407	1449	1480
1902	1956	1986
1942	1996	2026
1954	1996	2026
1984	2038	2068
2160	2214	2244
2172	2246	2276
2548	2605	2635

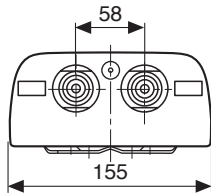


# Panels 1800 – 2700 MHz

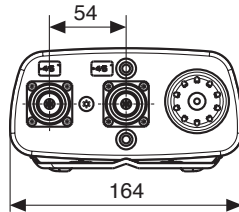
## Detailed Connector Position

### Antenna Dimensions

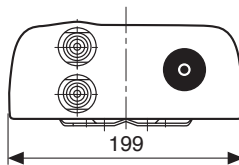
#### +45°/-45° Polarization



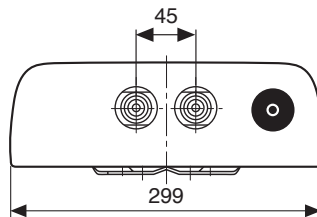
90° Half-power Beam Width



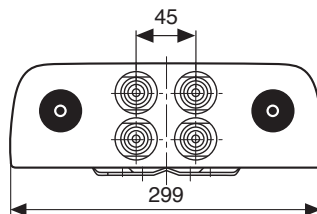
65° and 90° Half-power Beam Width  
adjustable electrical downtilt



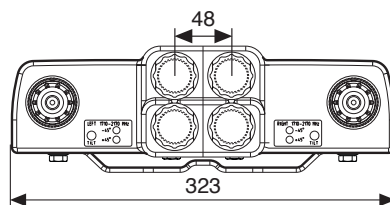
45° Half-power Beam Width  
Multi-band  
adjustable electrical downtilt



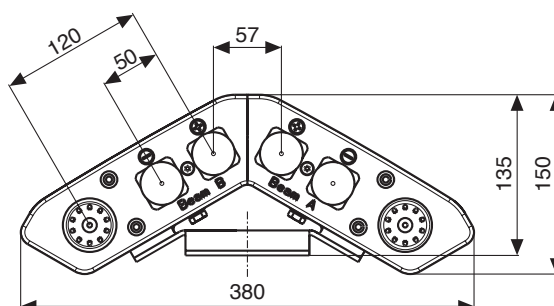
30° Half-power Beam Width  
Multi-band  
adjustable electrical downtilt



65° Half-power Beam Width  
2-Multi-band  
adjustable electrical downtilt

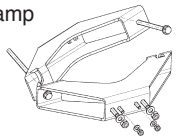



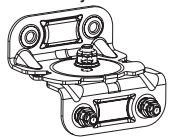

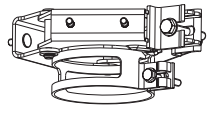
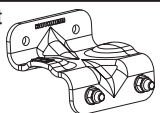
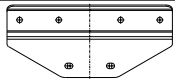
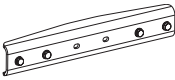



65° Half-power Beam Width  
2-Multi-band  
adjustable electrical downtilt



65° Half-power Beam Width  
Dual-Beam  
adjustable electrical downtilt

# Modified Product Line of Mounting Parts

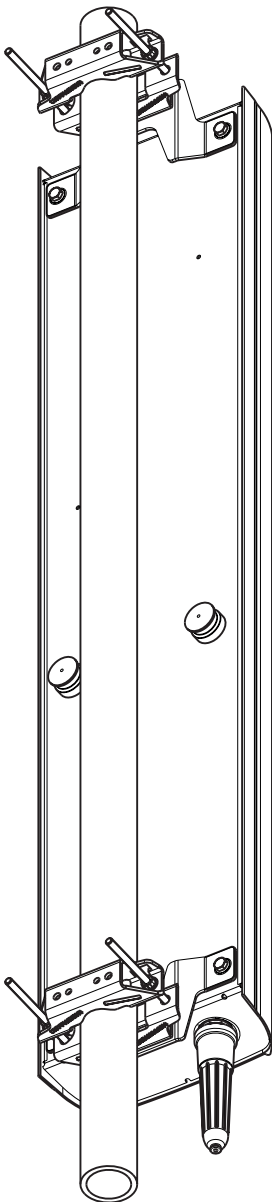
Type	Windload Classification	Pole Diameter in mm	Type No.	Remark	
	light / medium	∅ 28 – 64	731651	<b>Modified product</b>	
	light / medium / heavy	∅ 28 – 115	738546		
	light / medium / heavy	∅ 110 – 220	85010002		
		∅ 210 – 380	85010003		
	light		732317	<b>Modified product</b> Available: 2nd half 2011	
			732318		
			732321		
			732322		
			732327		
	light / medium		737971	<b>Modified product</b> Available: 2nd half 2011	
			737972		
			737973		
			737974		
			737975		
			737977		
			737978		
	heavy	<b>New product</b>	85010008	Replacement for 85010007 Available: 2nd half 2011	
	light / medium		85010014	Pole mounting adjustment angle ±30° (additional clamp needed)	
	heavy		85010015		
	light / medium		85010016	Wall mounting adjustment angle ±30°	
	heavy		85010017		
	light / medium	∅ 88.9	742263		
		∅ 88.9	742317		<b>New product</b>
		∅ 114.3	742033		
	heavy	∅ 139.7	742034		
		∅ 114.3	85010058		<b>New product</b>
		∅ 139.7	85010059		<b>New product</b>
	light / medium	<b>New product</b>	85010060	Clearance between pole and antenna (additional clamp needed)	
	heavy	<b>New product</b>	85010061		
2x Panel Mounting Kit	light / medium		742113	Additional clamp needed	
	heavy		85010006		
	light	∅ 34 – 60	734360	Please note: Only usable without downtilt kit	
		∅ 60 – 80	734361		
		∅ 80 – 100	734362		
		∅ 100 – 120	734363		
		∅ 120 – 140	734364		
		∅ 45 – 125	734365		

# Mounting Hardware

## Amount of needed clamps

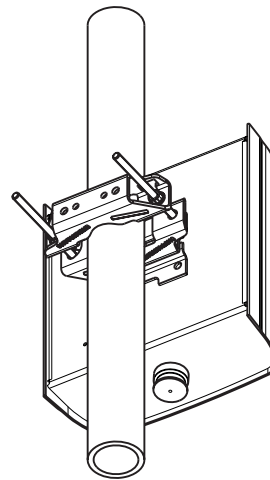
**VPol 800/900**  
All other Panels

**2 pcs**



**VPol 800/900**  
Antenna height: 264 mm

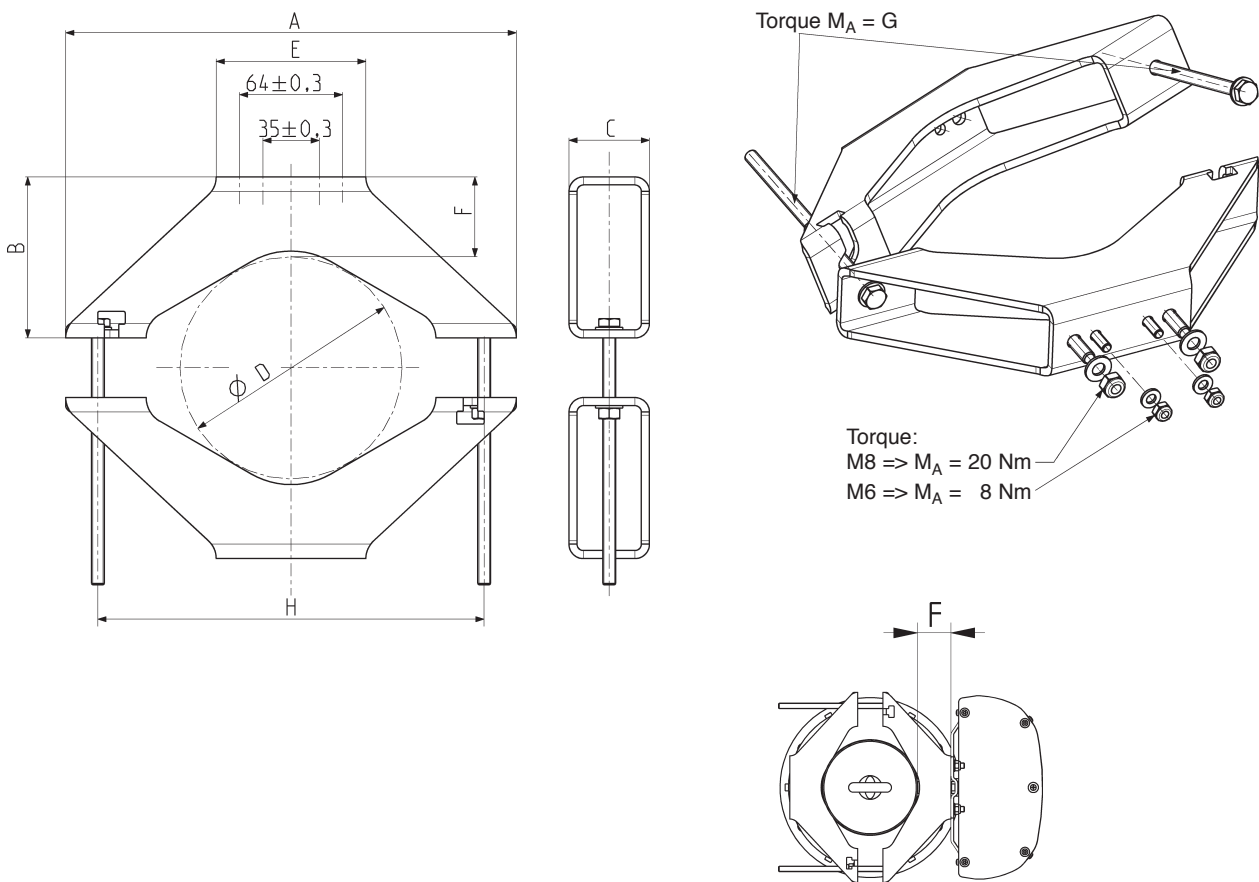
**1 pc**



# Panel Accessories Mounting Hardware Clamps

## Clamps

Type No.	731651	738546	85010002	85010003
Suitable for mast diameter	28 – 60 mm	42 – 115 mm	110 – 220 mm	210 – 380 mm
Antenna – mast distance F	40 – 44 mm	37 – 44 mm	47 – 56 mm	48 – 69 mm
Number of pieces	1 clamp	1 clamp	1 clamp	1 clamp
Material – Clamp	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel
– Screws	Hot-dip galvanized steel/ Stainless steel	Hot-dip galvanized steel/ Stainless steel	Hot-dip galvanized steel/ Stainless steel	Stainless steel
– Nuts	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Weight	0.8 kg	1.1 kg	2.7 kg	4.8 kg



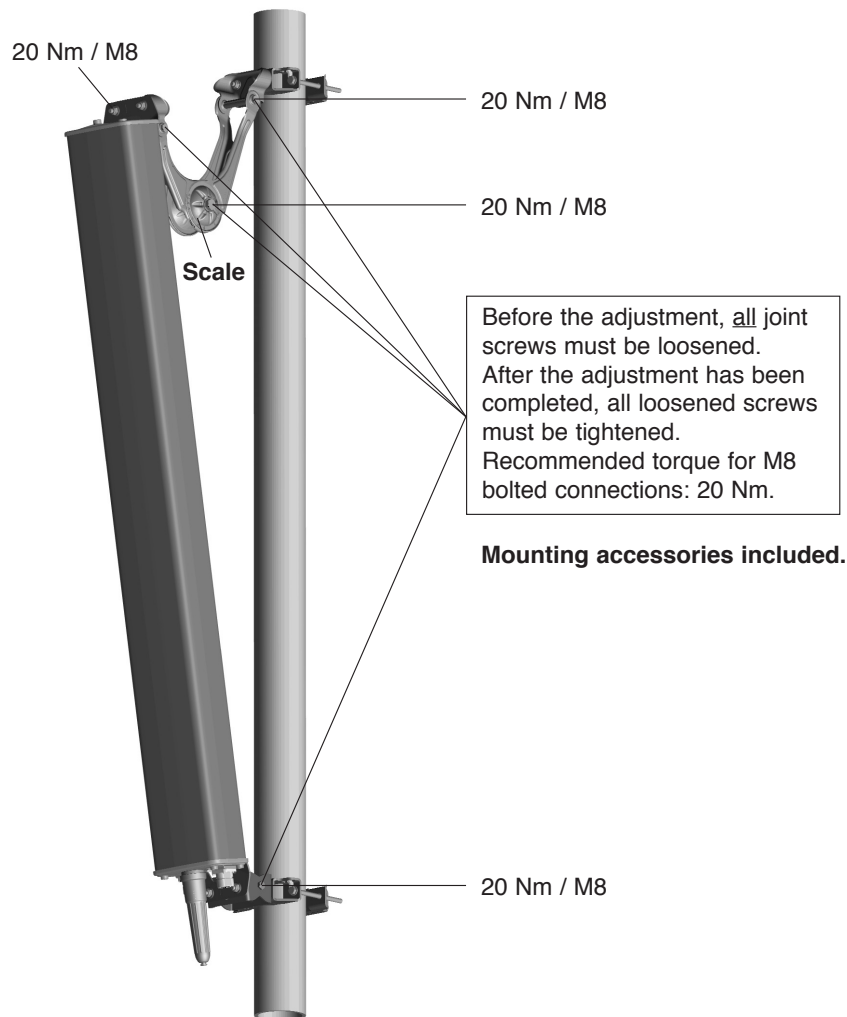
Type No.	A	B	C	D	E	F	G	H
731651	116 mm	40 mm	40 mm	28– 60 mm	93 mm	40–44 mm	20 Nm	84 mm
738546	152 mm	40 mm	40 mm	42–115 mm	93 mm	37–44 mm	25 Nm	125 mm
85010002	280 mm	100 mm	50 mm	110–220 mm	93 mm	47–56 mm	35 Nm	240 mm
85010003	442 mm	150 mm	50 mm	210–380 mm	150 mm	48–69 mm	35 Nm	392 mm

**Please note: Kathrein does not recommend to use counter nuts.  
The additional nuts supplied are only meant as spares.**

# Standard Downtilt kit for Panel Antennas (Wind load Category "L")

Modified product –  
Available:  
2nd half 2011

Antenna height: 502 mm  
662 mm  
982 mm  
1302 mm



For heights not mentioned in this table please use downtilt kit 732327.

Downtilt angle		Downtilt kit with scale	Downtilt kit without scale*		
Antenna height	Downtilt angle	Type No.	Type No.	Weight	Material
502 mm	0° – 25°	732322	732327	Approx. 1.3 kg	All parts: Hot-dip galvanized steel Nuts / washers: Stainless steel
662 mm	0° – 19°	732321			
982 mm	0° – 13°	732318			
1302 mm	0° – 10°	732317			

\* Instructions to adjust the required downtilt angle are given in the datasheet or on the reverse side of the antenna.

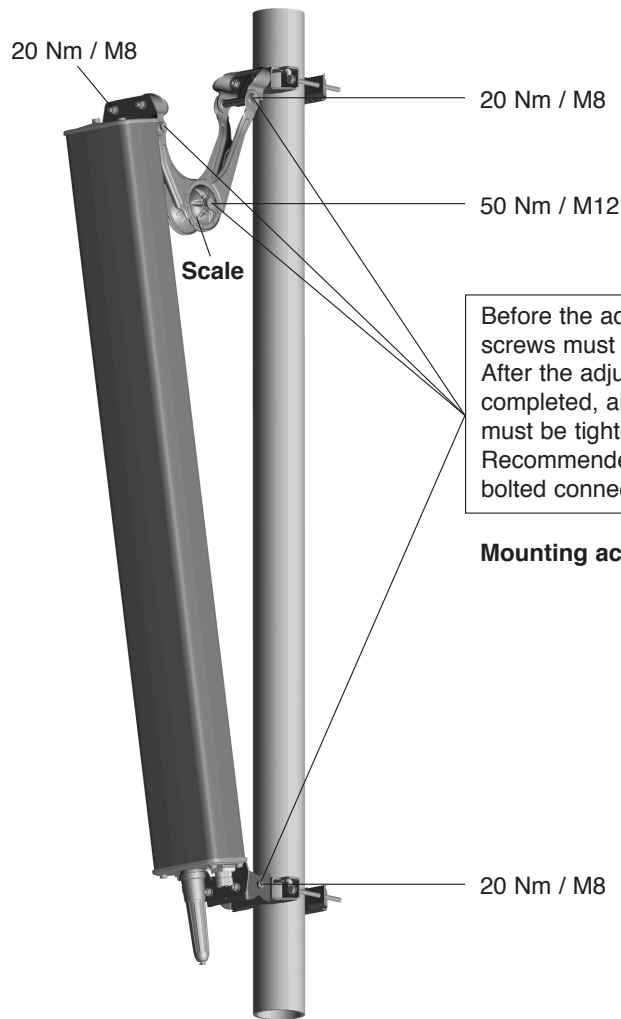
Mounting a downtilt kit enlarges the spacing between mast and antenna by 42 mm.

# Standard Downtilt kit for Panel Antennas Wind load Category “L” and “M”

**KATHREIN**  
Antennen · Electronic

Modified product –  
Available:  
2nd half 2011

Antenna height: 654 – 735 mm  
974 – 1032 mm  
1294 – 1306 mm  
1934 – 1946 mm  
2254 / 2256 mm  
2574 – 2582 mm



Before the adjustment, all joint screws must be loosened. After the adjustment has been completed, all loosened screws must be tightened. Recommended torque for M8 bolted connections: 20 Nm.

**Mounting accessories included.**

For heights not mentioned in this table please use downtilt kit 737978.

Downtilt angle		Downtilt kit with scale	Downtilt kit without scale*	Weight	Material
Antenna height	Downtilt angle	Type No.	Type No.		
654 – 735 mm	0° – 30°	737972	737978	Approx. 2.3 kg	All parts: Hot-dip galvanized steel Nuts / washers: Stainless steel
974 – 1032 mm	0° – 21°	737973			
1294 – 1306 mm	0° – 16°	737974			
1934 – 1946 mm	0° – 11°	737975			
2254 / 2256 mm	0° – 9°	737977			
2574 – 2582 mm	0° – 8°	737971			

\* Instructions to adjust the required downtilt angle are given in the datasheet or on the rearside of the antenna.

Mounting a downtilt kit enlarges the spacing between mast and antenna by 84 mm.

Use the downtilt kit together with the clamps Type No. 731651, 738546, 85010002, 85010003, 85010014 for pole mounting and 85010016 for wall mounting.

# Standard Downtilt kit for Panel Antennas (Wind load Category “H”)

New product –  
Available:  
2nd half 2011

## Special downtilt kit for Panel antennas with a higher wind load.

### Downtilt kit

Type No.	<b>85010008</b>
Preferred range of use	– Panel antennas with a higher wind load – Panel antennas with attached mounting plates – <b>Downtilt kit without scale for universal use</b>
Weight	6.5 kg
Material	Hot-dip galvanized steel
Screws	Hot-dip galvanized steel / stainless steel
All nuts	Stainless steel

### Recommended mast clamps:

Type No.	Description	Mast diameter	Weight approx.	Units per antenna
738546	1 clamp	42 – 115 mm	1.1 kg	2
85010002	1 clamp	110 – 220 mm	2.9 kg	2
85010003	1 clamp	210 – 380 mm	4.8 kg	2

### Recommended torque for all bolted connections:

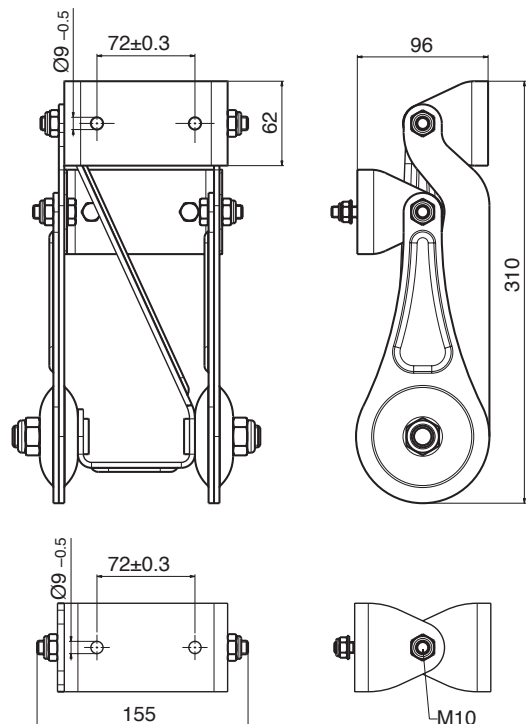
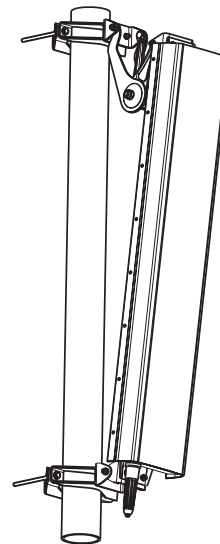
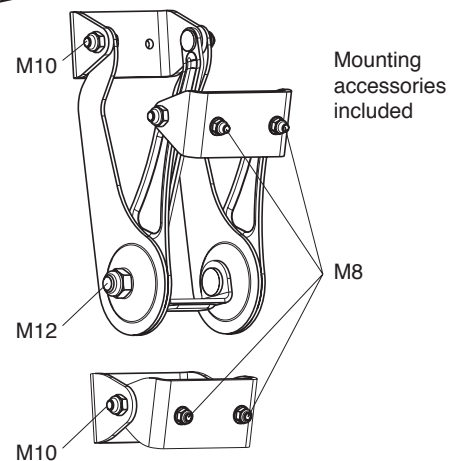
Screw size	Torque
M8	20 Nm
M10	50 Nm
M12	90 Nm

### Maximum acceptable load:

Frontal wind load	< 5000 N
Lateral wind load	< 1300 N

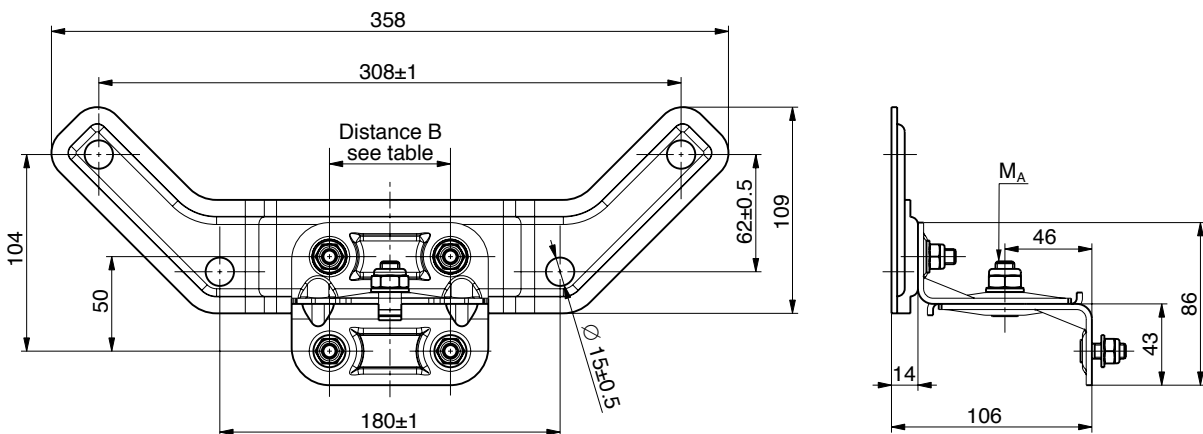
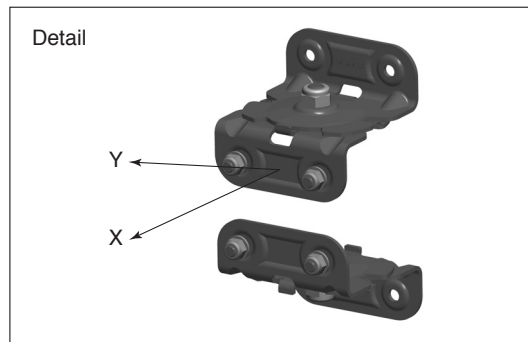
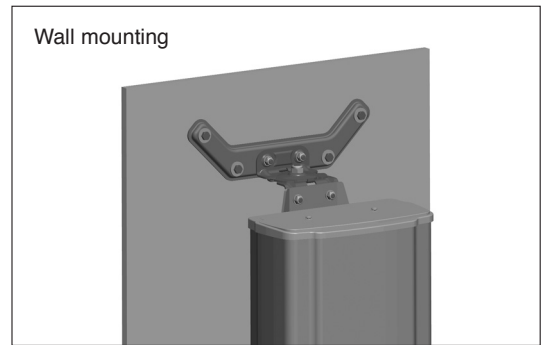
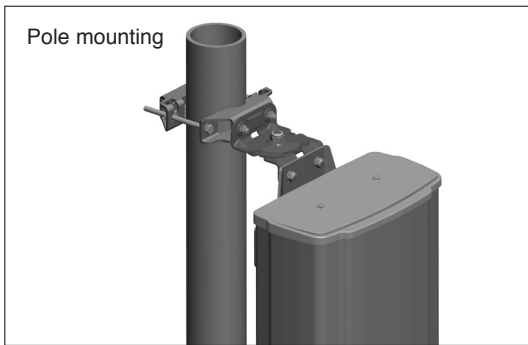
### Downtilt angle

Antenna height	Downtilt angle
1498 mm	0° – 13°
2058 mm	0° – 10°
2516 mm	0° – 8°
2628 mm	0° – 8°





# All Panels Mounting Hardware Azimuth Adjustment Kits



The azimuth adjustment kit for pole mounting can be mounted with all suitable clamps, 3-Sector clamps and 2x A-/C-/F-Panel mounting kits (with the latter only as an interface between mounting kit and antenna).

Type No.	85010014	85010015	85010016	85010017
Suitable for	pole mounting		wall mounting	
Number of pieces	2 brackets	2 brackets	2 brackets	2 brackets
Distance between screws [B]	64 mm	72 mm	64 mm	72 mm
Angular range	± 30°		± 30°	
Weight / kit	approx. 1260 g	approx. 1260 g	approx. 2500 g	approx. 2500 g
Supplied mounting accessories	all screws		Screws and dowels for wall fastening are not supplied, they must be chosen by installer according to on-site requirements.	
	Adapter for downtilt kit 732 3xx serie		Adapter for downtilt kit 732 3xx serie	
Materials	Parts are hot-dip galvanized steel; Captive nuts are stainless steel			
Max. permissible static load / kit				
– X direction	2150 N	5100 N	2150 N	5100 N
– Y direction	760 N	1350 N	760 N	1350 N

**Recommended torque: Screws M6: 8 Nm; Screws M8: 20 Nm; MoS<sub>2</sub> greased.  
Minimum torque M<sub>A</sub>: 30 Nm; MoS<sub>2</sub> greased**

# 3 Sector Panel Arrangement

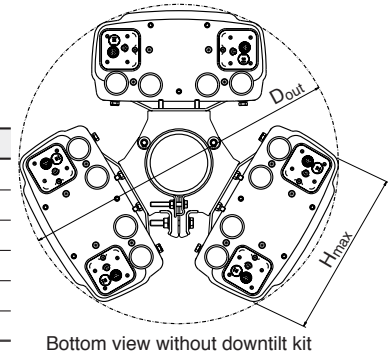
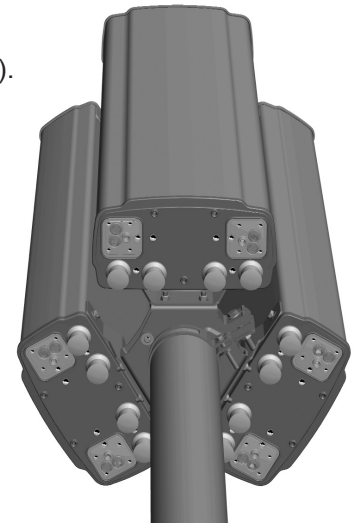
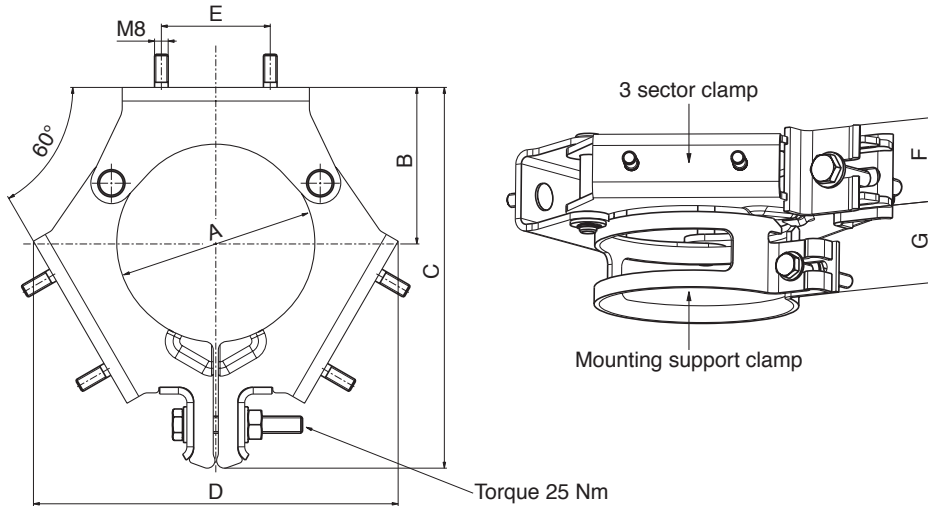
## 3 Sector Clamp Kit

### Mounting Hardware

- Slim and unobstrusive design.
- Nearly cylindrical optical appearance with small outer diameter.
- Suitable for all Panels with an antenna housing width less than 400 mm ( $H_{max}$ ).

**Please note:**

Panels with connector position “Rearside, pointing downwards” fit only with downtilt kit or offset mounted in-between.



Type No.	A	B	C	D	E	F	G	$H_{max}$	Weight
742263	88.9	65	180	168	64	50	45	280	4 kg
742317	88.9	88	213	199	64	50	45	361	4 kg
742033	114.3	88	217	207	64	49	45	375	4 kg
742034	139.7	100	236	228	64	49	45	400	4 kg
85010058	114.3	88	217	207	72	50	45	375	4 kg
85010059	139.7	100	236	228	72	50	45	400	4 kg

All dimensions in mm.

$D_{out}$  is determined by mounted components.

### 3 Sector Clamp Kit (Antenna Wind load Category “L” and “M”)

Type No.	742263	742317	742033	742034
Angle between antennas	120°	120°	120°	120°
Suitable for mast diameter	88.9 mm	88.9 mm	114.3 mm	139.7 mm
Number of pieces	2 x 3 sector clamp 2 x mounting support clamp	2 x 3 sector clamp 2 x mounting support clamp	2 x 3 sector clamp 2 x mounting support clamp	2 x 3 sector clamp 2 x mounting support clamp
Material				
– 3 sector clamp	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel
– Mounting support clamp	Aluminum	Aluminum	Aluminum	Aluminum
– Screws	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel
– Nuts	Stainless steel	Stainless steel	Stainless steel	Stainless steel

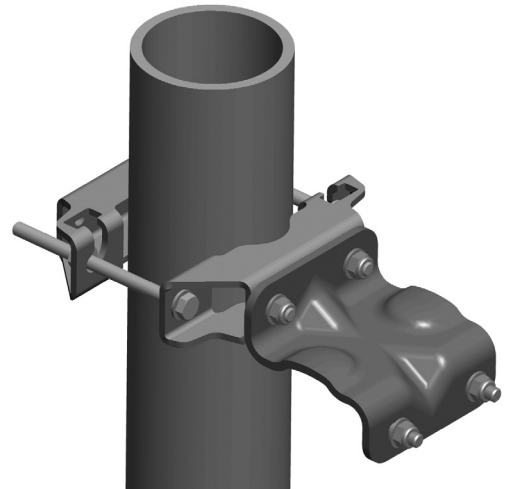
### 3 Sector Clamp Kit (Antenna Wind load Category “H”)

Type No.	85010058	85010059
Angle between antennas	120°	120°
Suitable for mast diameter	114.3 mm	139.7 mm
Number of pieces	2 x 3 sector clamp 2 x mounting support clamp	2 x 3 sector clamp 2 x mounting support clamp
Material		
– 3 sector clamp	Hot-dip galvanized steel	Hot-dip galvanized steel
– Mounting support clamp	Aluminum	Aluminum
– Screws	Hot-dip galvanized steel	Hot-dip galvanized steel
– Nuts	Stainless steel	Stainless steel

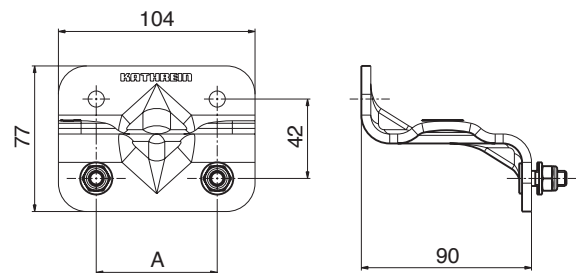
# Mounting Hardware Offset for Panel Antennas

Type No.	85010060	85010061
Wind load category	"L" and "M"	"H"
No. of pieces	2x spacer	
Material: – spacer – nuts	Hot-dip galvanized steel Stainless steel	
Dimension "A"	64 mm	72 mm
Weight	1.3 kg	
Fitting accessories	Supplied	

Recommended torque for M8 bolted connections: 20 Nm



Please use the offset in combination with clamps corresponding to the pole diameter.



Mounting accessories (order separately)

Possible clamps in combination with:

## 85010060

Type No.	Description	Mast diameter	Weight approx.	Units per antenna
731651	1 clamp	28 – 64 mm	0.8 kg	2
738546	1 clamp	42 – 115 mm	1.1 kg	2
85010002	1 clamp	110 – 220 mm	2.9 kg	2
85010003	1 clamp	210 – 380 mm	4.8 kg	2

## 85010061

Type No.	Description	Mast diameter	Weight approx.	Units per antenna
738546	1 clamp	42 – 115 mm	1.1 kg	2
85010002	1 clamp	110 – 220 mm	2.9 kg	2
85010003	1 clamp	210 – 380 mm	4.8 kg	2

If a downtilt kit is used, please choose the fitting one from the antenna data sheet.

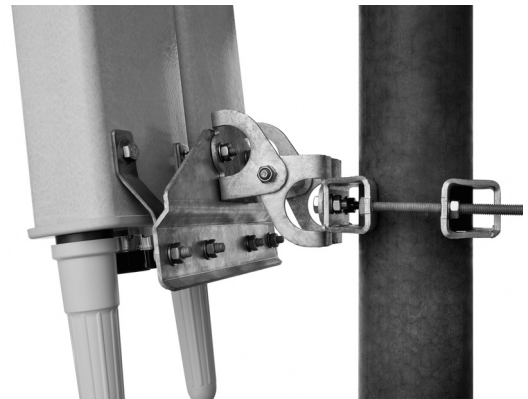
# Panel Accessories

## 2 x Panel Mounting Kit for Panels width 112 mm and 155 mm

Use this mounting kit only for Panels with a maximum width of 160 mm.

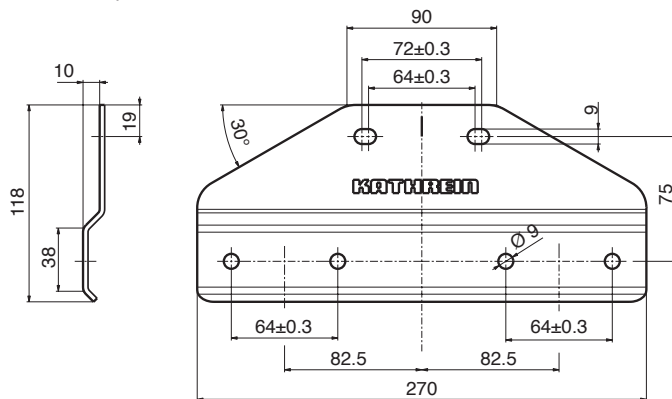
Wind load category: L (Light) or M (Medium)

2 x Panel Mounting Kit

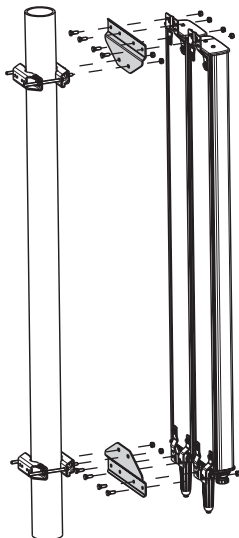


Type No.	<b>742113</b>
Contents	2 x brackets and mounting accessories
Material: – Clamp and screws – Nuts and washers	Hot-dip galvanized steel Stainless steel
Weight	Approx. 1.6 kg

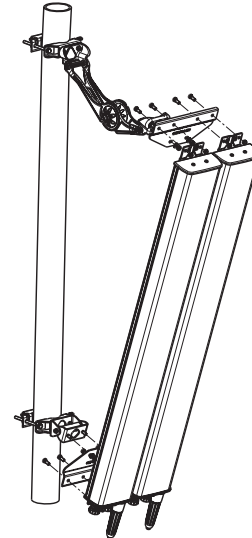
Recommended torque for M8 bolted connections: 20 Nm



Configuration without mechanical downtilt



Configuration with mechanical downtilt



Use the 2 x Panel Mounting Kit together with the following mounting accessories

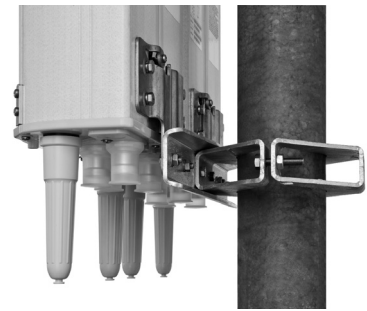
Type No.	Description	Remarks	Weight approx.	Units per antenna
731651	1 clamp	Mast: 28 – 60 mm diameter	0.8 kg	2
738546	1 clamp	Mast: 42 – 115 mm diameter	1.1 kg	2
85010002	1 clamp	Mast: 110 – 220 mm diameter	2.7 kg	2
85010003	1 clamp	Mast: 210 – 380 mm diameter	4.8 kg	2
85010060	1 offset	in combination with the clamps	1.3 kg	2
737978	1 downtilt kit	Downtilt angle: depending on antenna height	2.3 kg	1

For a three sector panel arrangement, use the mounting kit type no. 742113 together with the three sector clamp 742213, 742033 or 742034. Three sector clamp 742263 does not match.

If a downtilt kit is used, please choose the fitting one from the antenna datasheet.

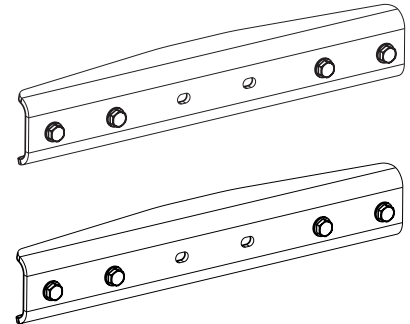
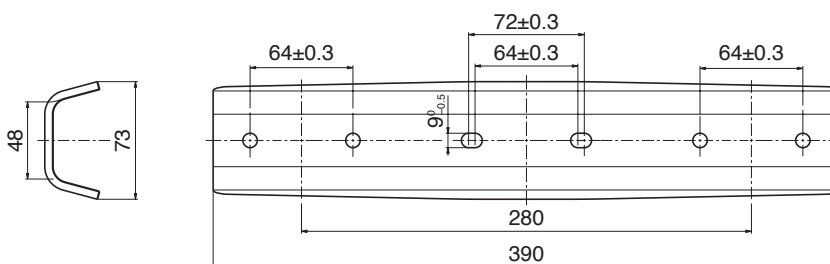
# Panels VPol / XPol 800/900 Panels XXPoI 800/900 / 1800/2000 2 x Panel Mounting Kit

Use this mounting kit only for Panels with a maximum width of 262 mm.  
Wind load category: H (Heavy)



Type No.	<b>85010006</b>
Contents	2 x brackets and mounting accessories
Material: – Clamp and screws – Nuts and washers	Hot-dip galvanized steel Stainless steel
Weight	Approx. 3.3 kg

Recommended torque for M8 bolted connections: 20 Nm



Configuration <u>without</u> mechanical downtilt	Configuration <u>with</u> mechanical downtilt

**Mounting Accessories** (order separately)

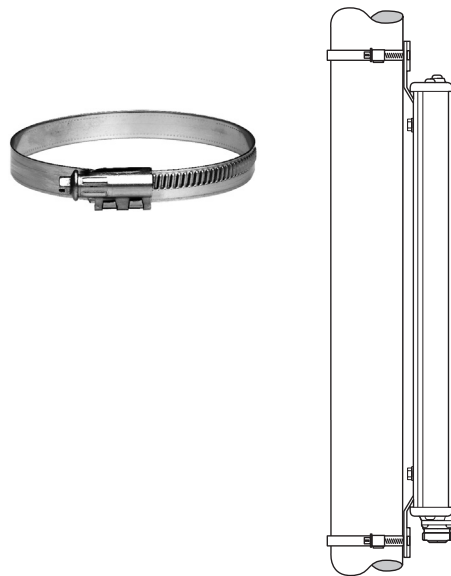
**Clamps** (only the listed clamps are allowed!)

Type No.	Description	Remarks	Weight approx.	Units per antenna
85010002	1 clamp	Mast: 110 – 220 mm diameter	2.7 kg	2
85010003	1 clamp	Mast: 210 – 380 mm diameter	4.8 kg	2
85010061	1 offset	in combination with the clamps	1.3 kg	2

If a downtilt kit is used, please choose the fitting one from the antenna datasheet.

# Mounting Hardware Tension Band for Panel Antennas (Wind load Category “L”)

Type No.	734360	734361	734362	734363	734364	734365
Suitable for mast diameter	34 – 60 mm	60 – 80 mm	80 – 100 mm	100 – 120 mm	120 – 140 mm	45 – 125 mm
Material	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Weight (approx.)	0.06 kg	0.07 kg	0.08 kg	0.09 kg	0.11 kg	0.08 kg

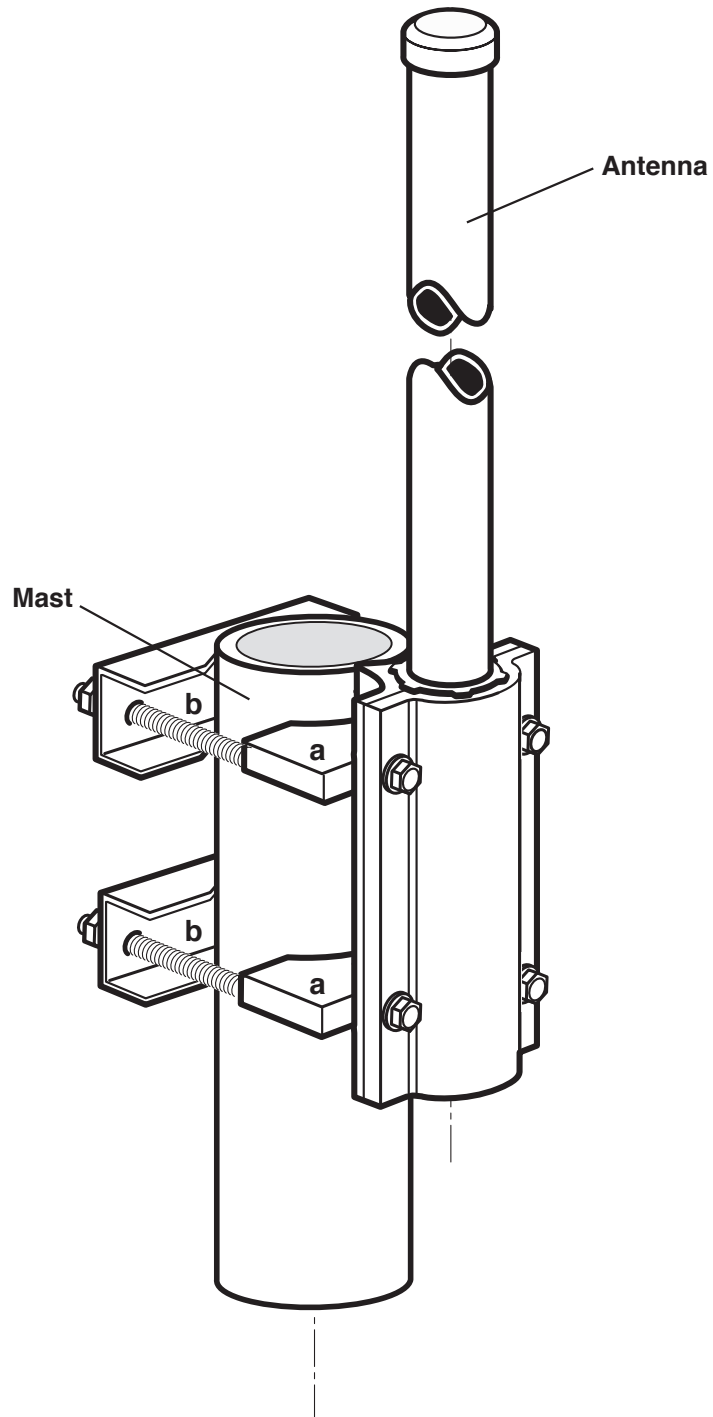


**Please note:  
Only usable without downtilt kit!**

# Side-mounting Clamp Omnidirectional Antennas Large Pipe

Type No. 738908

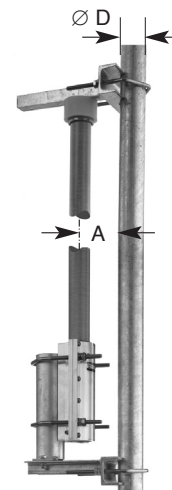
For mast diameters of 94 – 125 mm



# Side-mounting Bracket Omnidirectional Antennas

## Type No. 737398

Side-mounting bracket  
(for mast diameters of 40 – 105 mm)



Type No.	737398			
Bracket	At the top and at the bottom			
Fits for antenna type no:	<b>800/900 MHz</b> 736347 736348 736349 736350 736351 738664 738192	<b>1800 MHz</b> 739785 738187 739404 737190	<b>UMTS</b> 741790	<b>Dual-band</b> 80010274

Side-mounting is possible for four fixed distances between the tubular mast and the antenna:

800/900 MHz (holes 1 and 3)			1800/2000 MHz (hole 2)																													
<p>A = 100 mm = 0.3 λ      A = 160 mm = 0.5 λ      A = 240 mm = 0.75 λ</p>			<p>A = 80 mm = 0.5 λ</p>																													
<table border="1"> <thead> <tr> <th>Pipe D</th> <th>Horizontal Radiation Pattern</th> <th>Spacing A / Curve</th> </tr> </thead> <tbody> <tr> <td rowspan="3">40 mm</td> <td rowspan="3"></td> <td>100 mm</td> </tr> <tr> <td>160 mm</td> </tr> <tr> <td>240 mm</td> </tr> <tr> <td colspan="2">direction from mast to antenna →</td> <td></td> </tr> </tbody> </table>	Pipe D	Horizontal Radiation Pattern	Spacing A / Curve	40 mm		100 mm	160 mm	240 mm	direction from mast to antenna →			<table border="1"> <thead> <tr> <th>Pipe D</th> <th>Horizontal Radiation Pattern</th> <th>Spacing A / Curve</th> </tr> </thead> <tbody> <tr> <td rowspan="3">100 mm</td> <td rowspan="3"></td> <td>100 mm</td> </tr> <tr> <td>160 mm</td> </tr> <tr> <td>240 mm</td> </tr> <tr> <td colspan="2">direction from mast to antenna →</td> <td></td> </tr> </tbody> </table>	Pipe D	Horizontal Radiation Pattern	Spacing A / Curve	100 mm		100 mm	160 mm	240 mm	direction from mast to antenna →			<table border="1"> <thead> <tr> <th>Pipe D / Curve</th> <th>Horizontal Radiation Pattern</th> <th>Spacing A</th> </tr> </thead> <tbody> <tr> <td>40 mm</td> <td rowspan="3"></td> <td rowspan="3">80 mm</td> </tr> <tr> <td>100 mm</td> </tr> <tr> <td>direction from mast to antenna →</td> </tr> </tbody> </table>	Pipe D / Curve	Horizontal Radiation Pattern	Spacing A	40 mm		80 mm	100 mm	direction from mast to antenna →
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# Side-mounting Brackets Omnidirectional Antennas 900

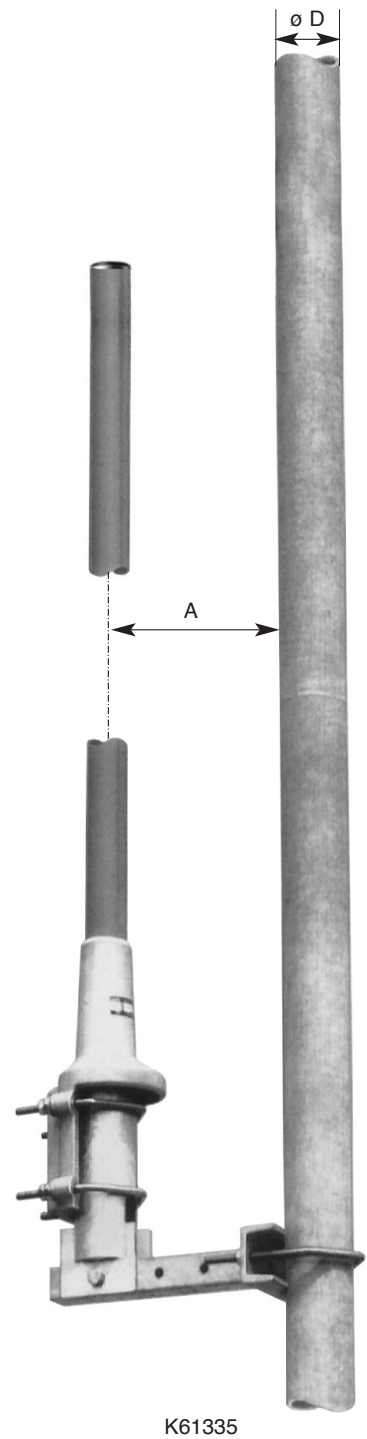
For mast diameters of 40 – 105 mm

Type No.	K61335
Bracket	at the bottom only
Fits for antenna type no.	K75116 .. K75156 .

Side mounting is possible for three fixed distances between the tubular mast and the antenna:

- 100 mm =  $0.3 \lambda$
- 160 mm =  $0.5 \lambda$
- 240 mm =  $0.75 \lambda$

Pipe D	Horizontal Radiation Pattern	Spacing A Curve	Additional gain to the nominal value of the antenna gain
40 mm		100 mm —————	2 dB
		160 mm - - - - -	3 dB
		240 mm - - - - -	2 dB
100 mm		100 mm —————	2.5 dB
		160 mm - - - - -	3.5 dB
		240 mm - - - - -	2.5 dB



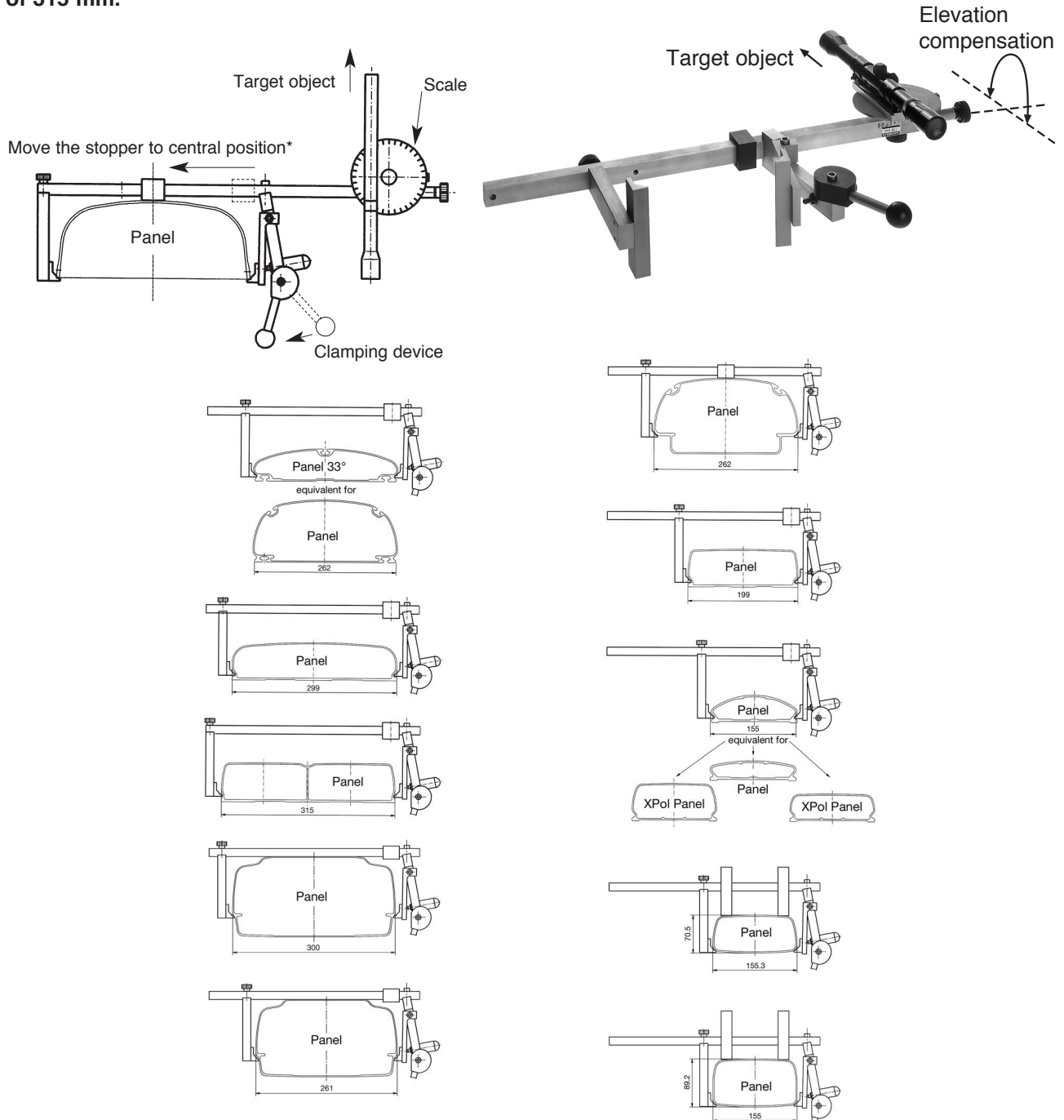
K61335

# All Panels Accessories Azimuth Adjustment Tool

## Type No. 738440

Precise azimuth adjustment for mast mounted antennas can easily be achieved by using the azimuth adjustment tool.

This tool is suitable to all types of Panels and Tri-Sector Pipe Antennas with a maximum width of 315 mm.



### Instruction:

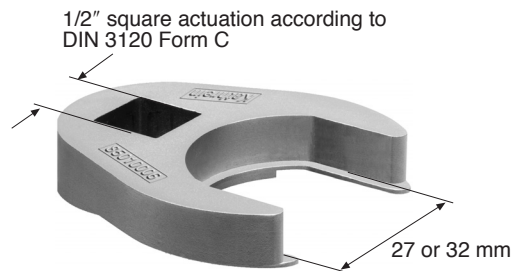
- Use a map to work out the angle between the designed antenna azimuth and target (church, building, mountain peak).
- Set this angle on the scale of the adjustment tool.
- Place the adjustment tool onto the antenna and tighten the clamping device.
- Use the telescope to aim at the target object, if necessary, use elevation compensation.
- Then rotate the antenna until the target object appears in the telescope.

\* Observe the position of the stopper when fitting the azimuth adjustment tool.

# Kathrein Installation Tool for Triple-band Antennas Type No. 85010005

**Please note:** To avoid any damage to the interfaces, please ensure that only suitable tools are used. To tighten the feederline connector interfaces, we strongly recommend using a special Kathrein installation tool (as shown below) in combination with a standard torque-wrench.

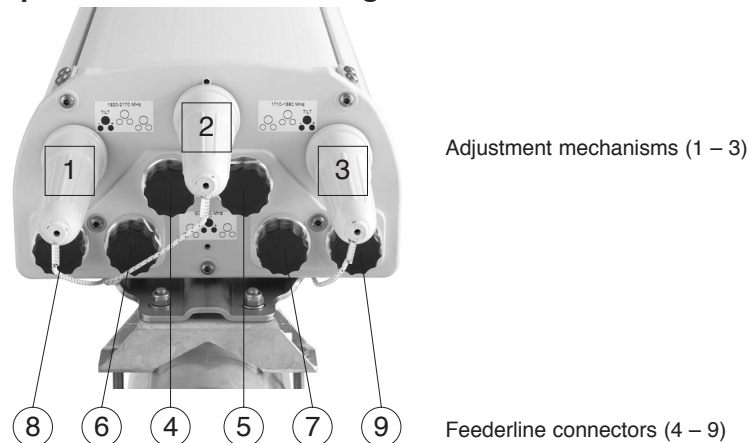
**Kathrein installation set: Type No. 85010005**  
**Set has to be ordered separately!**  
Set consists of two spanners of 27 and 32 mm width.



These tools are suitable for 7-16 connectors with a wrench size of 27 mm or 32 mm.

Tighten nut within a torque range of **25 – 33 Nm** depending on connector manufacturers' specifications.

## Description of connector arrangement:



There are six feederline connectors and three adjustment mechanisms located at the bottom of the antenna.

For detailed information about feederline installation for Triple-band Antennas please see Kathrein RET system brochure.

## Filters / Duplexers

## Multiband Combiners

Dual-Band Combiners  
Triple-Band Combiners  
Quad-Band Combiners

## Same-Band Combiners Hybrid Combiners

Same-Band Combiner  
Duplex Hybrid Combiner  
Active Duplex Hybrid Combiner  
Hybrid Combiner 2 : 1  
Hybrid Combiner 4 : 4  
3-dB Couplers  
Hybrid Ring Junctions

## System Components

Bias Tees  
Measuring Directional Couplers  
DC-Stops  
Attenuators  
50- $\Omega$  Loads  
Power Distribution Unit

## DTMAs

# Summary of Filter, Combiner, Amplifier and Repeater Types

The articles are listed by type number in numerical order.

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
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782 10154	309	782 10458	224, 225	<b>782 10640</b>	246, 247	784 10236	299
782 10161	214	782 10460	224, 225	<b>782 10641</b>	246, 247	784 10237	299
782 10162	214	782 10469	240	<b>782 10642</b>	246, 247	784 10238	299
782 10164	214	782 10474	298	<b>782 10643</b>	246, 247	784 10367	296
782 10165	214	782 10500	256	782 10652	314, 315	784 10470	296
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782 10168	210, 211	<b>782 10504</b>	258	<b>782 10660</b>	230, 231	728 954	223
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782 10171	210, 211	<b>782 10534</b>	261	<b>782 10663</b>	230, 231	791 498	274, 275
782 10172	210, 211	782 10550	287	<b>782 10664</b>	230, 231	791 918	299
782 10192	218	782 10555	306	<b>782 10665</b>	230, 231	791 919	299
782 10193	218	782 10556	306	<b>782 10669</b>	232, 233	791 920	299
782 10203	260	782 10557	306	<b>782 10680</b>	234, 235	791 921	299
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782 10216	212, 213	782 10561	310	<b>782 10682</b>	234, 235	792 544	217
782 10253	290, 291	782 10562	310	<b>782 10683</b>	234, 235	792 699	253
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782 10264	250	782 10567	310	782 10810	241	793 304	285
782 10265	212, 213	782 10568	310	782 10811	308	793 506	278
782 10278	236, 237	782 10569	310	<b>782 10850</b>	284	793 554	280
782 10279	236, 237	782 10570	310	<b>782 10860</b>	316	793 555	255
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782 10306	236, 237	<b>782 10577</b>	288	<b>782 10901</b>	248, 249	K 62 26 11 1	296
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782 10344	294, 295	782 10579	310	<b>782 10930</b>	268, 269	K 62 26 20 7	297
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782 10442	304	782 10625	238, 239	<b>782 11093</b>	242, 243	K 62 26 51 1	297
782 10448	311	782 10630	244, 245	<b>782 11094</b>	242, 243	K 62 26 61 1	296
782 10453	290, 291	782 10631	244, 245	<b>782 11095</b>	242, 243	K 63 73 62 1	274, 275
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782 10456	290, 291	<b>782 10634</b>	244, 245	<b>782 11110</b>	262, 263		

**New Products**

# Filters / Duplexers



## Filters:

Description	Type No.	Frequency range ... tunable bandwidth – fixed bandwidth	Max. Input power	Page
Band-pass Filter	782 10390	890 – 960 MHz	400 W	208
Band-pass Filter	782 10391	890 – 960 MHz	400 W	208
Band-pass Filter	<b>782 10392</b>	824 – 888 MHz	400 W	209

## Duplexers:

Description	Type No.	Frequency range	Max. input power	Page
Duplexer	782 10168	Low band: 824 – 835 MHz High band: 869 – 880 MHz	400 W	210, 211
Duplexer	782 10169	Low band: 824 – 835 MHz High band: 869 – 880 MHz	400 W	210, 211
Duplexer	782 10170	Low band: 824 – 835 MHz High band: 869 – 880 MHz	400 W	210, 211
Duplexer	782 10171	Low band: 835 – 851 MHz High band: 880 – 896 MHz	400 W	210, 211
Duplexer	782 10172	Low band: 835 – 851 MHz High band: 880 – 896 MHz	400 W	210, 211
Duplexer	782 10215	Low band: 824 – 851 MHz High band: 869 – 896 MHz	400 W	212, 213
Duplexer	782 10216	Low band: 824 – 851 MHz High band: 869 – 896 MHz	400 W	212, 213
Duplexer	782 10257	Low band: 824 – 846.5 MHz High band: 869 – 891.5 MHz	400 W	212, 213
Duplexer	782 10265	Low band: 824 – 846.5 MHz High band: 869 – 891.5 MHz	800 W	212, 213
Duplexer	782 10164	Low band: 890 – 915 MHz High band: 935 – 960 MHz	500 W	214
Duplexer	782 10165	Low band: 890 – 915 MHz High band: 935 – 960 MHz	500 W	214
Duplexer	782 10161	Low band: 890 – 915 MHz High band: 935 – 960 MHz	500 W	214
Duplexer	782 10162	Low band: 890 – 915 MHz High band: 935 – 960 MHz	500 W	214
Duplexer	782 10167	Low band: 880 – 915 MHz High band: 925 – 960 MHz	250 W	215
Duplexer	792 542	Low band: 1710 – 1785 MHz High band: 1805 – 1880 MHz	250 W	216
Duplexer	782 10415	Low band: 1710 – 1785 MHz High band: 1805 – 1880 MHz	250 W	216
Duplexer	792 544	Low band: 1850 – 1910 MHz High band: 1930 – 1990 MHz	300 W	217
Duplexer	782 10192	Low band: 1920 – 1980 MHz High band: 2110 – 2170 MHz	250 W	218
Duplexer	782 10193	Low band: 1920 – 1980 MHz High band: 2110 – 2170 MHz	250 W	218

**New Products**

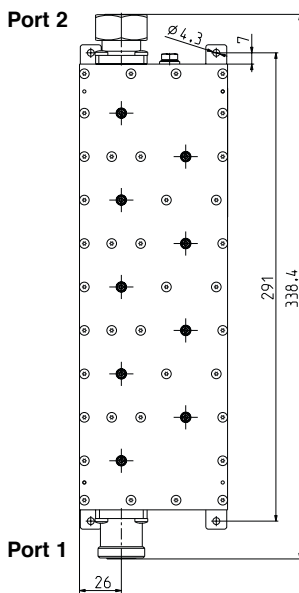
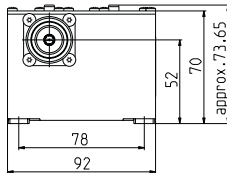
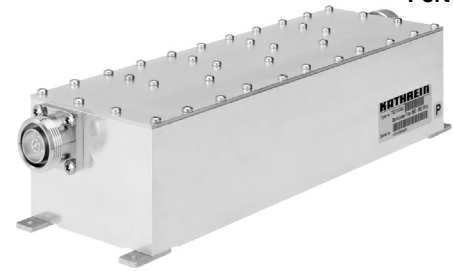


# Band-pass Filter 890 – 960 MHz

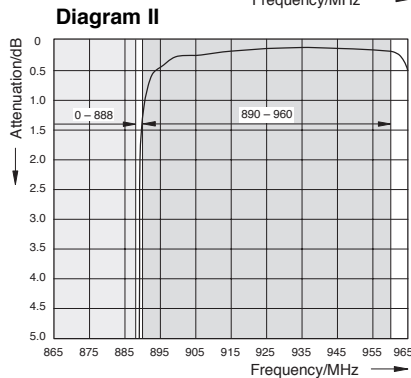
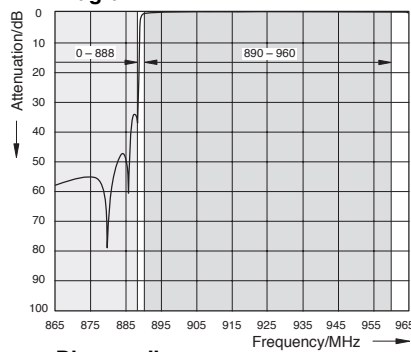
- GSM 900 Tx/Rx preselector filter
- Suppression of interfering Tx signals of an adjacent AMPS or CDMA frequency band
- Suitable for indoor applications
- Built-in DC stop

Port 2

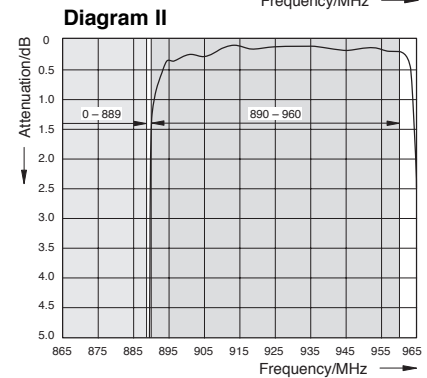
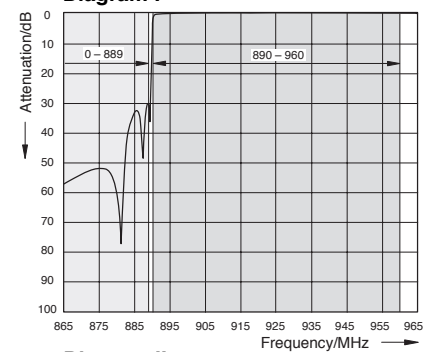
Port 1



**782 10390**  
Typical Attenuation Curves  
Diagram I



**782 10391**  
Typical Attenuation Curves  
Diagram I



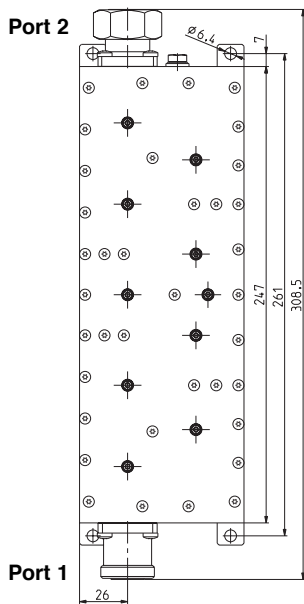
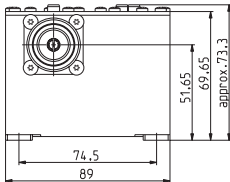
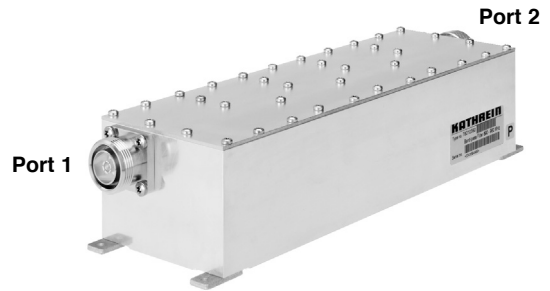
## Technical Data

Type No.	<b>782 10390</b>	<b>782 10391</b>
Stop band Frequency spacing	<b>0 – 888 MHz 2 MHz</b>	<b>0 – 889 MHz 1 MHz</b>
Pass band	890 – 960 MHz	890 – 960 MHz
Insertion loss	< 1.5 dB (890 – 892 MHz) < 0.8 dB (892 – 893 MHz) < 0.6 dB (893 – 905 MHz) < 0.3 dB (905 – 960 MHz)	< 4.0 dB (890 – 891 MHz) < 2.5 dB (891 – 892 MHz) < 1.0 dB (892 – 893 MHz) < 0.6 dB (893 – 905 MHz) < 0.3 dB (905 – 960 MHz)
Stop band attenuation	> 50 dB (0 – 880 MHz) > 40 dB (880 – 885 MHz) > 30 dB (885 – 888 MHz)	> 50 dB (0 – 869 MHz) > 30 dB (869 – 889 MHz)
VSWR	< 1.25 (890 – 960 MHz)	< 1.3 (891 – 960 MHz)
Impedance	50 Ω	
Input power	< 400 W (935 – 960 MHz)	
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Temperature range	-20 ... +55 °C	-5 ... +45 °C
Connectors	Port 1: 7-16 female, long neck / Port 2: 7-16 male	
Application	Indoor	
DC/AISG transparency Port 1 ↔ Port 2	Stop	
Mounting	With 4 screws (max. 4 mm diameter)	
Weight	2 kg	
Packing size	387 x 137 x 130 mm	
Dimensions (w x h x d)	92 x 74 x 338.4 mm (including connectors and mounting feet)	

# Band-pass Filter

## 824 – 888 MHz (AMPS/CDMA850)

- AMPS/CDMA850 Tx/Rx filter
- Suppression of spurious emissions at adjacent GSM900 Rx frequencies
- Suitable for indoor applications
- Built-in DC stop



### Calculated Attenuation Curves

Diagram I

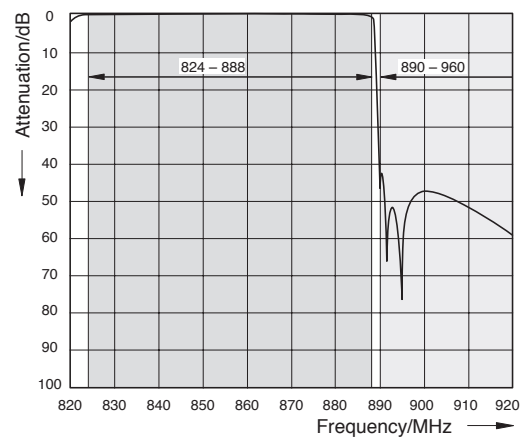
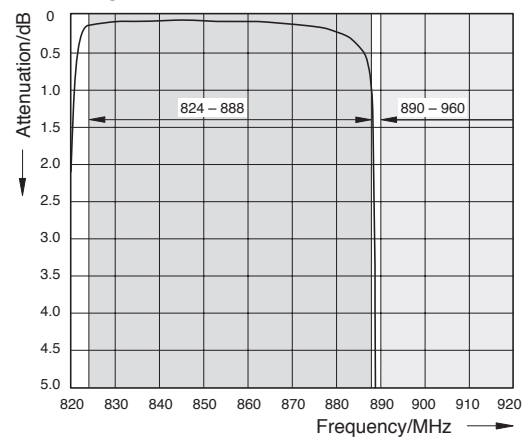


Diagram II



### Technical Data

Type No.	782 10392
Pass band	824 – 888 MHz
Insertion loss	< 0.5 dB (824 – 885 MHz) < 0.8 dB (885 – 886 MHz) < 1.5 dB (886 – 888 MHz)
Stop band attenuation	> 40 dB (890 – 960 MHz)
VSWR	< 1.25
Impedance	50 Ω
Input power	< 400 W (824 – 888 MHz)
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors	Port 1: 7-16 female (long neck) / Port 2: 7-16 male
Application	Indoor
DC/AISG transparency Port 1 ↔ Port 2	Stop
Mounting	With 4 screws (max. 4 mm diameter)
Weight	2 kg
Packing size	387 x 137 x 130 mm
Dimensions (w x h x d)	89 x 73,3 mm x 308.5 mm (including connectors and mounting feet)

# Duplexer

## 824 – 835 / 869 – 880 MHz (AMPS A-Band)

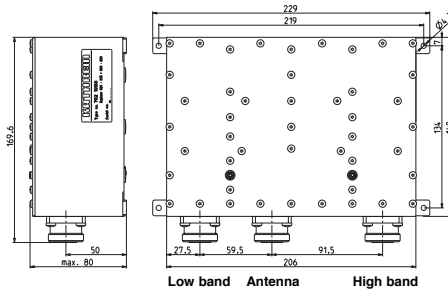
## 835 – 851 / 880 – 896 MHz (AMPS B-Band)

# KATHREIN

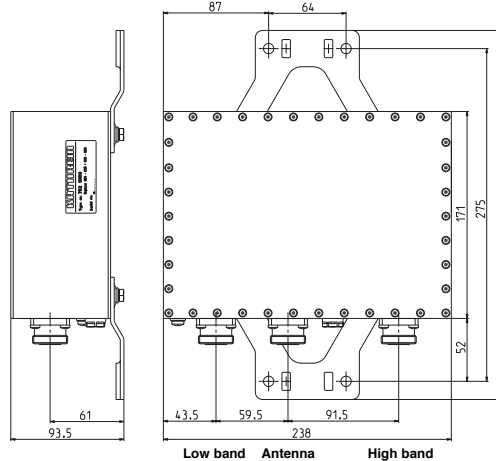
Antennen · Electronic

The Duplexer is designed to combine/split GSM Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

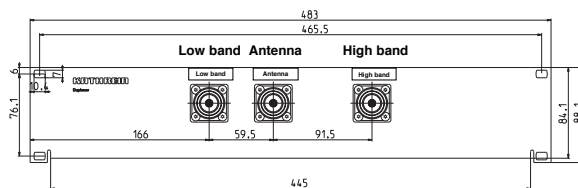
- **78210168:** AMPS A-Band, indoor version
- **78210169:** AMPS A-Band, outdoor version
- **78210170:** AMPS A-Band, indoor version mounted onto a 19" drawer
- **78210171:** AMPS B-Band, indoor version
- **78210172:** AMPS B-Band, outdoor version



**782 10168**  
**782 10171**  
(indoor)



**782 10169**  
**782 10172**  
(outdoor)



**782 10170 (19" drawer)**

### Technical Data

Type No.	782 10168	782 10169 AMPS A-Band	782 10170	782 10171	782 10172 AMPS B-Band
Pass band		824 – 835 MHz 869 – 880 MHz		835 – 851 MHz 880 – 896 MHz	
Insertion loss		< 0.5 dB (824 – 835 MHz) < 0.5 dB (869 – 880 MHz)		< 0.5 dB (835 – 851 MHz) < 0.5 dB (880 – 896 MHz)	
Isolation		> 85 dB (824 – 835 / 869 – 880 MHz)		> 85 dB (835 – 851 / 880 – 896 MHz)	
VSWR		< 1.25 (824 – 835 / 869 – 880 MHz)		< 1.25 (835 – 851 / 880 – 896 MHz)	
Impedance		50 Ω		50 Ω	
Input power		< 400 W (high band; with max. 8 carriers)		< 400 W (high band; with max. 12 carriers)	
Intermodulation products		< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)		< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Temperature range	-20 ... +55 °C	-40 ... +60 °C	-20 ... +55 °C	-20 ... +55 °C	-40 ... +60 °C
Connectors		7-16 female		7-16 female	
Application	Indoor	Outdoor (IP 66)	Indoor, 19" drawer	Indoor	Outdoor (IP 66)
Special features	Built-in DC stop between all ports			Built-in DC stop between all ports	
Mounting	With 4 screws (max. 4 mm diameter)	Wall mounting with 4 screws (max. 8 mm diameter) Mast mounting with additional clamp set	With 4 screws (max. 6 mm diameter)	With 4 screws (max. 4 mm diameter)	Wall mounting with 4 screws (max. 8 mm diameter) Mast mounting with additional clamp set
Weight	2.8 kg	5.5 kg	3.7 kg	2.8 kg	5.5 kg
Packing size	309 x 162 x 252 mm	347 x 297 x 174 mm	612 x 312 x 224 mm	309 x 162 x 252 mm	347 x 297 x 174 mm
Dimensions (w x h x d)	229 x 80 x 170 mm	238 x 305 x 93.5 mm	19" drawer, 2 height units, plug- in depth 170 mm	229 x 80 x 170 mm (including connectors and mounting feet)	238 x 305 x 93.5 mm (including mounting feet)

# Duplexer

824 – 835 / 869 – 880 MHz (AMPS A-Band)

835 – 851 / 880 – 896 MHz (AMPS B-Band)

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Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



## Typical Attenuation Curves (782 10168, 782 10169, 782 10170)

Diagram I

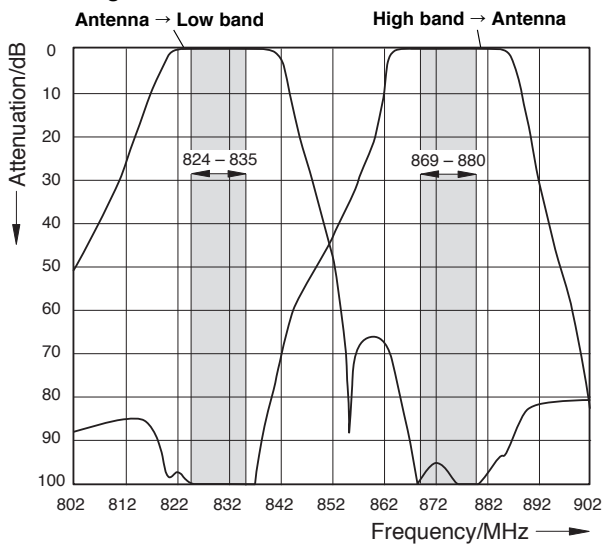
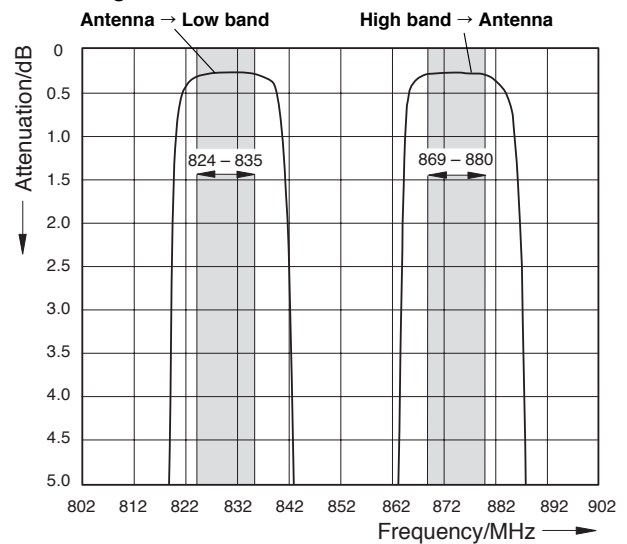


Diagram II



## Typical Attenuation Curves (782 10171, 782 10172)

Diagram I

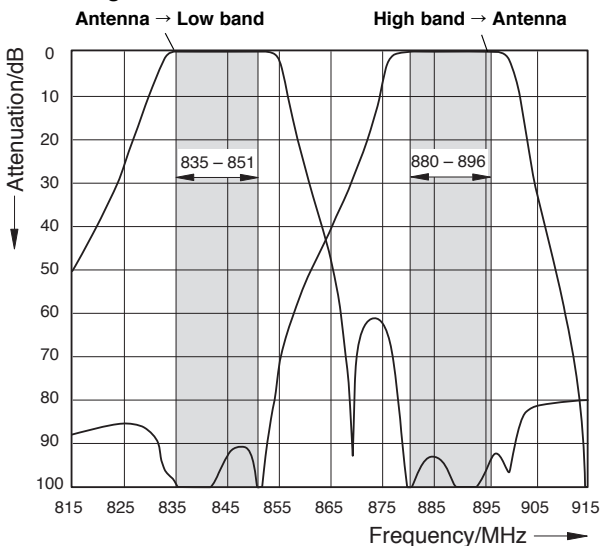
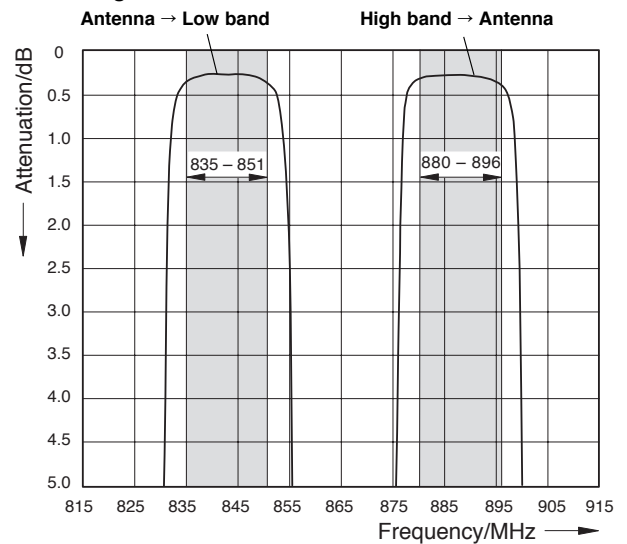


Diagram II



# Duplexer

**824 – 851 / 869 – 896 MHz (AMPS A/B-Band)**

**824 – 846.5 / 869 – 891.5 MHz (AMPS A/B-Band)**

**KATHREIN**

Antennen · Electronic

The Duplexer is designed to combine/split AMPS Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

- Suitable for indoor application
- Built-in DC stop

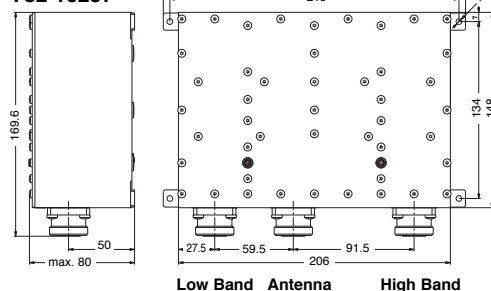


782 10215, 782 10257

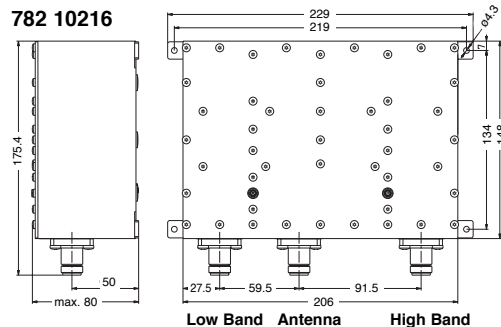


782 10216

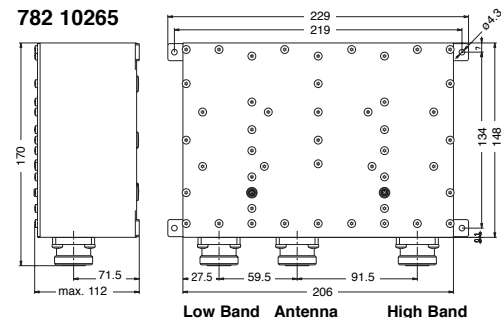
782 10215  
782 10257



782 10216



782 10265



## Technical Data

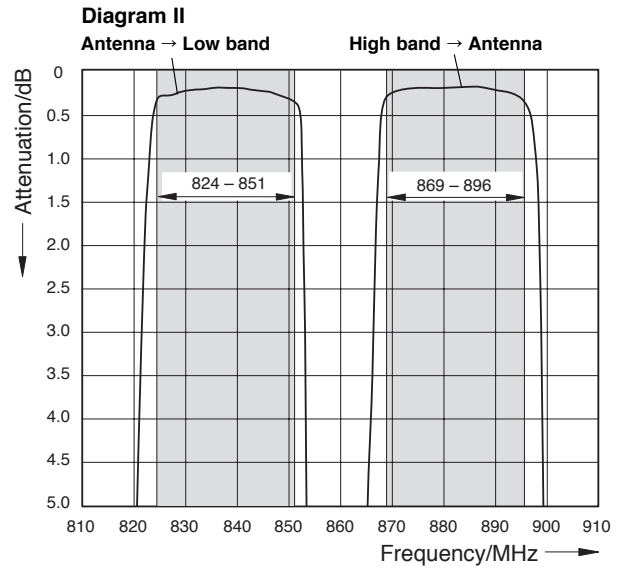
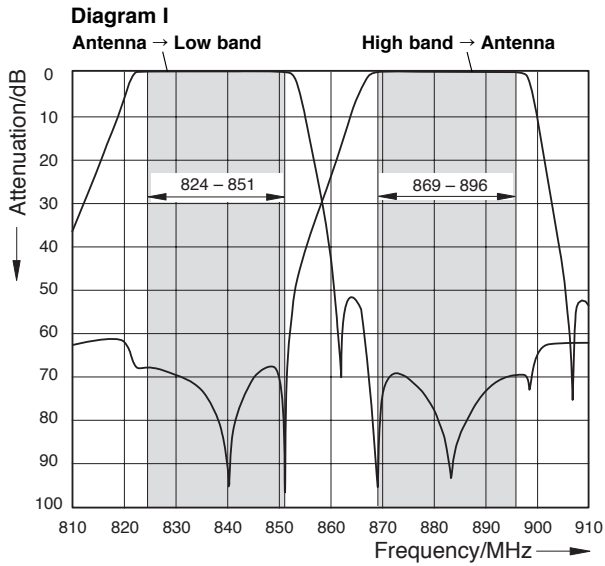
Type No.	782 10215 AMPS A/B-Band	782 10216	782 10257 AMPS A/B-Band (reduced bandwidth)	782 10265
Pass band Low band High band	824 – 851 MHz 869 – 896 MHz		824 – 846.5 MHz 869 – 891.5 MHz	
Insertion loss Antenna → Low band High band → Antenna	< 0.5 dB (824 – 851 MHz) < 0.5 dB (869 – 896 MHz)		< 0.5 dB (824 – 846.5 MHz) < 0.5 dB (869 – 891.5 MHz)	
Isolation Low band ↔ High band	> 65 dB (824 – 851 / 869 – 896 MHz)		> 70 dB (824 – 846.5 / 869 – 891.5 MHz)	
VSWR	< 1.25 (824 – 851 / 869 – 896 MHz)		< 1.25 (824 – 846.5 / 869 – 891.5 MHz)	
Impedance	50 Ω		50 Ω	
Input power	< 400 W (high band; with max. 16 carriers)		< 400 W (high band; with max. 16 carriers)	< 800 W (high band; with max. 32 carriers)
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)		< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Temperature range	-20 ... +55 °C		-20 ... +55 °C	
Connectors	7-16 female	N female	7-16 female	
Application	Indoor		Indoor	
Special features	Built-in DC stop between all ports		Built-in DC stop between all ports	
Mounting	With 4 screws (max. 4 mm diameter)		With 4 screws (max. 4 mm diameter)	
Weight	2.6 kg		2.6 kg	Approx. 3 kg
Packing size	309 x 252 x 162 mm		309 x 252 x 162 mm	309 x 252 x 162 mm
Dimensions (w x h x d)	229 x 80 x 170 mm   229 x 80 x 175.4 mm (including connectors and mounting feet)		229 x 80 x 170 mm	229 x 112 x 170 mm (including connectors and mounting feet)

# Duplexer

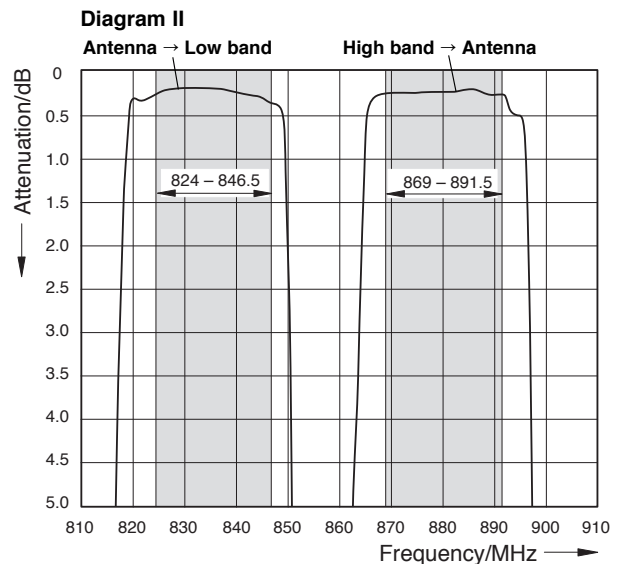
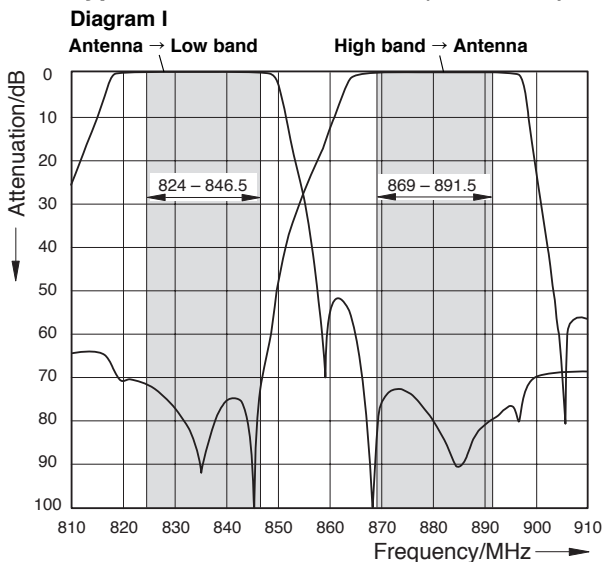
824 – 851 / 869 – 896 MHz (AMPS A/B-Band)

824 – 846.5 / 869 – 891.5 MHz (AMPS A/B-Band)

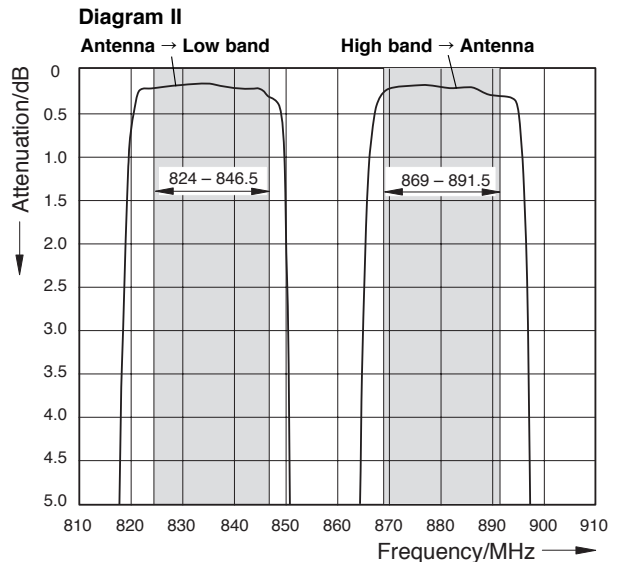
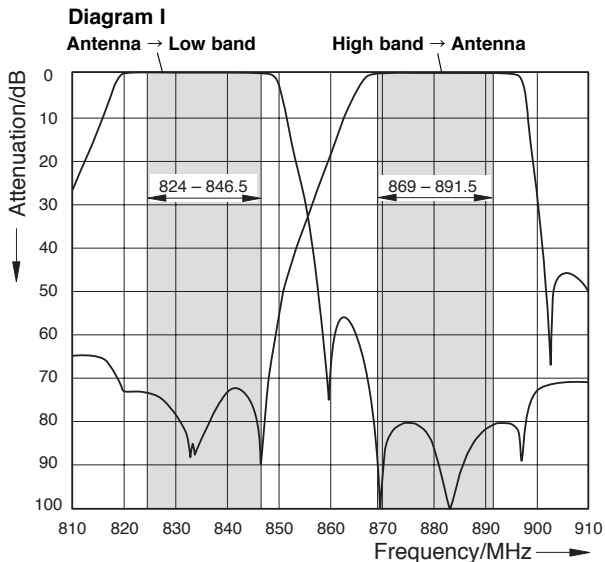
Typical Attenuation Curves (782 10215, 782 10216)



Typical Attenuation Curves (782 10257)



Typical Attenuation Curves (782 10265)



# Duplexer

## 890 – 915 / 935 – 960 MHz (GSM)

The Duplexer is designed to combine/split GSM Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

- **782 10164:** Indoor version with 7-16 female connectors
- **782 10165:** Indoor version with 7-16/N female connectors
- **782 10161:** Indoor version with 7-16 female connectors mounted onto a 19" drawer
- **782 10162:** Outdoor version with 7-16 female connectors



782 10164 (indoor)



782 10162 (outdoor)



782 10161 (19" drawer)



782 10165 (indoor)

### Typical Attenuation Curves

Diagram I

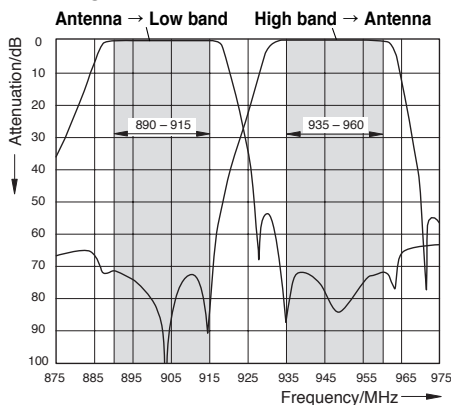
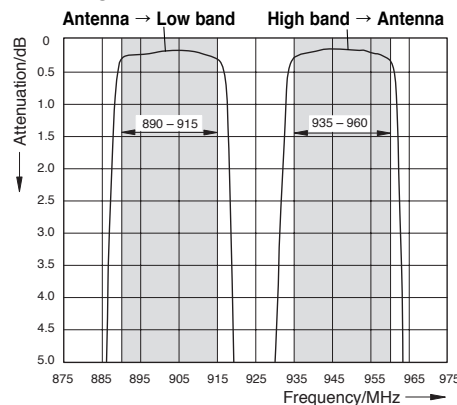


Diagram II



### Technical Data

Type No.	782 10164	782 10165	782 10161	782 10162
Pass band Low band High band	890 – 915 MHz 935 – 960 MHz			
Insertion loss Antenna → Low band High band → Antenna	< 0.5 dB (890 – 915 MHz) < 0.5 dB (935 – 960 MHz)			
Isolation Low band ↔ High band	> 70 dB (890 – 915 / 935 – 960 MHz)			
VSWR	< 1.25 (890 – 915 / 935 – 960 MHz)			
Impedance	50 Ω			
Input power	< 500 W (high band; with max. 16 carriers)			
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)			
Temperature range	-20 ... +55 °C			-40 ... +60 °C
Connectors Low band High band Antenna	7-16 female 7-16 female 7-16 female	N female 7-16 female 7-16 female	7-16 female 7-16 female 7-16 female	7-16 female 7-16 female 7-16 female
Application	Indoor	Indoor	Indoor, 19" drawer	Outdoor (IP 66)
Special features	Built-in DC stop between all ports			
Mounting	With 4 screws (max. 4 mm diameter)		With 4 screws (max. 6 mm diameter)	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	2.6 kg		3.5 kg	5.5 kg
Packing size	309 x 162 x 252 mm		612 x 312 x 224 mm	347 x 294 x 174 mm
Dimensions (w x h x d)	228.6 x 80 x 169.6 mm (including connectors and mounting feet)		19" drawer, 2 height units, plug-in depth 172 mm	238 x 93.5 x 305 mm (including connectors and mounting brackets)

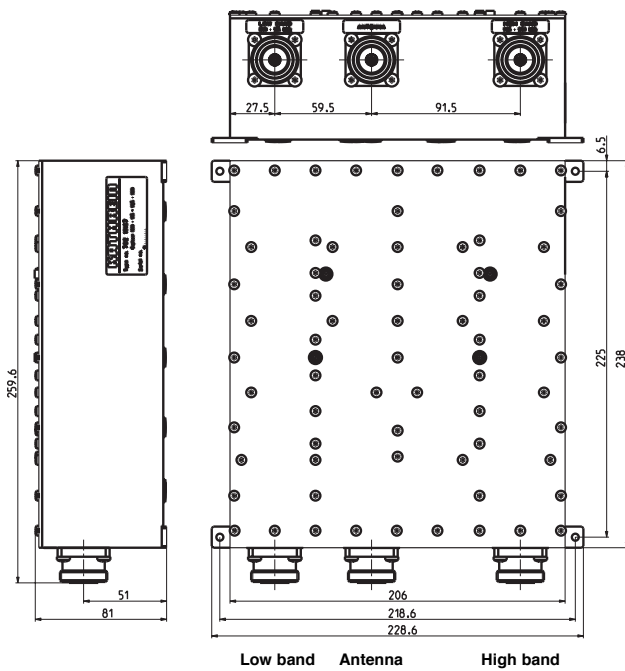
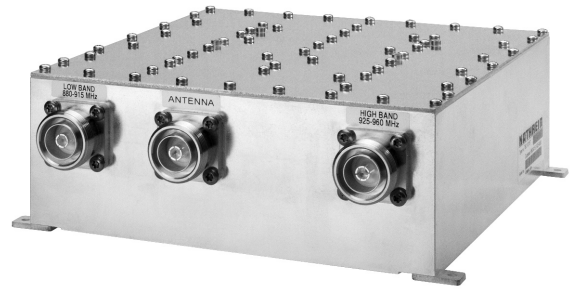


# Duplexer

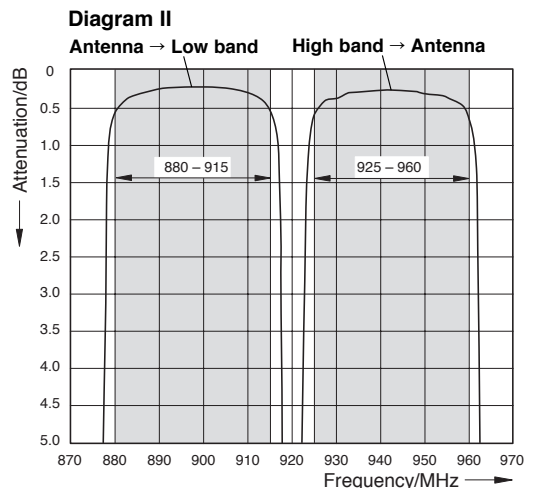
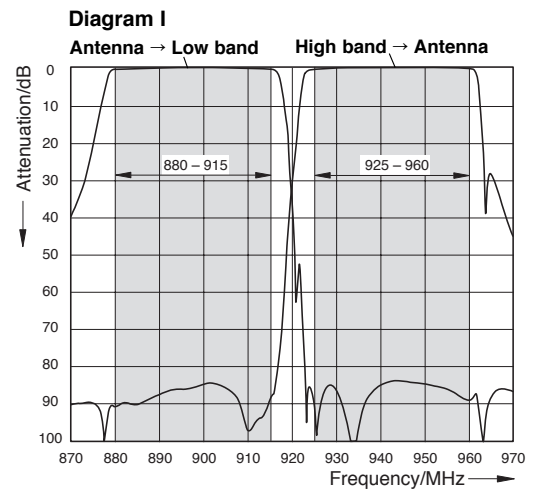
## 880 – 915 / 925 – 960 MHz (EGSM)

The Duplexer is designed to combine/split EGSM Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

- Suitable for indoor applications
- Built-in DC Stop



### Typical Attenuation Curves



### Technical Data

Type No.	<b>782 10167</b>
Pass band Low band High band	880 – 915 MHz 925 – 960 MHz
Insertion loss Antenna → Low band High band → Antenna	< 0.9 dB (880 – 915 MHz) < 0.9 dB (925 – 960 MHz)
Isolation Low band ↔ High band	> 75 dB (880 – 915 / 925 – 960 MHz)
VSWR	< 1.25 (880 – 915 / 925 – 960 MHz)
Impedance	50 Ω
Input power	< 250 W (low band or high band)
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors	7-16 female
Application	Indoor
Special features	Built-in DC stop between all ports
Mounting	With 4 screws (max. 4 mm diameter)
Weight	4.6 kg
Packing size	347 x 297 x 174 mm
Dimensions (w x h x d)	229 x 81 x 260 mm (including connectors and mounting feet)

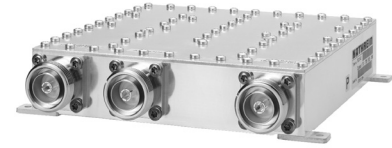


# Duplexer

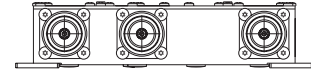
## 1710 – 1785 / 1805 – 1880 MHz (GSM 1800)

The Duplexer is designed to combine/split GSM 1800 Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

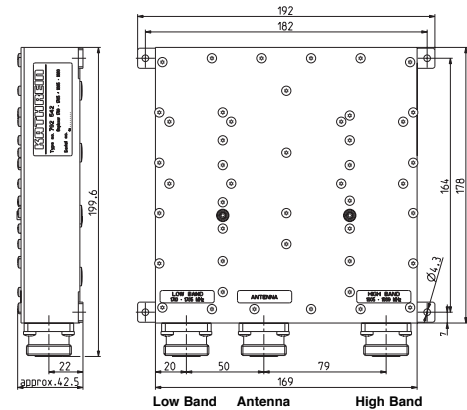
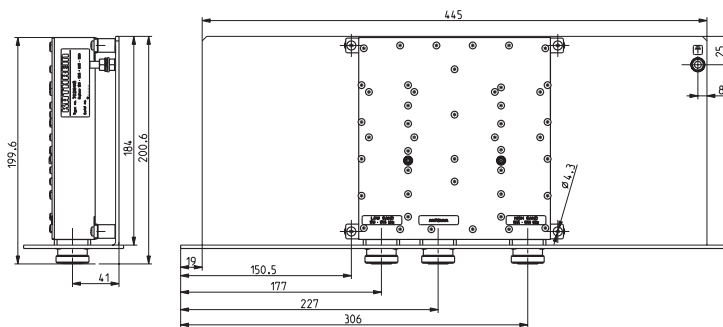
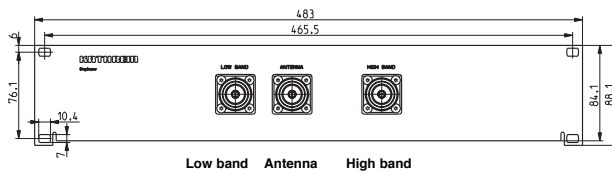
- Suitable for indoor applications
- Built-in DC stop between all ports



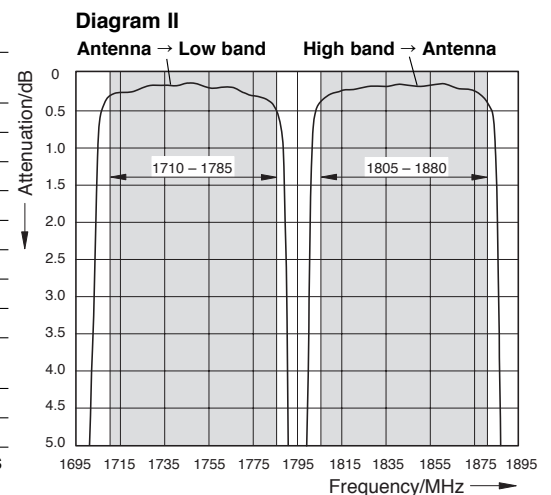
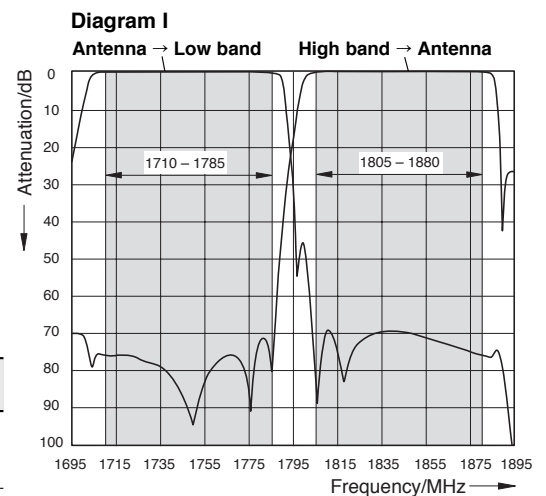
792 542



782 10415



### Typical Attenuation Curves



### Technical Data

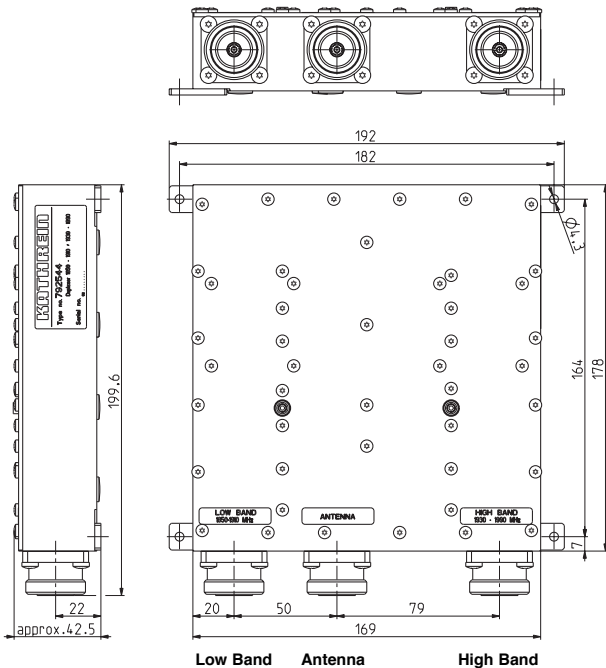
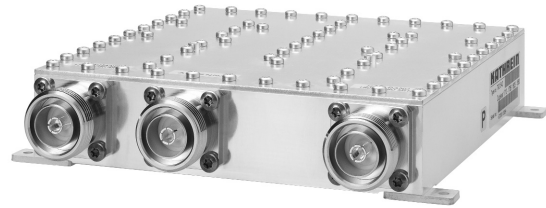
Type No.	792 542	782 10415
Pass band Low band High band	1710 – 1785 MHz 1805 – 1880 MHz	
Insertion loss Antenna → Low band High band → Antenna	< 0.7 dB (1710 – 1785 MHz) < 0.7 dB (1805 – 1880 MHz)	
Isolation Low band ↔ High band	> 65 dB (1710 – 1785 / 1805 – 1880 MHz)	
VSWR	< 1.25 (1710 – 1785 / 1805 – 1880 MHz)	
Impedance	50 Ω	
Input power	< 250 W (low band or high band, with max. 8 carriers)	
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Temperature range	-20 ... +55 °C	
Connectors	7-16 female	
Application	Indoor	Indoor, 19" drawer
DC/AISG transparency	Built-in DC stop between all ports	
Mounting	With 4 screws (max. 4 mm diameter)	With 4 screws (max. 6 mm diameter)
Weight	1.6 kg	2.6 kg
Packing size	282 x 252 x 114 mm	612 x 312 x 224 mm
Dimensions (w x h x d)	192 x 42.5 x 199.6 mm (including connectors and mounting feet)	19" drawer, 2 height units plug-in depth 184 mm

# Duplexer

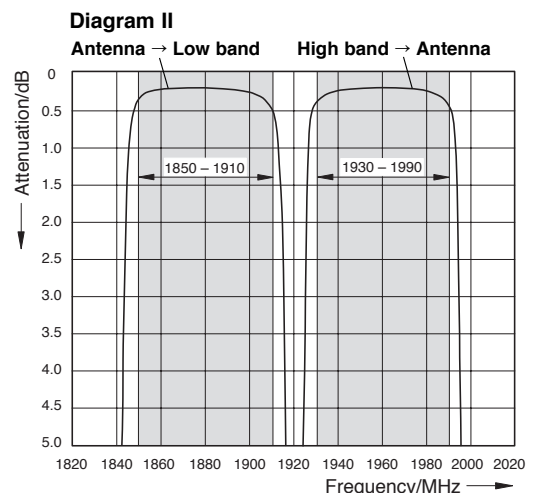
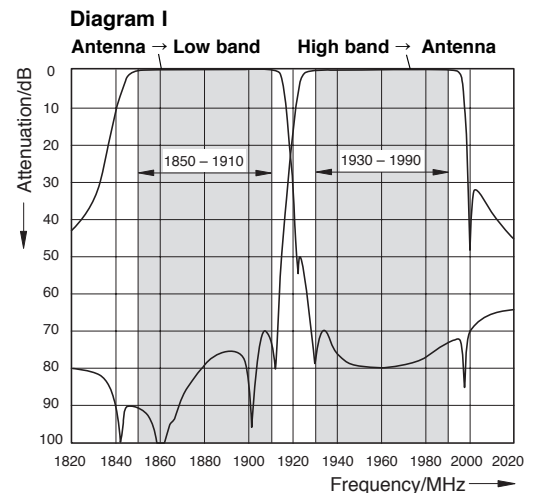
## 1850 – 1910 / 1930 – 1990 MHz (GSM 1900)

The Duplexer is designed to combine/split GSM 1900 Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

- Suitable for indoor applications
- Built-in DC stop



### Typical Attenuation Curves



### Technical Data

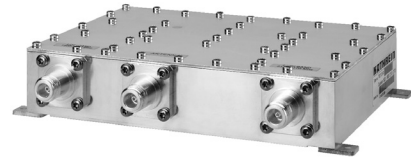
Type No.	<b>792 544</b>
Pass band	
Low band	1850 – 1910 MHz
High band	1930 – 1990 MHz
Insertion loss	
Antenna → Low band	< 0.7 dB (1850 – 1910 MHz)
High band → Antenna	< 0.7 dB (1930 – 1990 MHz)
Isolation	
Low band ↔ High band	> 65 dB (1850 – 1910 / 1930 – 1990 MHz)
VSWR	< 1.25 (1850 – 1910 / 1930 – 1990 MHz)
Impedance	50 Ω
Input power	< 300 W (low band or high band)
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors	7-16 female
Application	Indoor
Special features	Built-in DC stop between all ports
Mounting	With 4 screws (max. 4 mm diameter)
Weight	1.7 kg
Packing size	282 x 252 x 114 mm
Dimensions (w x h x d)	192 x 42.5 x 199.6 mm (including connectors and mounting feet)

# Duplexer

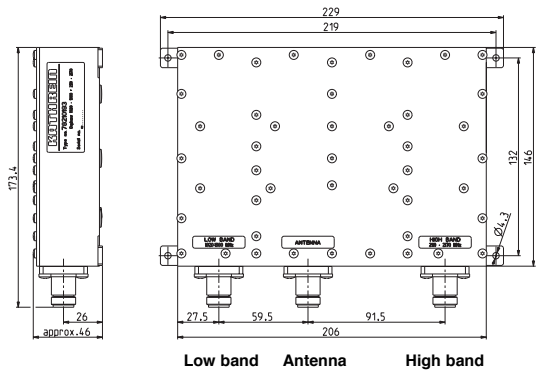
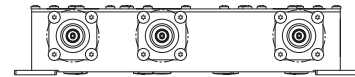
## 1920 – 1980 / 2110 – 2170 MHz (UMTS)

The Duplexer is designed to combine/split UMTS Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

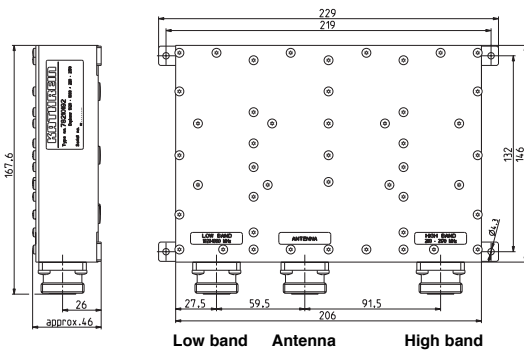
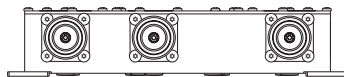
- Suitable for indoor applications
- Built-in DC stop



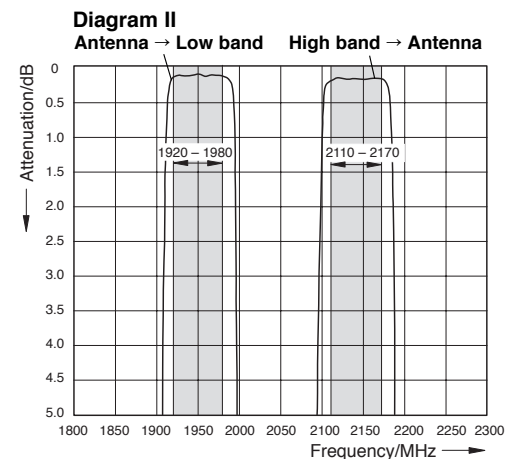
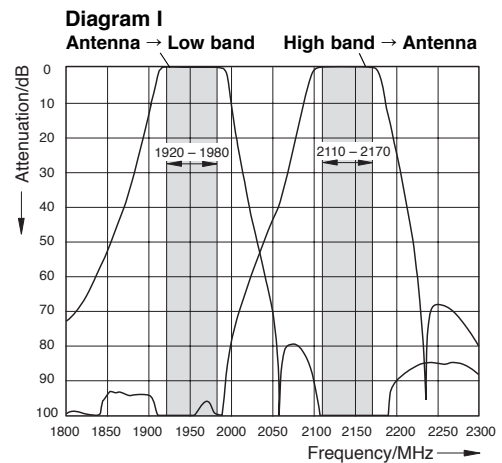
782 10193



782 10192



### Typical Attenuation Curves



### Technical Data

Type No.	782 10192	782 10193
Pass band Low band High band	1920 – 1980 MHz 2110 – 2170 MHz	
Insertion loss Antenna → Low band High band → Antenna	< 0.3 dB (1920 – 1980 MHz) < 0.3 dB (2110 – 2170 MHz)	
Isolation Low band ↔ High band	> 90 dB (1920 – 1980 / 2110 – 2170 MHz)	
VSWR	< 1.25 (1920 – 1980 / 2110 – 2170 MHz)	
Impedance	50 Ω	
Input power	< 250 W (low band or high band)	
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Temperature range	-20 ... +55 °C	
Connectors	7-16 female	N female
Application	Indoor	
Special features	Built-in DC stop between all ports	
Mounting	With 4 screws (max. 4 mm diameter)	
Weight	1.67 kg	
Packing size	272 x 237 x 119 mm	
Dimensions (w x h x d)	229 x 46 x 167.6 mm   229 x 46 x 173.4 mm (including connectors and mounting feet)	

# Multiband Combiners

Dual-Band Combiners  
Triple-Band Combiners  
Quad-Band Combiners

## Multiband Combiners:

Description	Type No.	Frequency range	Max. input power	Page
Dual-Band Combiner	728 954	Band 1: 68 – 470 MHz Band 2: 870 – 970 MHz	50 W 50 W	223
Dual-Band Combiner	782 10460	Band 1: 50 – 470 MHz Band 2: 806 – 2500 MHz	500 W 500 W	224, 225
Dual-Band Combiner	782 10457	Band 1: 87.5 – 470 MHz Band 2: 806 – 2500 MHz	500 W 500 W	224, 225
Dual-Band Combiner	782 10458	Band 1: 87.5 – 470 MHz Band 2: 806 – 2500 MHz	500 W 500 W	224, 225
Dual-Band Combiner	791 145	Band 1: 50 – 1000 MHz Band 2: 1600 – 2000 MHz	100 W 50 W	226
Dual-Band Combiner	782 10341	Band 1: 824 – 880 MHz Band 2: 890 – 960 MHz	400 W 400 W	227
Dual-Band Combiner	<b>782 10970</b>	Band 1: 790 – 862 MHz Band 2: 880 – 960 MHz	200 W 200 W	228, 229
Dual-Band Combiner	<b>782 10971</b>	Band 1: 790 – 862 MHz Band 2: 880 – 960 MHz	200 W 200 W	228, 229
Dual-Band Combiner	<b>782 10972</b>	Band 1: 790 – 862 MHz Band 2: 880 – 960 MHz	200 W 200 W	228, 229
Dual-Band Combiner	<b>782 10973</b>	Band 1: 790 – 862 MHz Band 2: 880 – 960 MHz	200 W 200 W	228, 229
Dual-Band Combiner	<b>782 10660</b>	Band 1: 470 – 960 MHz Band 2: 1710 – 2700 MHz	650 W 350 W	230, 231
Dual-Band Combiner	<b>782 10661</b>	Band 1: 470 – 960 MHz Band 2: 1710 – 2700 MHz	650 W 350 W	230, 231
Dual-Band Combiner	<b>782 10662</b>	Band 1: 470 – 960 MHz Band 2: 1710 – 2700 MHz	650 W 350 W	230, 231
Dual-Band Combiner	<b>782 10663</b>	Band 1: 470 – 960 MHz Band 2: 1710 – 2700 MHz	650 W 350 W	230, 231
Dual-Band Combiner	<b>782 10664</b>	Band 1: 470 – 960 MHz Band 2: 1710 – 2700 MHz	650 W 350 W	230, 231
Dual-Band Combiner	<b>782 10665</b>	Band 1: 470 – 960 MHz Band 2: 1710 – 2700 MHz	650 W 350 W	230, 231
Dual-Band Combiner	<b>782 10669</b>	Band 1: 470 – 960 MHz Band 2: 1710 – 2700 MHz	650 W 350 W	232, 233
Dual-Band Combiner	<b>782 10680</b>	Band 1: 380 – 960 MHz Band 2: 1710 – 2700 MHz	700 W 650 W	234, 235
Dual-Band Combiner	<b>782 10681</b>	Band 1: 380 – 960 MHz Band 2: 1710 – 2700 MHz	700 W 650 W	234, 235
Dual-Band Combiner	<b>782 10682</b>	Band 1: 380 – 960 MHz Band 2: 1710 – 2700 MHz	700 W 650 W	234, 235
Dual-Band Combiner	<b>782 10683</b>	Band 1: 380 – 960 MHz Band 2: 1710 – 2700 MHz	700 W 650 W	234, 235
Dual-Band Combiner	782 10278	Band 1: 790 – 1880 MHz Band 2: 1920 – 2170 MHz	500 W 500 W	236, 237
Dual-Band Combiner	782 10279	Band 1: 790 – 1880 MHz Band 2: 1920 – 2170 MHz	500 W 500 W	236, 237
Dual-Band Combiner	782 10305	Band 1: 790 – 1880 MHz Band 2: 1920 – 2170 MHz	500 W 500 W	236, 237
Dual-Band Combiner	782 10306	Band 1: 790 – 1880 MHz Band 2: 1920 – 2170 MHz	500 W 500 W	236, 237
Dual-Band Combiner	782 10620	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	238, 239
Dual-Band Combiner	782 10621	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	238, 239
Dual-Band Combiner	782 10622	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	238, 239
Dual-Band Combiner	782 10623	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	238, 239
Dual-Band Combiner	782 10624	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	238, 239
Dual-Band Combiner	782 10625	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	238, 239

## Multiband Combiners:

Description	Type No.	Frequency range	Max. input power	Page
Dual-Band Combiner	782 10469	Band 1: 1850 – 1990 MHz Band 2: 1710 – 2155 MHz	250 W 250 W	240
Dual-Band Combiner	782 10808	Band 1: 1850 – 1990 MHz Band 2: 1710 – 2155 MHz	250 W 250 W	240
Dual-Band Combiner	782 10809	Band 1: 1850 – 1990 MHz Band 2: 1710 – 2155 MHz	250 W 250 W	241
Dual-Band Combiner	782 10810	Band 1: 1850 – 1990 MHz Band 2: 1710 – 2155 MHz	250 W 250 W	241
Dual-Band Combiner	782 10800	Band 1: 1710 – 2180 MHz Band 2: 2400 – 2700 MHz	300 W 300 W	242, 243
Dual-Band Combiner	<b>782 11091</b>	Band 1: 1710 – 2180 MHz Band 2: 2400 – 2700 MHz	300 W 300 W	242, 243
Dual-Band Combiner	<b>782 11092</b>	Band 1: 1710 – 2180 MHz Band 2: 2400 – 2700 MHz	300 W 300 W	242, 243
Dual-Band Combiner	<b>782 11093</b>	Band 1: 1710 – 2180 MHz Band 2: 2400 – 2700 MHz	300 W 300 W	242, 243
Dual-Band Combiner	<b>782 11094</b>	Band 1: 1710 – 2180 MHz Band 2: 2400 – 2700 MHz	300 W 300 W	242, 243
Dual-Band Combiner	<b>782 11095</b>	Band 1: 1710 – 2180 MHz Band 2: 2400 – 2700 MHz	300 W 300 W	242, 243
Dual-Band Combiner	782 10264	Band 1: 50 – 2200 MHz Band 2: 2400 – 2500 MHz	200 W 200 W	250
SmartPlex Dual-Band Combiner	<b>782 10900</b>	Band 1: 380 – 960 MHz Band 2: 1710 – 2690 MHz	500 W 300 W	248, 249
SmartPlex Dual-Band Combiner	<b>782 10901</b>	Band 1: 380 – 960 MHz Band 2: 1710 – 2690 MHz	500 W 300 W	248, 249
Triple-Band Combiner	782 10630	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2170 MHz	700 W 300 W 300 W	244, 245
Triple-Band Combiner	782 10631	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2170 MHz	700 W 300 W 300 W	244, 245
Triple-Band Combiner	782 10632	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2170 MHz	700 W 300 W 300 W	244, 245
Triple-Band Combiner	782 10633	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2170 MHz	700 W 300 W 300 W	244, 245
Triple-Band Combiner	<b>782 10634</b>	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2170 MHz	700 W 300 W 300 W	244, 245
Triple-Band Combiner	<b>782 10635</b>	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2170 MHz	700 W 300 W 300 W	244, 245
Quad-Band Combiner	<b>782 10640</b>	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2200 MHz Band 4: 2500 – 2690 MHz	700 W 300 W 300 W 200 W	246, 247
Quad-Band Combiner	<b>782 10641</b>	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2200 MHz Band 4: 2500 – 2690 MHz	700 W 300 W 300 W 200 W	246, 247
Quad-Band Combiner	<b>782 10642</b>	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2200 MHz Band 4: 2500 – 2690 MHz	700 W 300 W 300 W 200 W	246, 247
Quad-Band Combiner	<b>782 10643</b>	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2200 MHz Band 4: 2500 – 2690 MHz	700 W 300 W 300 W 200 W	246, 247

### New Products

Type No.	Frequency / MHz																						
	PMR	LTE800	GSM/UMTS900	GSM1800	UMTS2100	WLAN	LTE2600/WiMax	200	400	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	
<b>Dual-band Combiners</b>																							
728954																							
791145																							
78210457, ..458 ..460																							
78210341																							
78210970, ..971 ..972 ..973																							
78210660, ..1 ..2 ..3 ..4 ..5 ..9																							
78210680, ..681 ..682 ..683																							
78210900, 78210901																							
78210278, ..279 ..305 ..306																							
78210620, ..1 ..2 ..3 ..4 ..5																							
78210264																							
78210800, 78211091, ..2 ..3 ..4 ..5																							
78210469, ..808 ..809 ..810																							
<b>Triple-band Combiners</b>																							
78210630, ..1 ..2 ..3 ..4 ..5																							
<b>Quad-band Combiners</b>																							
78210640, ..641 ..642 ..643																							

# Dual-Band Combiner

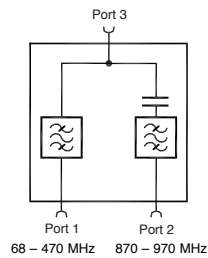
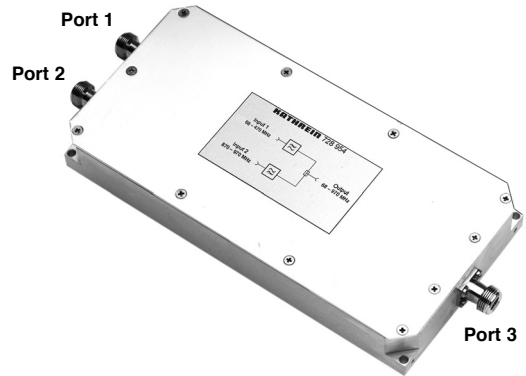
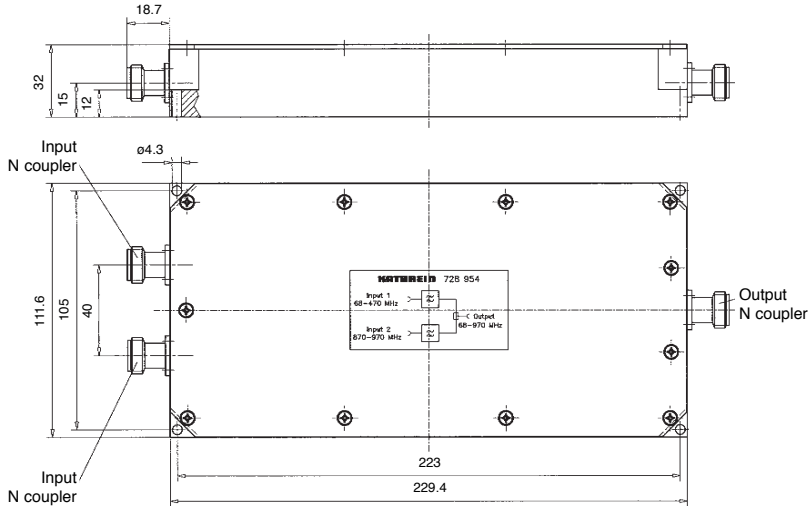
**KATHREIN**

Antennen · Electronic

**68 – 470 MHz**  
80 / 160 / 400 MHz

**870 – 970 MHz**  
GSM 900

- Designed for inhouse multiband distribution network
- Enables feeder sharing
- DC by-pass between port 1 and port 3
- Built-in DC stop between port 2 and port 3



## Typical Attenuation Curves

Diagram I

Port 1 ↔ Port 3

Port 2 ↔ Port 3

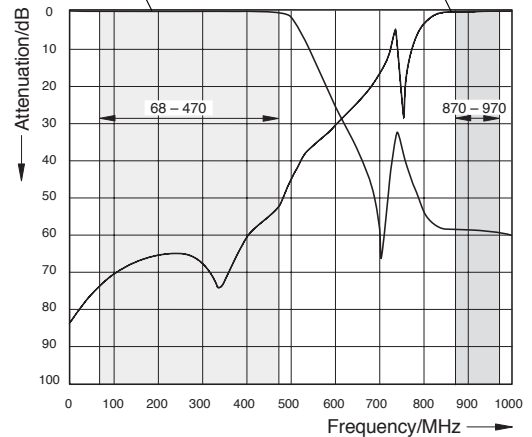
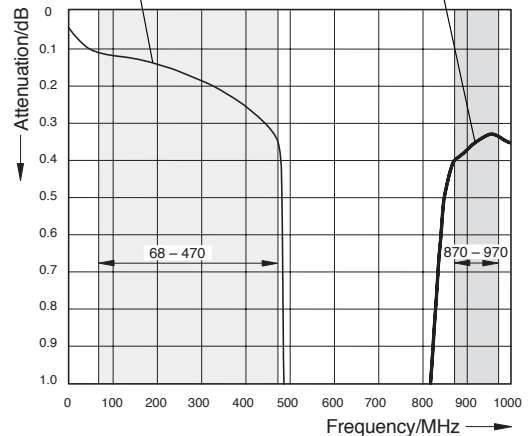


Diagram II

Port 1 ↔ Port 3

Port 2 ↔ Port 3



## Technical Data

Type No.	728 954
Pass band Band 1 Band 2	68 – 470 MHz 870 – 970 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.5 dB (68 – 470 MHz) < 0.5 dB (870 – 970 MHz)
Isolation Port 1 ↔ Port 2	> 45 dB
VSWR	< 1.2
Impedance	50 Ω
Input power Band 1 Band 2	< 50 W < 50 W
Intermodulation products	< -160 dBc (2 <sup>nd</sup> /3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-20 ... +70 °C
Connectors	N female
Application	Indoor
DC transparency Port 1 ↔ Port 3 Port 2 → Port 3 Port 3 → Port 2	By-pass (max. 2500mA) short circuited stop
Weight	0.8 kg
Packing size	285 x 55 x 125 mm
Dimensions (w x h x d)	229.4 x 32 x 111.6 mm (without connectors)



# Dual-Band Combiner

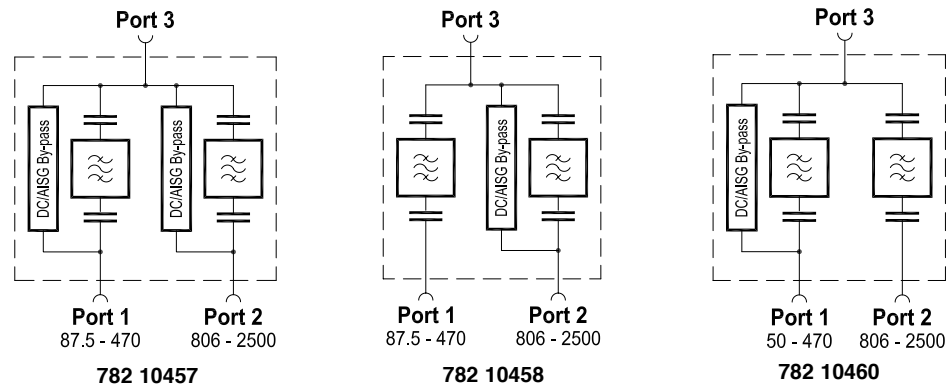
**KATHREIN**

Antennen · Electronic

**50 – 470 MHz**  
PMR / TETRA / TETRAPOL

**806 – 2500 MHz**  
CDMA 850 / GSM 900 / GSM 1800 / UMTS 2100 / WLAN

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- External DC stop available as an accessory
- **Very low insertion loss**
- **High input power**



## Technical Data

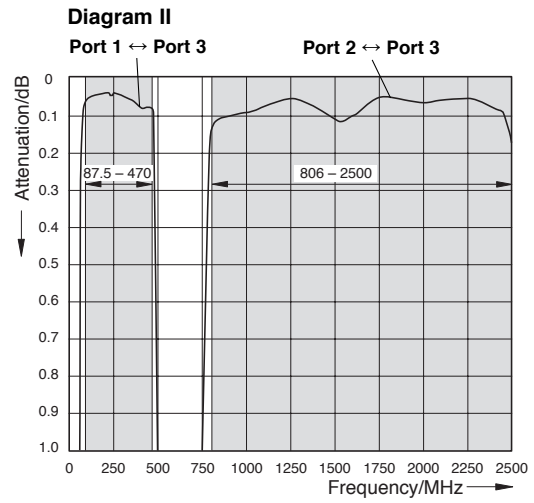
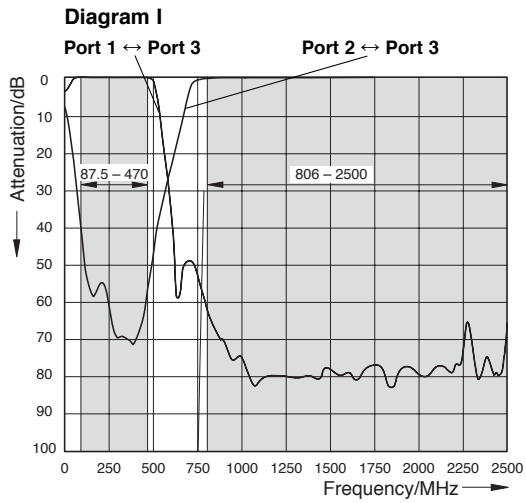
Type No.	782 10457	782 10458	782 10460
Pass band Band 1 Band 2	87.5 – 470 MHz 806 – 2500 MHz	87.5 – 470 MHz 806 – 2500 MHz	50 – 470 MHz 806 – 2500 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.15 dB (87.5 – 470 MHz) < 0.15 dB (806 – 2500 MHz)	< 0.15 dB (87.5 – 470 MHz) < 0.15 dB (806 – 2500 MHz)	< 0.15 dB (50 – 470 MHz) < 0.15 dB (806 – 2500 MHz)
Isolation Port 1 ↔ Port 2	> 50 dB (250 – 470 / 806 – 2500 MHz) > 40 dB (87.5 – 250 MHz)	> 50 dB (250 – 470 / 806 – 2500 MHz) > 40 dB (87.5 – 250 MHz)	> 50 dB (50 – 470 / 806 – 2500 MHz)
VSWR	< 1.25 (87.5 – 470 / 806 – 960 / 1710 – 2500 MHz)	< 1.25 (87.5 – 470 / 806 – 960 / 1710 – 2500 MHz)	< 1.25 (50 – 470 / 806 – 960 / 1710 – 2500 MHz)
Impedance	50 Ω		
Input power Band 1 Band 2	< 500 W < 500 W		
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)		
Temperature range	-55 ... +60 °C		
Connectors	7-16 female, long neck		
Application	Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	<b>By-pass</b> (max. 2500 mA) <b>By-pass</b> (max. 2500 mA)	<b>Stop</b> <b>By-pass</b> (max. 2500 mA)	<b>By-pass</b> (max. 2500 mA) <b>Stop</b>
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set		
Weight	4 kg		
Dimensions (w x h x d)	122 x 52 x 284.7 mm (without connectors, without mounting brackets)		

**50 – 470 MHz**  
PMR / TETRA / TETRAPOL

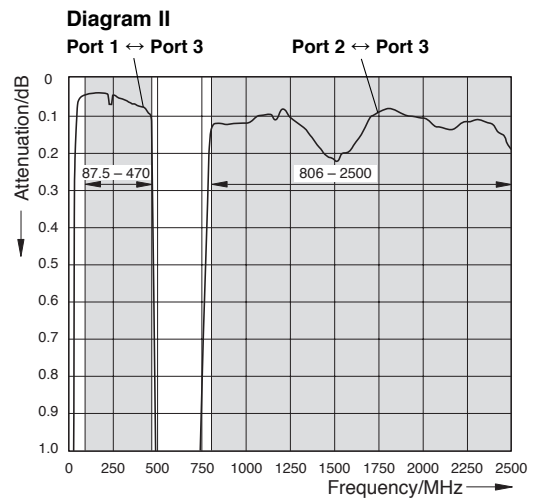
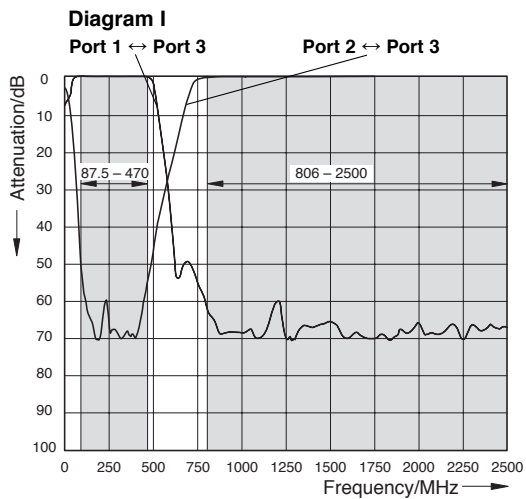
**806 – 2500 MHz**  
CDMA 850 / GSM 900 / GSM 1800 / UMTS 2100 / WLAN

## Typical Attenuation Curves

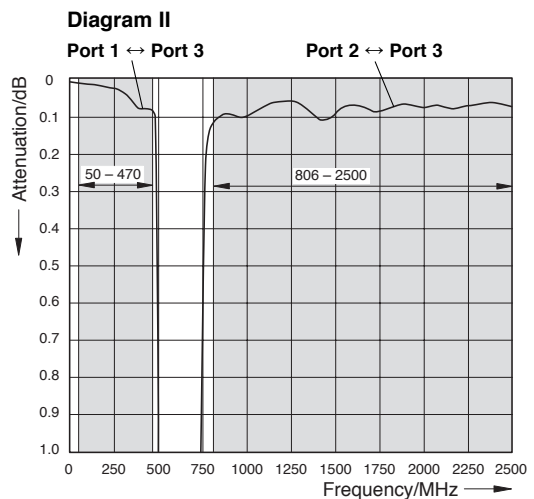
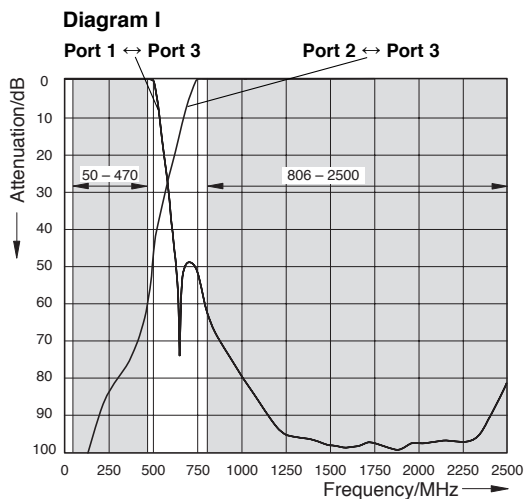
**782 10457**



**782 10458**



**782 10460**



# Dual-Band Combiner

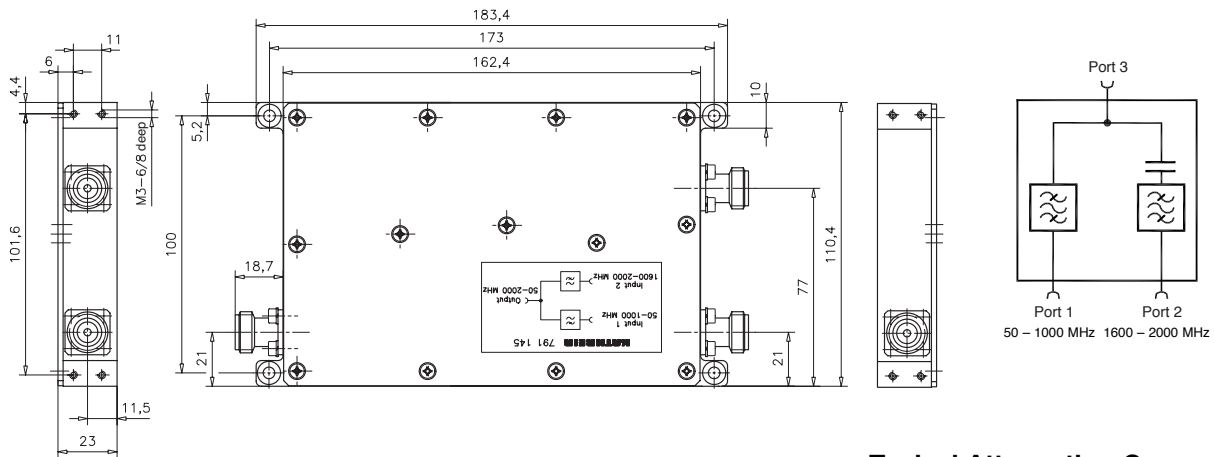
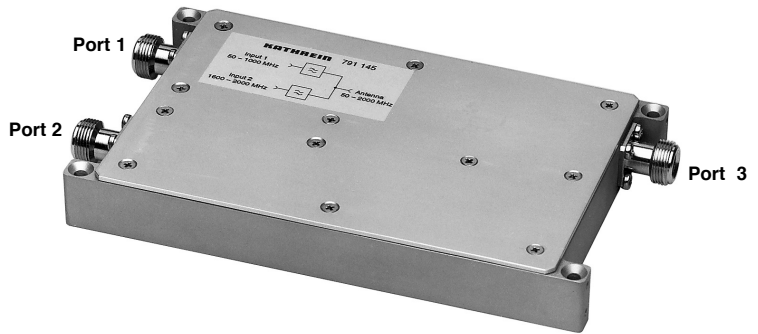
**KATHREIN**

Antennen · Electronic

**50 – 1000 MHz**  
80 / 160 / 400 / GSM 900

**1600 – 2000 MHz**  
GSM 1800

- Designed for inhouse multiband distribution network
- Enables feeder sharing
- DC by-pass between port 1 and port 3
- Built-in DC stop between port 2 and port 3



## Typical Attenuation Curves

Diagram I

Port 1 ↔ Port 3

Port 2 ↔ Port 3

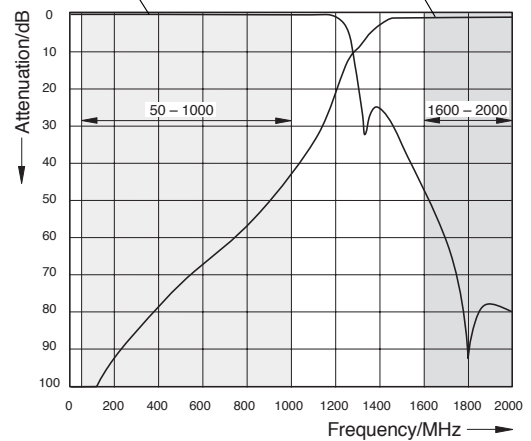
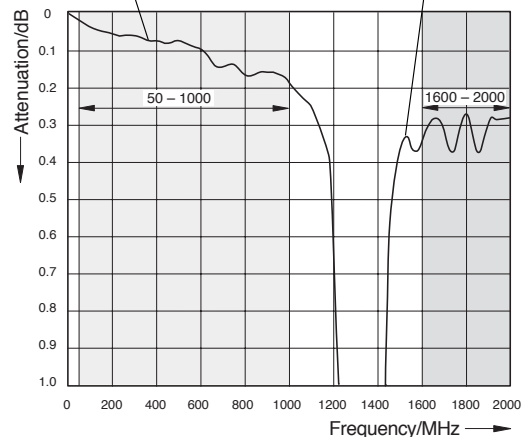


Diagram II

Port 1 ↔ Port 3

Port 2 ↔ Port 3



## Technical Data

Type No.	<b>791 145</b>
Pass band Band 1 Band 2	50 – 1000 MHz 1600 – 2000 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.3 dB (50 – 1000 MHz) < 0.5 dB (1600 – 2000 MHz)
Isolation Port 1 ↔ Port 2	> 40 dB (50 – 1000 / 1600 – 2000 MHz)
VSWR (all ports)	< 1.2 (50 – 1000 / 1600 – 2000 MHz)
Impedance	50 Ω
Input power Band 1 Band 2	< 100 W < 50 W
Temperature range	-30 ... +60 °C
Connectors	N female
Application	Indoor
DC transparency Port 1 ↔ Port 3 Port 2 → Port 3 Port 3 → Port 2	By-pass (max. 2500mA) Short circuited Stop
Mounting	With 4 screws (max.4 mm diameter)
Weight	0.7 kg
Packing size	220 x 40 x 140 mm
Dimensions (w x h x d)	201 x 23 x 112 mm (incl. connectors)

# Dual-Band Combiner

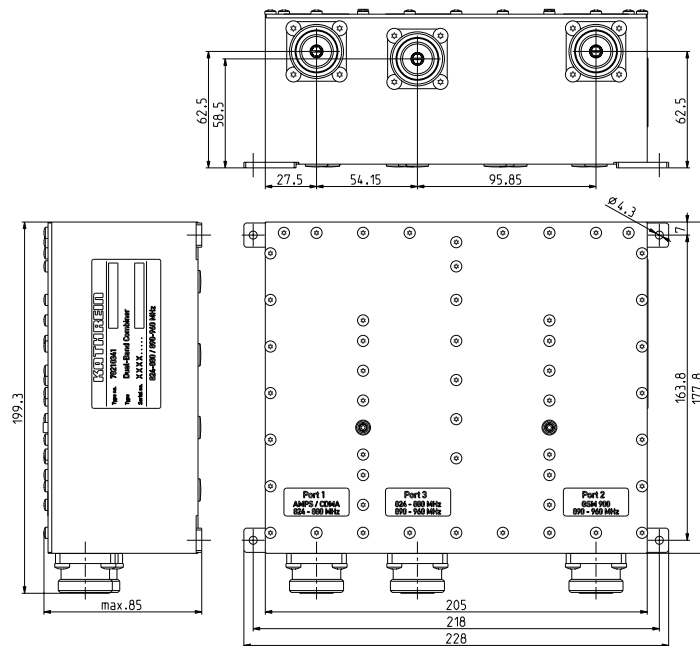
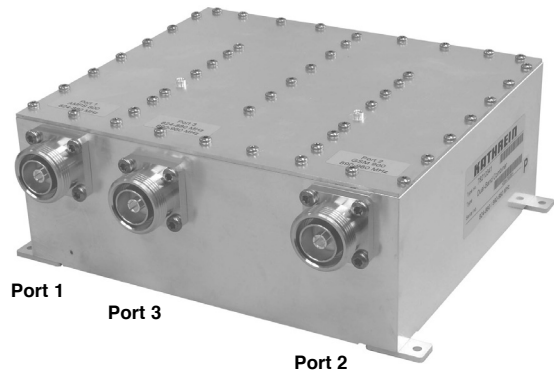
**KATHREIN**

Antennen · Electronic

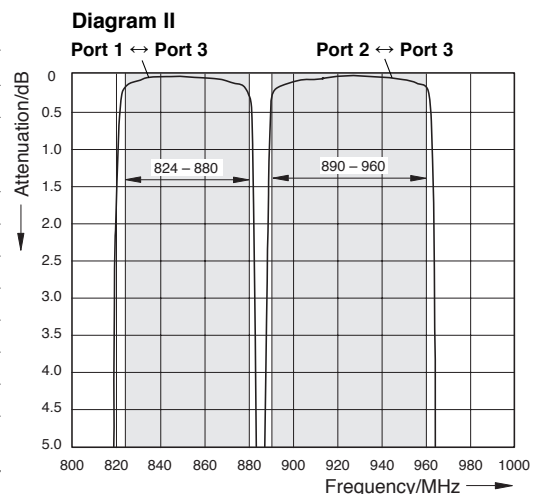
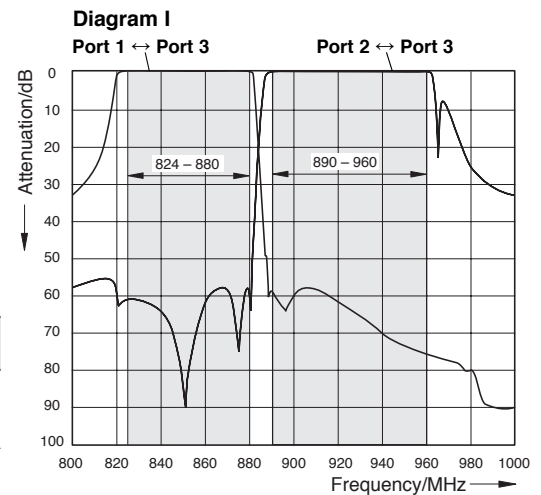
**824 – 880 MHz**  
AMPS / CDMA 850

**890 – 960 MHz**  
GSM 900

- Designed for co-siting purposes
- Enables feeder sharing
- Suitable for indoor applications
- Built-in DC stop between all ports



## Typical Attenuation Curves



## Technical Data

Type No.	<b>782 10341</b>
Pass band	
Band 1 (AMPS / CDMA 800)	824 – 880 MHz
Band 2 (GSM 900)	890 – 960 MHz
Insertion loss	
Port 1 ↔ Port 3	< 0.6 dB (824 – 880 MHz)
Port 2 ↔ Port 3	< 0.6 dB (890 – 960 MHz)
Isolation	
Port 1 ↔ Port 2	> 55 dB (824 – 880 / 890 – 960 MHz)
VSWR	< 1.2 (824 – 880 / 890 – 960 MHz)
Impedance	50 Ω
Input power	
Band 1	< 400 W (with max. 8 carriers)
Band 2	< 400 W (with max. 8 carriers)
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors	7-16 female
Application	Indoor
Special features	Built-in DC stop between all ports
Mounting	With 4 screws (max. 4 mm diameter)
Weight	3.2 kg
Dimensions (w x h x d)	228 x 85 x 199.3 mm (including connectors and mounting feet)

# Dual-Band Combiner

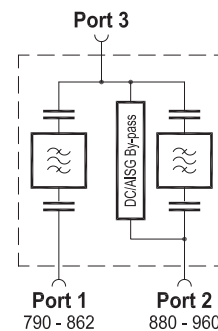
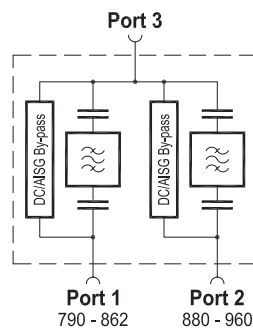
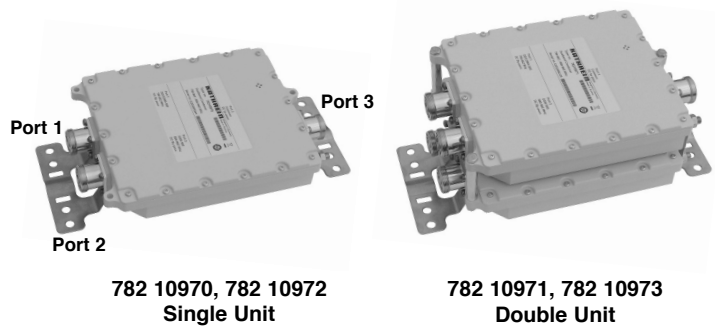
**KATHREIN**

Antennen · Electronic

**790 – 862 MHz**  
LTE 800

**880 – 960 MHz**  
GSM 900

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC stop available as an accessory



## Technical Data

Type No.	782 10970 Single Unit	782 10972 Single Unit
	782 10971 Double Unit	782 10973 Double Unit
Pass band Band 1 Band 2	790 – 862 MHz 880 – 960 MHz	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.4 dB, typically 0.2 dB (790 – 862 MHz) < 0.4 dB, typically 0.2 dB (880 – 960 MHz)	
Isolation Port 1 ↔ Port 2	> 50 dB (790 – 862 MHz / 880 – 960 MHz)	
VSWR	< 1.25 (790 – 862 / 880 – 960 MHz)	
Impedance	50 Ω	
Input power Band 1 / Band 2	< 200 W / < 200 W	
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Temperature range	-40 ... +60 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	<b>By-pass</b> (max. 2500 mA) <b>By-pass</b> (max. 2500 mA)	<b>Stop</b> <b>By-pass</b> (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	Single Unit: 2.9 kg / Double Unit: 5.8 kg	
Dimensions (w x h x d)	Single Unit: 175 x 51 x 207 mm / Double Unit: 175 x 106 x 207 mm (without connectors, without mounting brackets)	

# Dual-Band Combiner

**KATHREIN**

Antennen · Electronic

**790 – 862 MHz**  
LTE 800

**880 – 960 MHz**  
GSM 900

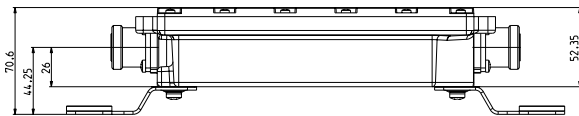
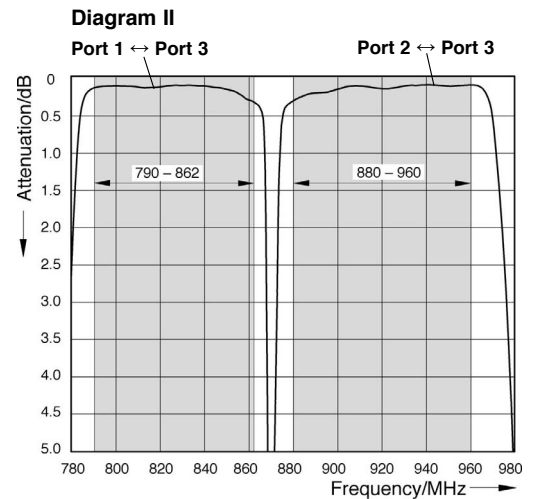
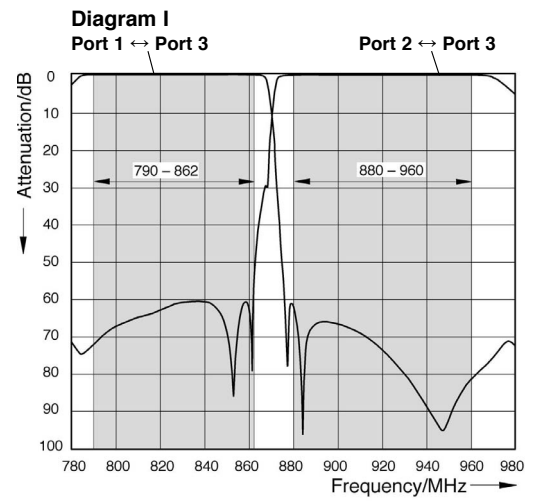
## Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	45 – 125 mm

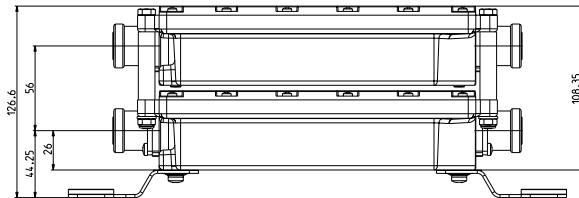


Type No.	Description
<b>793 301</b>	DC stop
<b>784 10367</b>	50-Ohm load

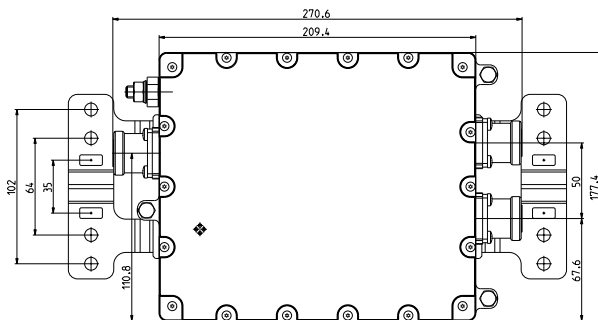
## Typical Attenuation Curves



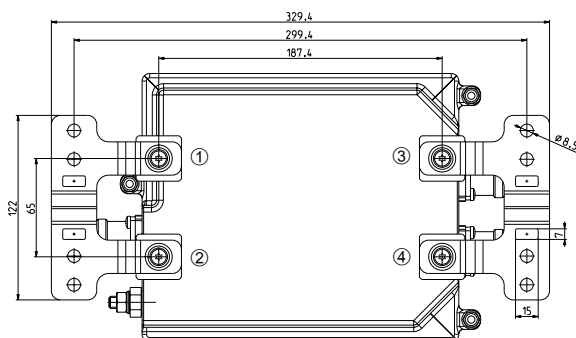
Side view  
Single Unit



Side view  
Double Unit



Top view  
Single Unit,  
Double Unit



Bottom view  
Single Unit,  
Double Unit

### Please note:

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 12) and replaced with other means of mounting, always provided that the max. drilled depth of 7.5 mm is respected with the choice of replacement screws.

# Dual-Band Combiner

**KATHREIN**

Antennen · Electronic

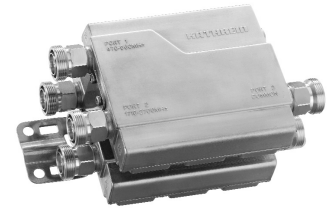
**470 – 960 MHz**  
LTE 800 / CDMA 850 / GSM 900

**1710 – 2700 MHz**  
GSM 1800 / UMTS 2100 / WiMAX / LTE 2600

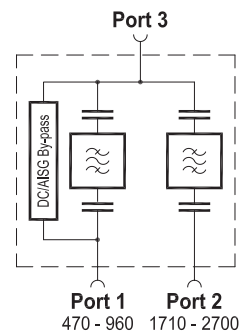
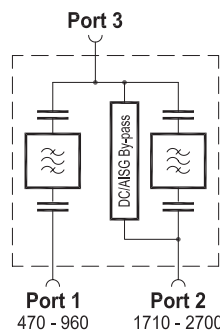
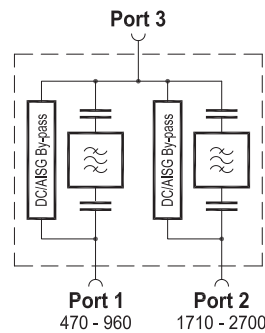
- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC stop available as an accessory
- **Extremely small dimensions and low weight**
- **Very low insertion loss**
- **High input power**



782 10660, 782 10662, 782 10664  
Single Unit



782 10661, 782 10663, 782 10665  
Double Unit



## Technical Data

Type No.	782 10660 Single Unit	782 10662 Single Unit	782 10664 Single Unit
	782 10661 Double Unit	782 10663 Double Unit	782 10665 Double Unit
Pass band Band 1 Band 2	470 – 960 MHz 1710 – 2700 MHz		
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.15 dB (470 – 960 MHz), typically 0.1 dB (470 – 960 MHz) < 0.2 dB (1710 – 2700 MHz), typically 0.1 dB (1710 – 2700 MHz)		
Isolation Port 1 ↔ Port 2	> 55 dB (470 – 960 MHz) / > 65 dB (1710 – 2700 MHz)		
VSWR	< 1.2 (470 – 960 / 1710 – 2700 MHz)		
Impedance	50 Ohm		
Input power Band 1 / Band 2	< 650 W / < 350 W		
Intermodulation products	< –160 dBc (3 <sup>rd</sup> order with 2 x 20 W)		
Temperature range	–55 ... +60 °C		
Connectors	7-16 female (long neck)		
Application	Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	<b>By-pass</b> (max. 2500 mA) <b>By-pass</b> (max. 2500 mA)	<b>Stop</b> <b>By-pass</b> (max. 2500 mA)	<b>By-pass</b> (max. 2500 mA) <b>Stop</b>
Lightning protection	3 kA, 10/350 µs pulse		
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set		
Weight	Single Unit: 1.2 kg / Double Unit: 2.4 kg		
Packing size	Single Unit: 285 x 157 x 93 mm / Double Unit: 285 x 157 x 148 mm		
Dimensions (w x h x d)	Single Unit: 126 x 145 x 38 mm / Double Unit: 126 x 145 x 93 mm (without connectors, without mounting brackets)		

# Dual-Band Combiner

**KATHREIN**

Antennen · Electronic

**470 – 960 MHz**  
LTE 800 / CDMA 850 / GSM 900

**1710 – 2700 MHz**  
GSM 1800 / UMTS 2100 / WiMAX / LTE 2600

## Accessories (order separately)

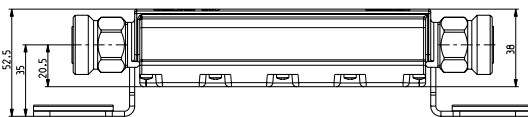
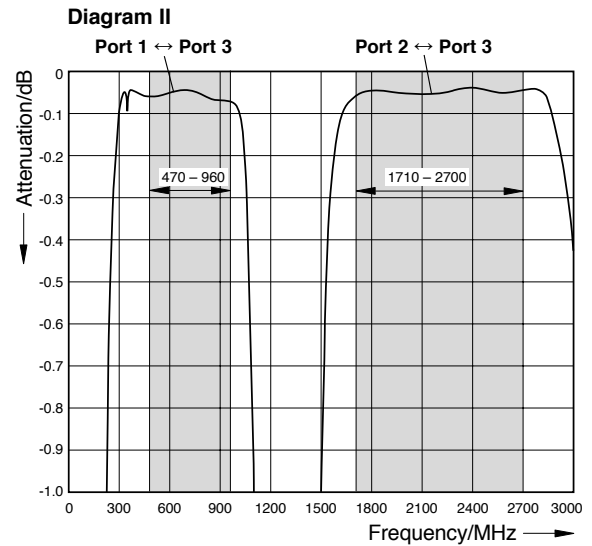
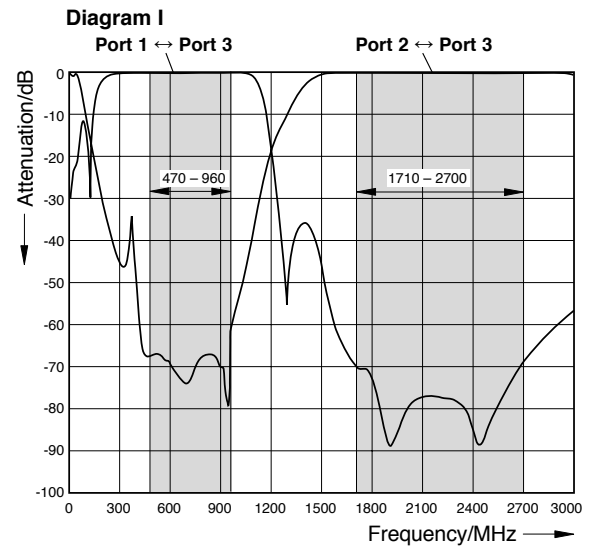
Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



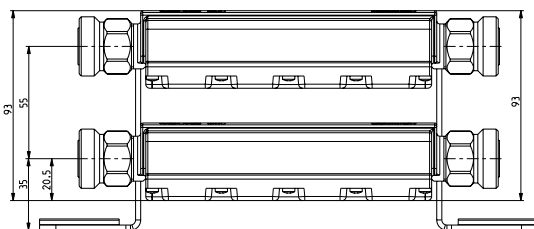
Type No.	Description
782 10850	DC stop
784 10367	50-Ohm load



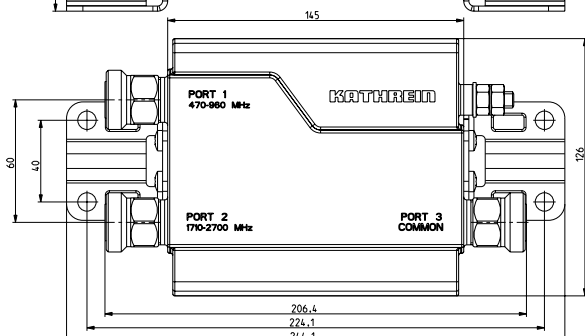
## Typical Attenuation Curves



Side view  
Single Unit



Side view  
Double Unit



Top view  
Single Unit,  
Double Unit



# Dual-Band Combiner

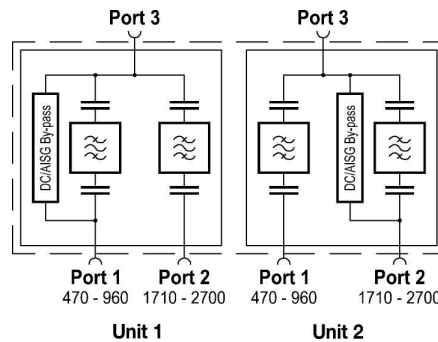
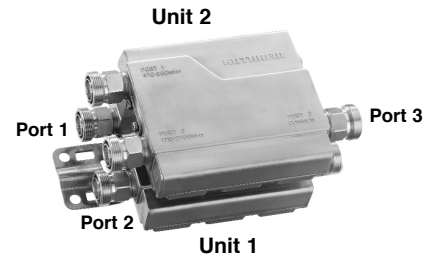
**KATHREIN**

Antennen · Electronic

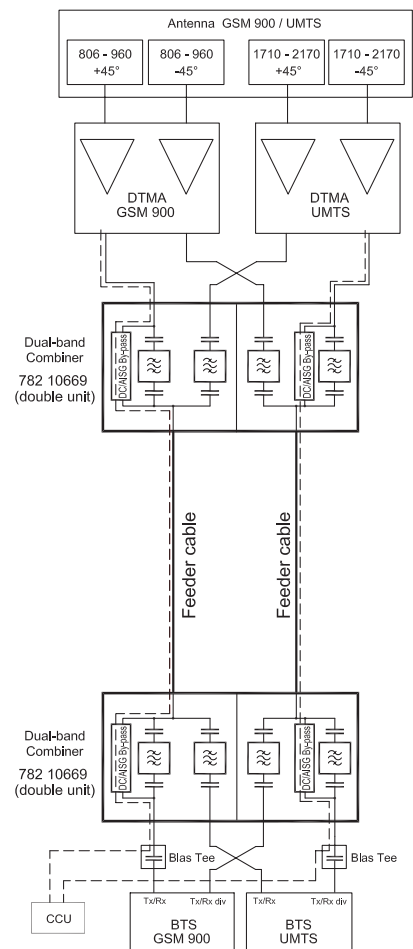
**470 – 960 MHz**  
LTE 800 / CDMA 850 / GSM 900

**1710 – 2700 MHz**  
GSM 1800 / UMTS 2100 / WiMAX / LTE 2600

- Designed to support separate DC/AISG supply for a low-band and high-band DTMA via 2 feeder cables (see application)
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Double unit for XPol antennas
- Built-in lightning protection
- **Extremely small dimensions and low weight**
- **Very low insertion loss**
- **High input power**



## Application Example



## Technical Data

Type No.	<b>782 10669</b> Double Unit	
Pass band Band 1 Band 2	470 – 960 MHz 1710 – 2700 MHz	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.15 dB (470 – 960 MHz), typically 0.1 dB (470 – 960 MHz) < 0.2 dB (1710 – 2700 MHz), typically 0.1 dB (1710 – 2700 MHz)	
Isolation Port 1 ↔ Port 2	> 55 dB (470 – 960 MHz) / > 65 dB (1710 – 2700 MHz)	
VSWR	< 1.2 (470 – 960 / 1710 – 2700 MHz)	
Impedance	50 Ohm	
Input power Band 1 / Band 2	< 650 W / < 350 W	
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order with 2 x 20 W)	
Temperature range	-55 ... +60 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	<b>Unit 1</b> By-pass (max. 2500 mA) Stop	<b>Unit 2</b> Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 µs pulse	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	2.4 kg	
Packing size	285 x 157 x 148 mm	
Dimensions (w x h x d)	126 x 145 x 93 mm (without connectors, without mounting brackets)	

# Dual-Band Combiner

**KATHREIN**

Antennen · Electronic

**470 – 960 MHz**  
LTE 800 / CDMA 850 / GSM 900

**1710 – 2700 MHz**  
GSM 1800 / UMTS 2100 / WiMAX / LTE 2600

## Accessories (order separately)

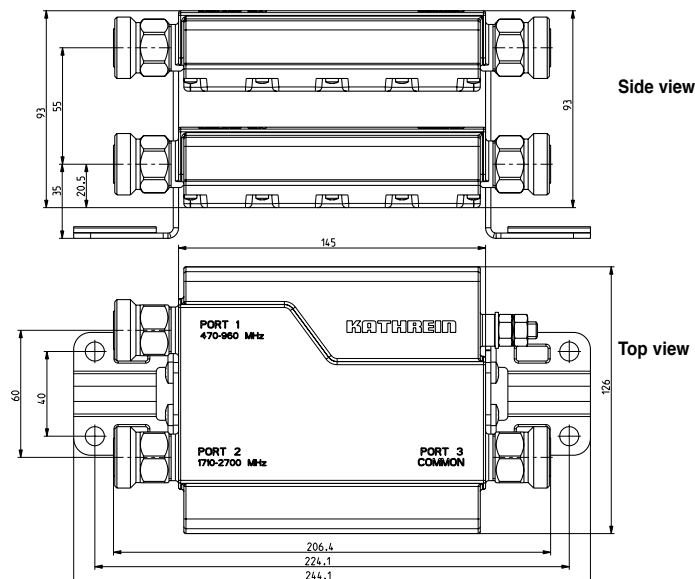
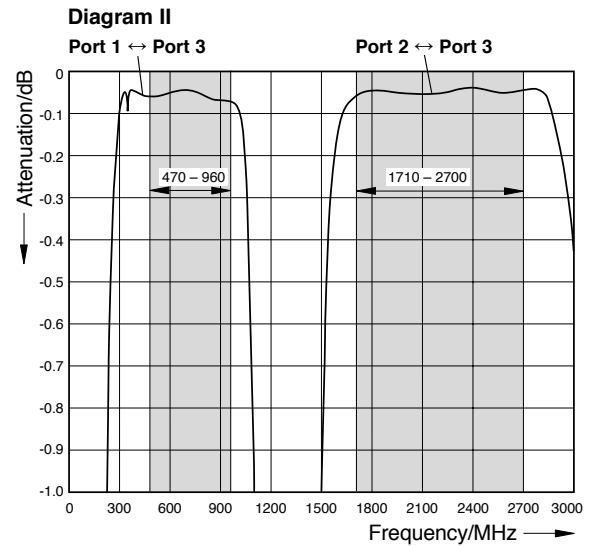
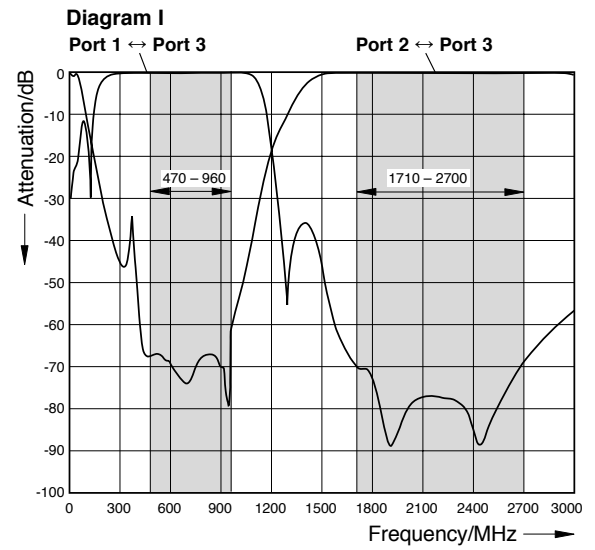
Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



Type No.	Description
782 10850	DC stop
784 10367	50-Ohm load



## Typical Attenuation Curves



# Dual-Band Combiner

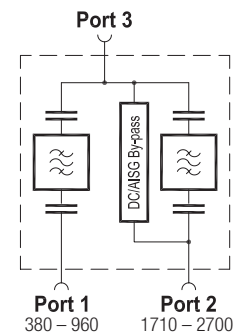
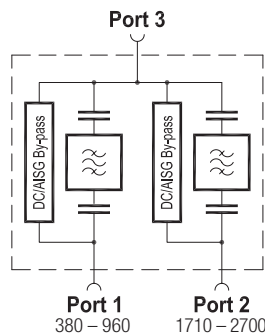
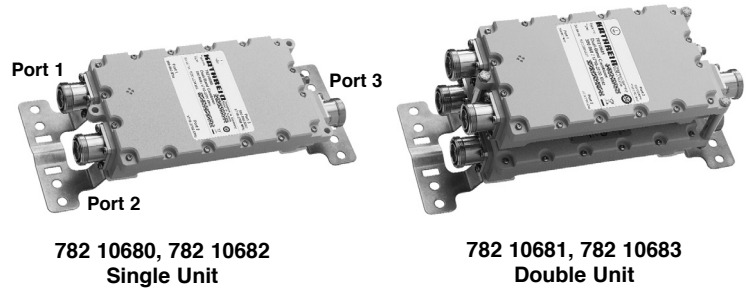
**KATHREIN**

Antennen · Electronic

**380 – 960 MHz**  
TETRA / LTE800 / CDMA850 / GSM900

**1710 – 2700 MHz**  
GSM1800 / UMTS / WiMAX / LTE2600

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC stop available as an accessory
- **Extremely low insertion loss**
- **High input power**



## Technical Data

Type No.	782 10680 Single Unit	782 10682 Single Unit
	782 10681 Double Unit	782 10683 Double Unit
Pass band Band 1 Band 2	380 – 960 MHz 1710 – 2700 MHz	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.1 dB (380 – 960 MHz) < 0.1 dB (1710 – 2700 MHz)	
Isolation Port 1 ↔ Port 2	> 55 dB (380 – 550 MHz) / > 65 dB (550 – 960 MHz) / > 65 dB (1710 – 2700 MHz)	
VSWR	< 1.2 (380 – 960 / 1710 – 2700 MHz)	
Impedance	50 Ω	
Input power Band 1 / Band 2	< 700 W / < 700 W	
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Temperature range	-55 ... +60 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	<b>By-pass</b> (max. 2500 mA) <b>By-pass</b> (max. 2500 mA)	<b>Stop</b> <b>By-pass</b> (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	Single Unit: 2.2 kg / Double Unit: 4.3 kg	
Packing size	Single Unit: 365 x 207 x 150 mm / Double Unit: 365 x 207 x 214 mm	
Dimensions (w x h x d)	Single Unit: 117 x 210 x 50 mm / Double Unit: 117 x 210 x 102 mm (without connectors, without mounting brackets)	

# Dual-Band Combiner

**KATHREIN**

Antennen · Electronic

**380 – 960 MHz**  
TETRA / LTE800 / CDMA850 / GSM900

**1710 – 2700 MHz**  
GSM1800 / UMTS / WiMAX / LTE2600

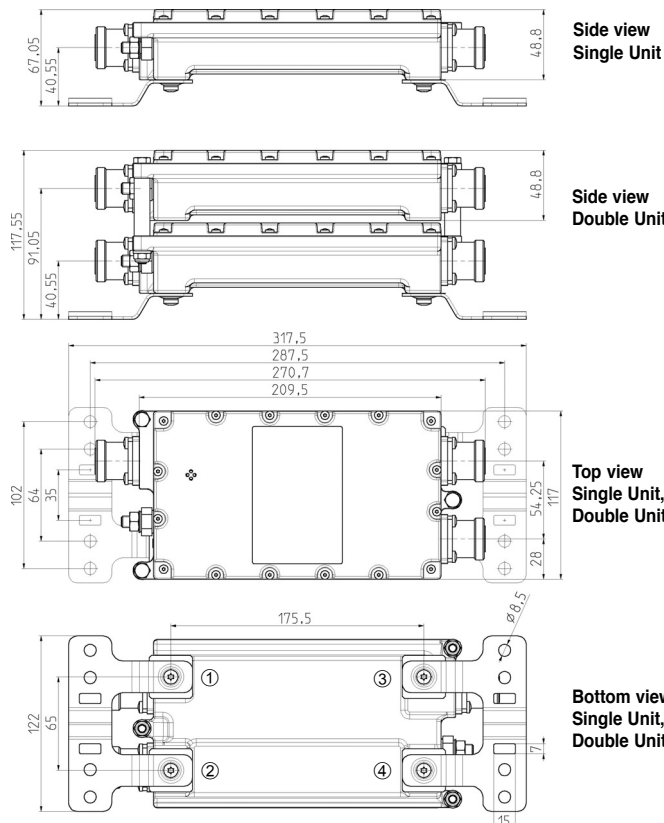
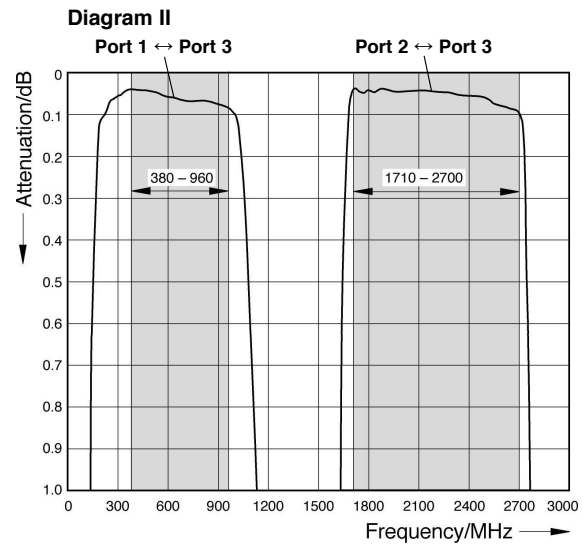
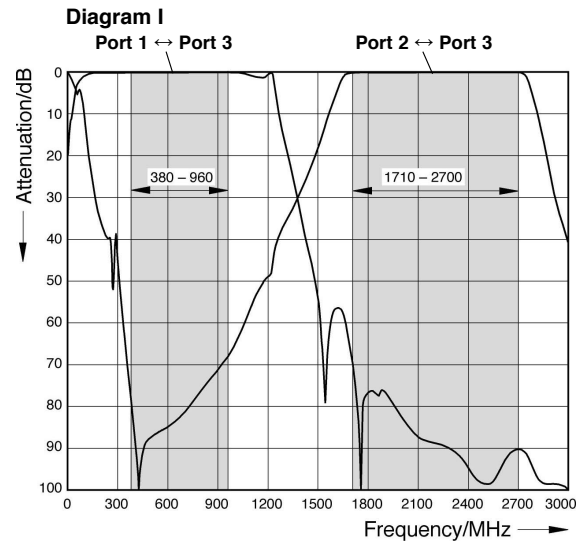
## Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>



Type No.	Description
<b>782 10850</b>	<b>DC stop</b>
<b>784 10367</b>	<b>50-Ohm load</b>

## Typical Attenuation Curves



**Please note:**

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 12) and replaced with other means of mounting, always provided that the max. drilled depth of 7.5 mm is respected with the choice of replacement screws.

# Dual-Band Combiner

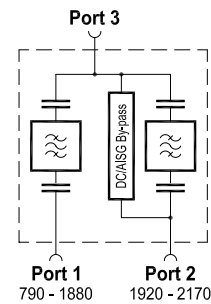
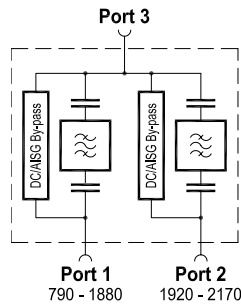
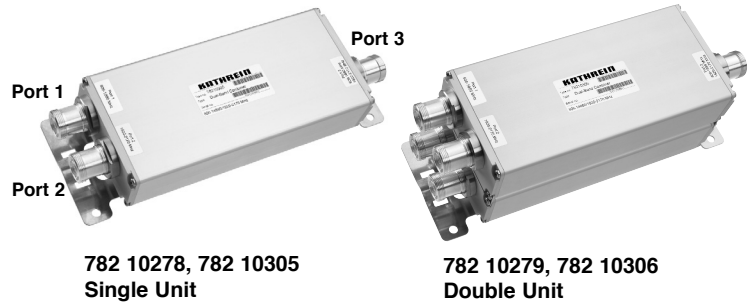
**KATHREIN**

Antennen · Electronic

**790 – 1880 MHz**  
LTE 800 / CDMA 850 / GSM 900 / GSM 1800

**1920 – 2170 MHz**  
UMTS

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC Stop available as an accessory



## Technical Data

Type No.	782 10278 Single Unit	782 10305 Single Unit
	782 10279 Double Unit	782 10306 Double Unit
Pass band Band 1 Band 2	790 – 1880 MHz 1920 – 2170 MHz	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.1 dB, typically 0.05 dB (790 – 960 MHz) / < 0.4 dB, typically 0.2 dB (1710 – 1880 MHz) < 0.4 dB, typically 0.2 dB (1920 – 2170 MHz)	
Isolation Port 1 ↔ Port 2	> 55 dB (790 – 960 MHz) / > 50 dB (1710 – 1880 MHz) / > 50 dB (1920 – 2170 MHz)	
VSWR	< 1.2 (790 – 960 MHz) / < 1.25 (1710 – 1880 MHz) / < 1.2 (1920 – 2170 MHz)	
Impedance	50 Ω	
Input power Band 1 / Band 2	< 500 W / < 500 W	
Intermodulation products	< -160 dBc (2 <sup>nd</sup> /3 <sup>rd</sup> order; with 2 x 20 W)	
Temperature range	-55 ... +60 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	<b>By-pass</b> (max. 2500 mA) <b>By-pass</b> (max. 2500 mA)	<b>Stop</b> <b>By-pass</b> (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	Single Unit: 3.4 kg / Double Unit: 6.6 kg	
Packing size	Single Unit: 207 x 437 x 154 mm / Double Unit: 207 x 437 x 214 mm	
Dimensions (w x h x d)	Single Unit: 130 x 269.9 x 43 mm / Double Unit: 130 x 269.9 x 98.5 mm (without connectors, without mounting brackets)	

# Dual-Band Combiner

**KATHREIN**

Antennen · Electronic

**790 – 1880 MHz**  
LTE 800 / CDMA 850 / GSM 900 / GSM 1800

**1920 – 2170 MHz**  
UMTS

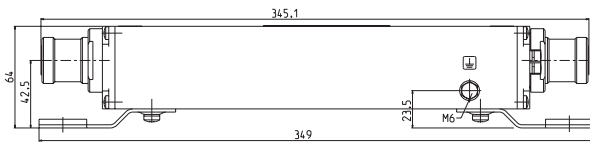
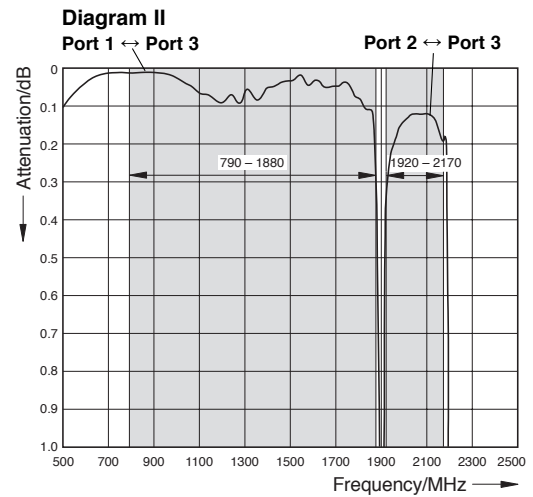
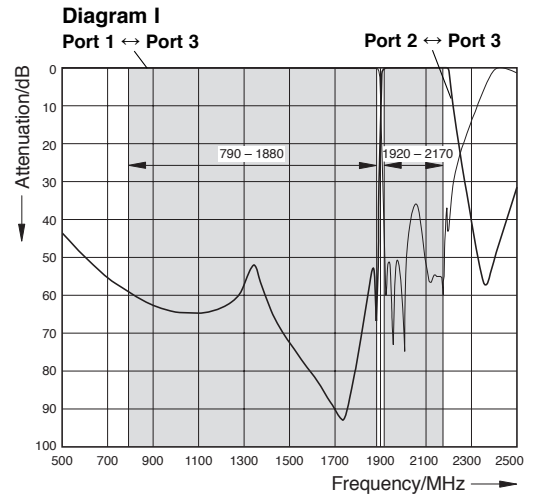
## Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

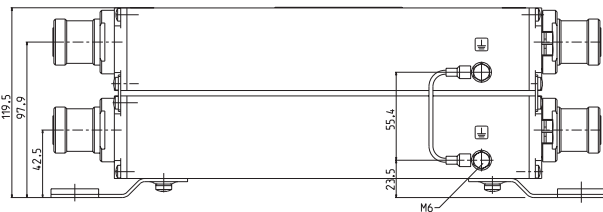


Type No.	Description
793 301	DC stop
784 10367	50-Ohm load

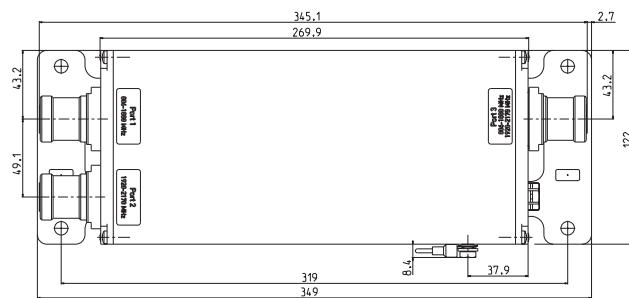
## Typical Attenuation Curves



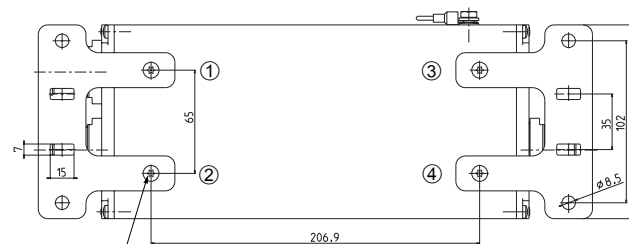
Side view, Single Unit



Side view, Double Unit



Top view, Single Unit, Double Unit



4 screws M5 x 10  
4 spring washers  
5.5 DIN 6095

Bottom view, Single Unit, Double Unit

### Please note:

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 10) and replaced with other means of mounting, always provided that the max. drilled depth of 8.5 mm is respected with the choice of replacement screws.

# Dual-Band Combiner

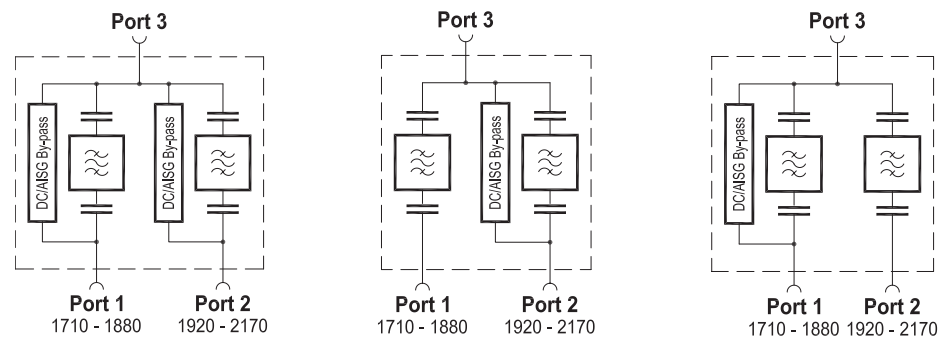
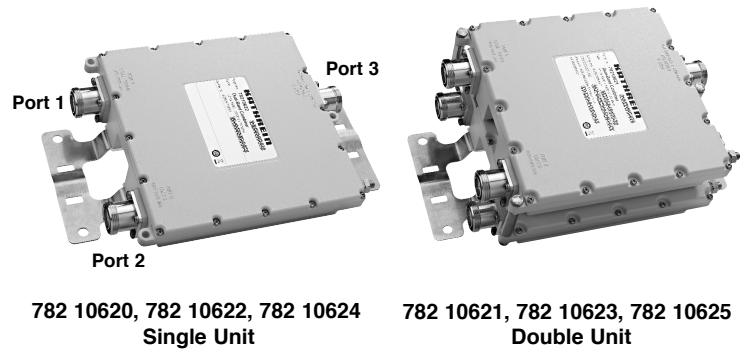
# KATHREIN

Antennen · Electronic

**1710 – 1880 MHz**  
GSM 1800

**1920 – 2170 MHz**  
UMTS 2100

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC Stop available as an accessory



## Technical Data

Type No.	782 10620 Single Unit	782 10622 Single Unit	782 10624 Single Unit
	782 10621 Double Unit	782 10623 Double Unit	782 10625 Double Unit
Pass band Band 1 (GSM 1800) Band 2 (UMTS)	1710 – 1880 MHz 1920 – 2170 MHz		
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.3 dB (1710 – 1880 MHz) < 0.3 dB (1920 – 2170 MHz)		
Isolation Port 1 ↔ Port 2	> 50 dB (1710 – 1880 / 1920 – 2170 MHz)		
VSWR	< 1.25 (1710 – 1880 / 1920 – 2170 MHz)		
Impedance	50 Ω		
Input power Band 1 / Band 2	< 300 W / < 300 W		
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)		
Temperature range	-40 ... +60 °C		
Connectors	7-16 female (long neck)		
Application	Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	<b>By-pass</b> (max. 2500 mA) <b>By-pass</b> (max. 2500 mA)	<b>Stop</b> <b>By-pass</b> (max. 2500 mA)	<b>By-pass</b> (max. 2500 mA) <b>Stop</b>
Lightning protection	3 kA, 10/350 μs pulse		
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set		
Weight	Single Unit: 2.9 kg / Double Unit: 5.7 kg		
Packing size	Single Unit: 392 x 272 x 139 mm / Double Unit: 392 x 272 x 189 mm		
Dimensions (w x h x d)	Single Unit: 199 x 199 x 48 mm / Double Unit: 199 x 199 x 100 mm (without connectors, without mounting brackets)		



# Dual-Band Combiner

**KATHREIN**

Antennen · Electronic

**1710 – 1880 MHz**  
GSM 1800

**1920 – 2170 MHz**  
UMTS 2100

## Accessories (order separately)

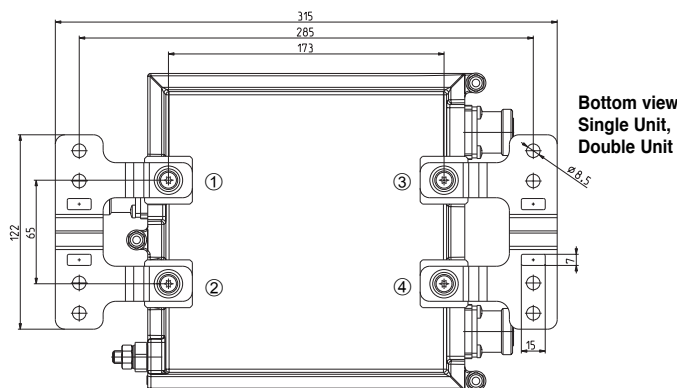
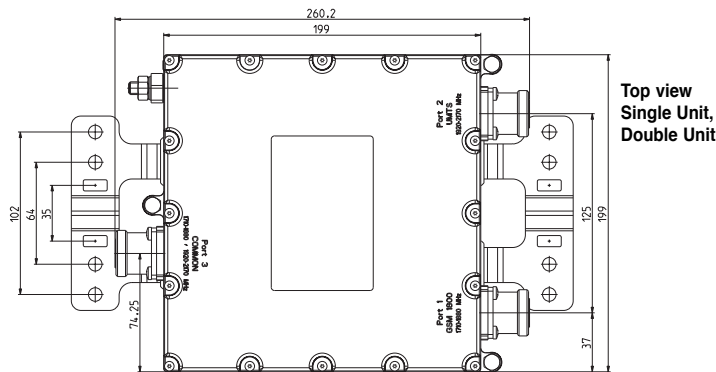
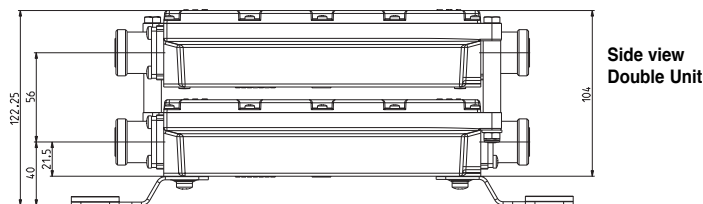
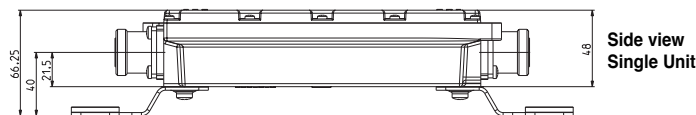
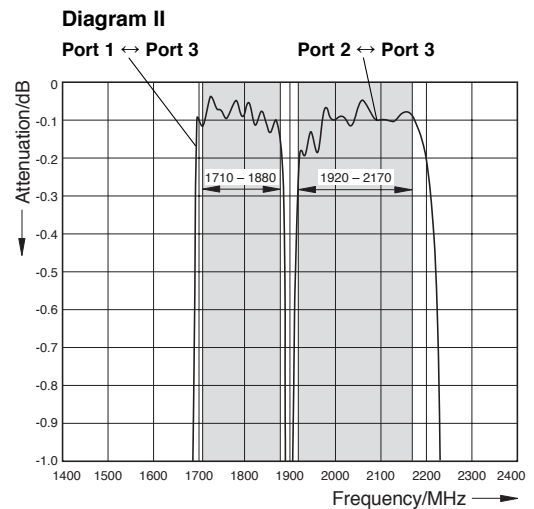
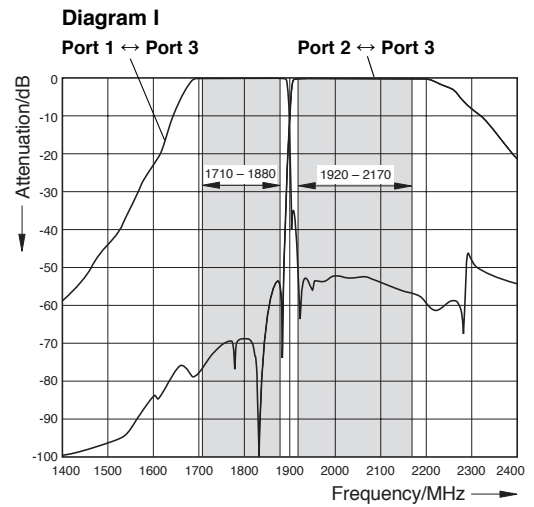
Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

Type No.	Description
793 301	DC stop
784 10367	50-Ohm load



## Typical Attenuation Curves



### Please note:

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 12) and replaced with other means of mounting, always provided that the max. drilled depth of 7.5 mm is respected with the choice of replacement screws.



# Dual-Band Combiner

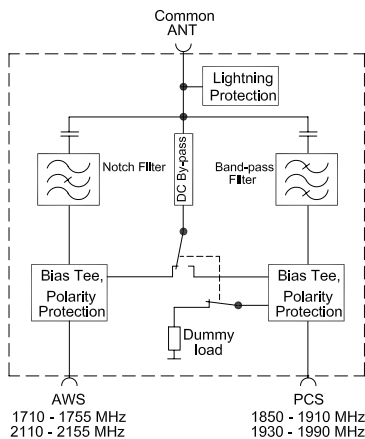
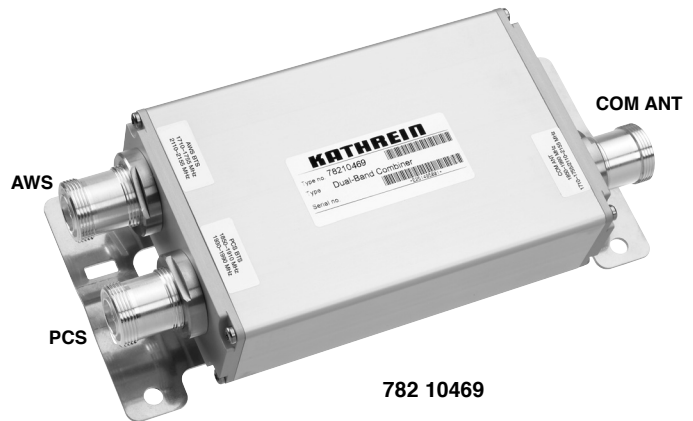
**KATHREIN**

Antennen · Electronic

1850 – 1910 / 1930 – 1990 MHz  
PCS

1710 – 1755 / 2110 – 2155 MHz  
AWS

- Designed for co-siting purposes
- Enables feeder sharing
- Suitable for indoor or outdoor applications
- With fault detection and integrated switch for multiple DC power supply



782 10469

## Typical Attenuation Curves

Diagram I

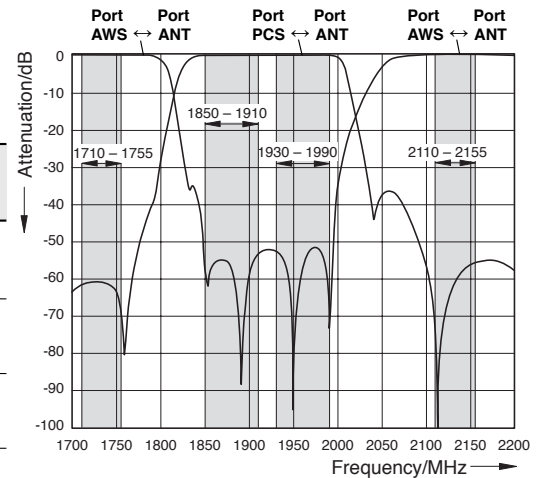
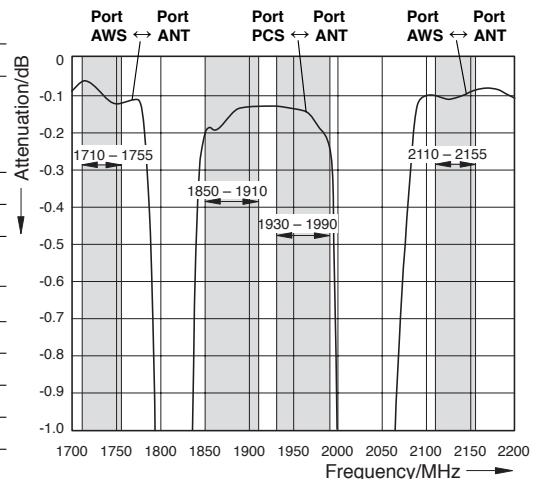


Diagram II



## Technical Data

Type No.	782 10469 Single unit	782 10808 Double unit
Pass band Band 1 (PCS) Band 2 (AWS)	1850 – 1910 (Rx) / 1930 – 1990 (Tx) MHz 1710 – 1755 (Rx) / 2110 – 2155 (Tx) MHz	
Insertion loss Port PCS ↔ Port ANT Port AWS ↔ Port ANT	< 0.3 dB (1850 – 1910 / 1930 – 1990 MHz) < 0.2 dB (1710 – 1755 / 2110 – 2155 MHz)	
Isolation Port PCS ↔ Port AWS	> 50 dB (1850 – 1910 / 1930 – 1990 MHz) > 50 dB (1710 – 1755 / 2110 – 2155 MHz)	
VSWR	< 1.25 (1850 – 1910 / 1930 – 1990 MHz) < 1.25 (1710 – 1755 / 2110 – 2155 MHz)	
Impedance	50 Ω	
Input power Port PCS Port AWS	< 250 W (1850 – 1910 / 1930 – 1990 MHz) < 250 W (1710 – 1755 / 2110 – 2155 MHz)	
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Power supply voltage operational survival	+10 ... +15 V DC (Port PCS) +10 ... +30 V DC (Port AWS) +10 ... +35 V DC	
Polarity protection	-48 V DC (Port PCS, Port AWS)	
Max. Current	1.5 A (Port ANT)	
Power supply current at PCS port operating with dummy load	100 mA ±20 mA (+10 ... +15 V DC)	
Lightning protection	8/20 μs, 20 kA; 10/350 μs, 3 kA (Port ANT)	
Temperature range	-40 ... +65 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
Weight	2.5 kg	5 kg
Dimensions (w x h x d)	122 x 216.3 x 47 mm	122 x 216.3 x 102.6 mm (without connectors, without mounting brackets)

# Dual-Band Combiner

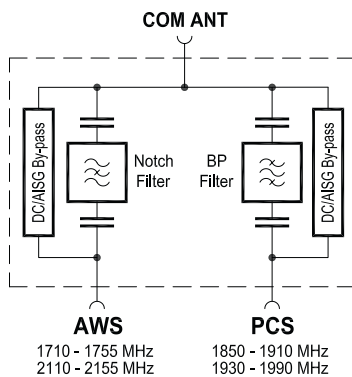
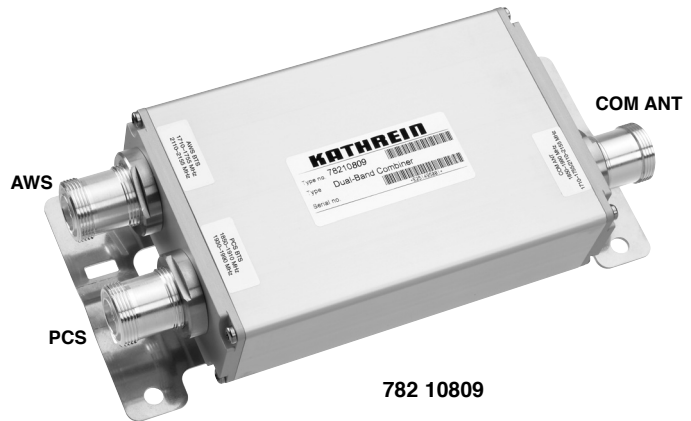
**KATHREIN**

Antennen · Electronic

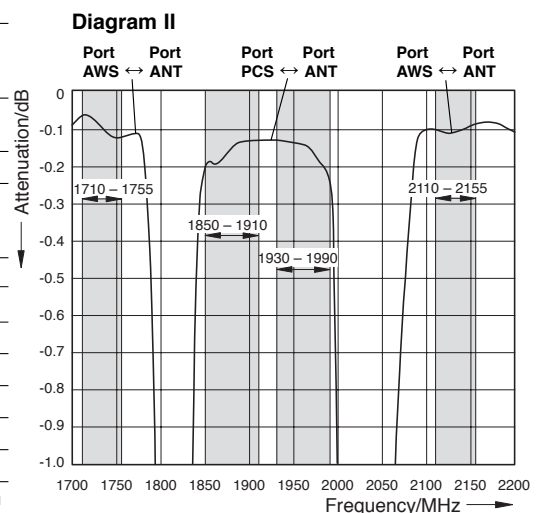
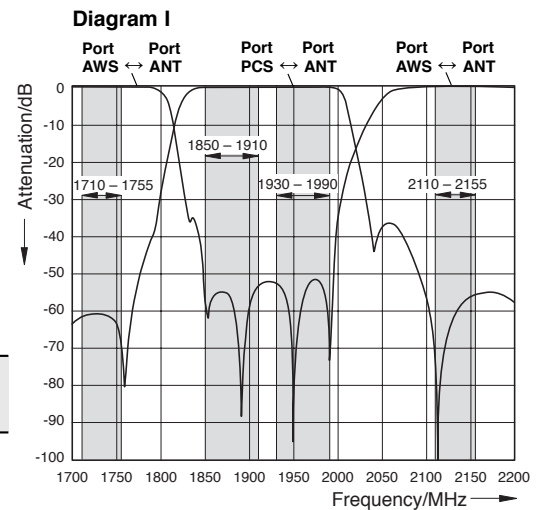
1850 – 1910 / 1930 – 1990 MHz  
PCS

1710 – 1755 / 2110 – 2155 MHz  
AWS

- Designed for co-siting purposes
- Enables feeder sharing
- Suitable for indoor or outdoor applications
- DC by-pass between all ports
- External DC stop available as an accessory



## Typical Attenuation Curves



## Technical Data

Type No.	782 10809 Single unit	782 10810 Double unit
Pass band Band 1 (PCS) Band 2 (AWS)	1850 – 1910 (Rx) / 1930 – 1990 (Tx) MHz 1710 – 1755 (Rx) / 2110 – 2155 (Tx) MHz	
Insertion loss Port PCS ↔ Port ANT Port AWS ↔ Port ANT	< 0.3 dB (1850 – 1910 / 1930 – 1990 MHz) < 0.2 dB (1710 – 1755 / 2110 – 2155 MHz)	
Isolation Port PCS ↔ Port AWS	> 50 dB (1850 – 1910 / 1930 – 1990 MHz) > 50 dB (1710 – 1755 / 2110 – 2155 MHz)	
VSWR	< 1.25 (1850 – 1910 / 1930 – 1990 MHz) < 1.25 (1710 – 1755 / 2110 – 2155 MHz)	
Impedance	50 Ω	
Input power Port PCS Port AWS	< 250 W (1850 – 1910 / 1930 – 1990 MHz) < 250 W (1710 – 1755 / 2110 – 2155 MHz)	
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Lightning protection	3 kA, 10/350 μs pulse	
Temperature range	-40 ... +65 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
DC/AISG transparency	By-pass between all ports (max. 2500 mA)	
Weight	2.5 kg	5 kg
Dimensions (w x h x d)	122 x 216.3 x 47 mm	122 x 216.3 x 102.6 mm (without connectors, without mounting brackets)

# Dual-Band Combiner

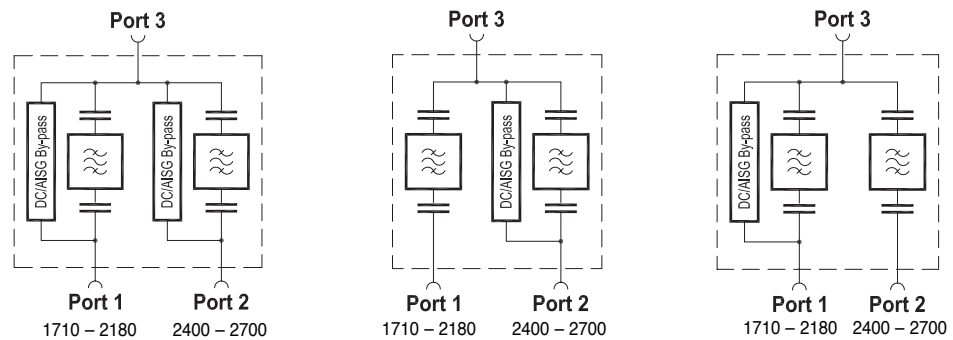
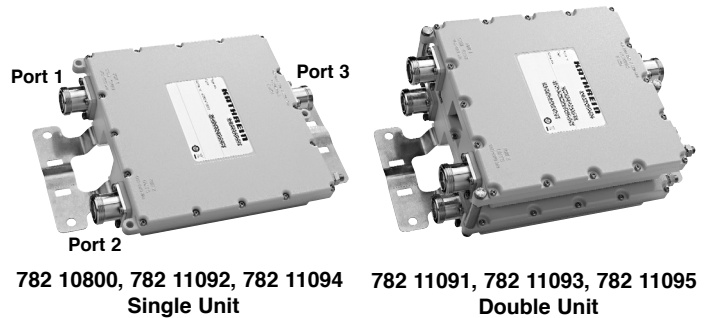
**KATHREIN**

Antennen · Electronic

**1710 – 2180 MHz**  
GSM1800 / PCS1900 / AWS / UMTS2100

**2400 – 2700 MHz**  
WLAN / WiMAX / BRS/ LTE2600

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC stop available as an accessory
- **Very low insertion loss**



## Technical Data

Type No.	782 10800 Single Unit	782 11092 Single Unit	782 11094 Single Unit
	782 11091 Double Unit	782 11093 Double Unit	782 11095 Double Unit
Pass band Band 1 Band 2	1710 – 2180 MHz 2400 – 2700 MHz		
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.15 dB < 0.15 dB		
Isolation Port 1 ↔ Port 2	> 60 dB		
VSWR	< 1.25 (1710 – 2180 / 2400 – 2700 MHz)		
Impedance	50 Ω		
Input power Band 1 / Band 2	< 300 W / < 300 W		
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order with 2 x 20 W)		
Temperature range	-40 ... +60 °C		
Connectors	7-16 female (long neck)		
Application	Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	<b>By-pass</b> (max. 2500 mA) <b>By-pass</b> (max. 2500 mA)	<b>Stop</b> <b>By-pass</b> (max. 2500 mA)	<b>By-pass</b> (max. 2500 mA) <b>Stop</b>
Lightning protection	3 kA, 10/350 μs pulse		
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set		
Weight	Single Unit: 2.9 kg / Double Unit: 5.7 kg		
Packing size	Single Unit: 392 x 272 x 139 mm / Double Unit: 392 x 272 x 189 mm		
Dimensions (w x h x d)	Single Unit: 199 x 199 x 44 mm / Double Unit: 199 x 199 x 95 mm (without connectors, without mounting brackets)		

# Dual-Band Combiner

# KATHREIN

Antennen · Electronic

**1710 – 2180 MHz**  
GSM1800 / PCS1900 / AWS / UMTS2100

**2400 – 2700 MHz**  
WLAN / WiMAX / BRS/ LTE2600

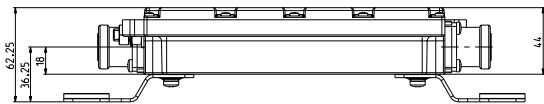
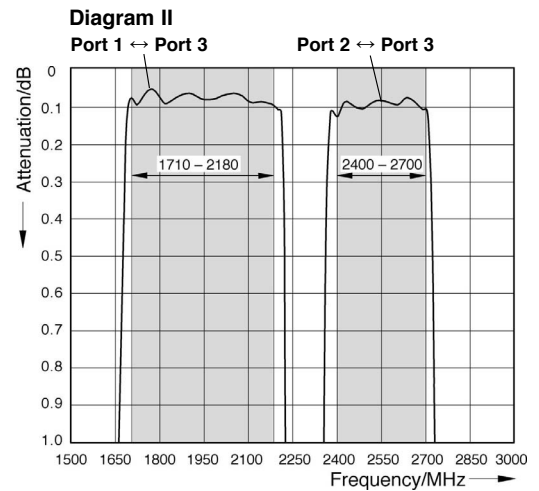
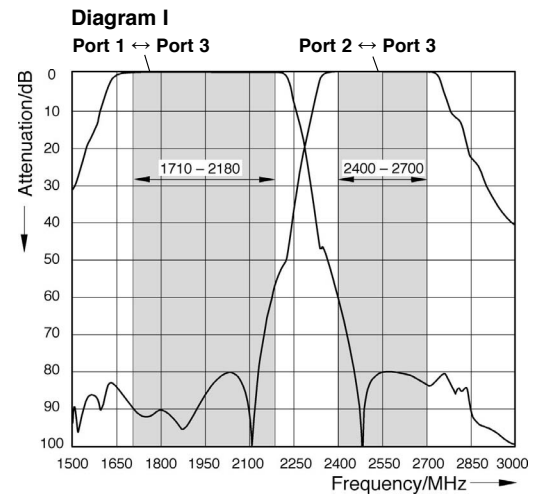
## Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

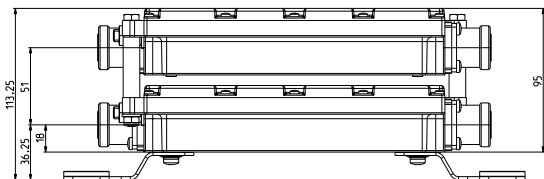


Type No.	Description
782 10850	DC stop
784 10367	50-Ohm load

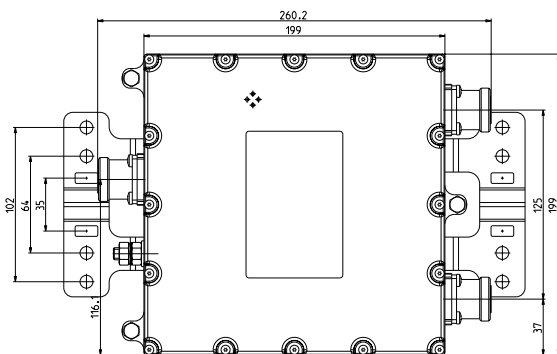
## Typical Attenuation Curves



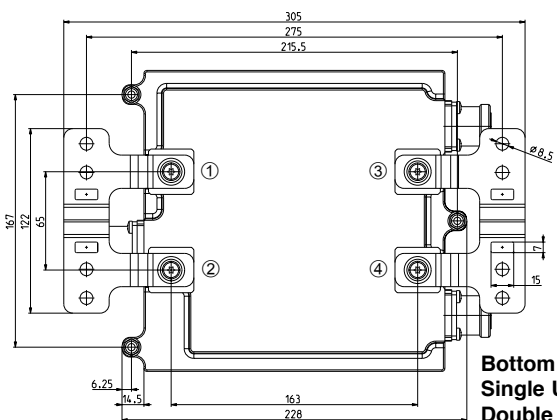
Single Unit  
Side view



Double Unit  
Side view



Top view  
Single Unit  
Double Unit



Bottom view  
Single Unit  
Double Unit

### Please note:

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 12) and replaced with other means of mounting, always provided that the max. drilled depth of 7.5 mm is respected with the choice of replacement screws.

# Triple-Band Combiner

**KATHREIN**

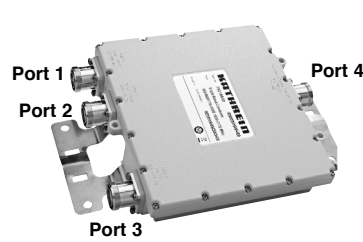
Antennen · Electronic

**380 – 960 MHz**  
TETRA, LTE 800, CDMA 850, GSM 900

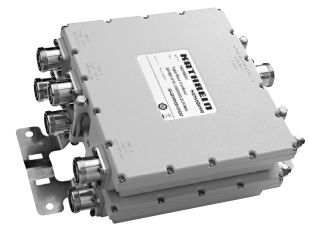
**1710 – 1880 MHz**  
GSM 1800

**1920 – 2170 MHz**  
UMTS 2100

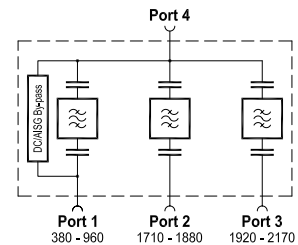
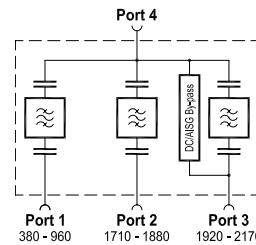
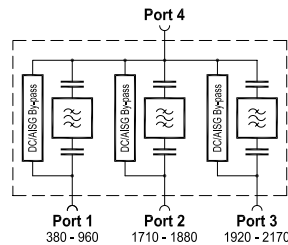
- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC Stop available as an accessory



782 10630, 782 10632, 782 10634  
Single Unit



782 10631, 782 10633, 782 10635  
Double Unit



## Technical Data

Type No.	782 10630 Single Unit	782 10632 Single Unit	782 10634 Single Unit
	782 10631 Double Unit	782 10633 Double Unit	782 10635 Double Unit
Pass band Band 1 (TETRA ... GSM 900) Band 2 (GSM 1800) Band 3 (UMTS)		380 – 960 MHz 1710 – 1880 MHz 1920 – 2170 MHz	
Insertion loss Port 1 ↔ Port 4 Port 2 ↔ Port 4 Port 3 ↔ Port 4		< 0.2 dB ( 380 – 960 MHz) < 0.3 dB (1710 – 1880 MHz) < 0.3 dB (1920 – 2170 MHz)	
Isolation Port 1 ↔ Port 2 Port 1 ↔ Port 3 Port 2 ↔ Port 3		> 45 dB (380 – 600 MHz) / > 50 dB (600 – 960 / 1710 – 1880 MHz) > 45 dB (380 – 600 MHz) / > 50 dB (600 – 960 / 1920 – 2170 MHz) > 50 dB (1710 – 1880 / 1920 – 2170 MHz)	
VSWR		< 1.25 (380 – 960 / 1710 – 1880 / 1920 – 2170 MHz)	
Impedance		50 Ω	
Input power Band 1 / Band 2 / Band 3		< 700 W / < 300 W / < 300 W	
Intermodulation products		< –160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Temperature range		–40 ... +60 °C	
Connectors		7-16 female (long neck)	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 4 Port 2 ↔ Port 4 Port 3 ↔ Port 4	<b>By-pass</b> (max. 2500 mA) <b>By-pass</b> (max. 2500 mA) <b>By-pass</b> (max. 2500 mA)	<b>Stop</b> <b>Stop</b> <b>By-pass</b> (max. 2500 mA)	<b>By-pass</b> (max. 2500 mA) <b>Stop</b> <b>Stop</b>
Lightning protection		3 kA, 10/350 μs pulse	
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight		Single Unit: 3.2 kg / Double Unit: 6.3 kg	
Packing size		Single Unit: 392 x 292 x 139 mm / Double Unit: 392 x 292 x 189 mm	
Dimensions (w x h x d)		Single Unit: 219 x 199 x 48 mm / Double Unit: 219 x 199 x 104 mm (without connectors, without mounting brackets)	

# Triple-Band Combiner

**KATHREIN**

Antennen · Electronic

**380 – 960 MHz**  
TETRA, LTE 800, CDMA 850, GSM 900

**1710 – 1880 MHz**  
GSM 1800

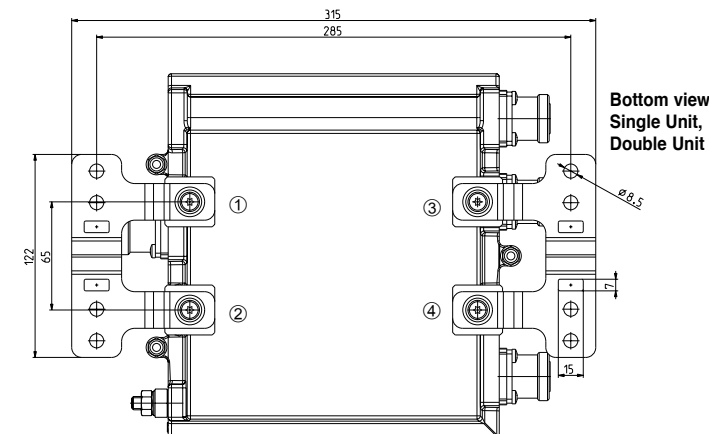
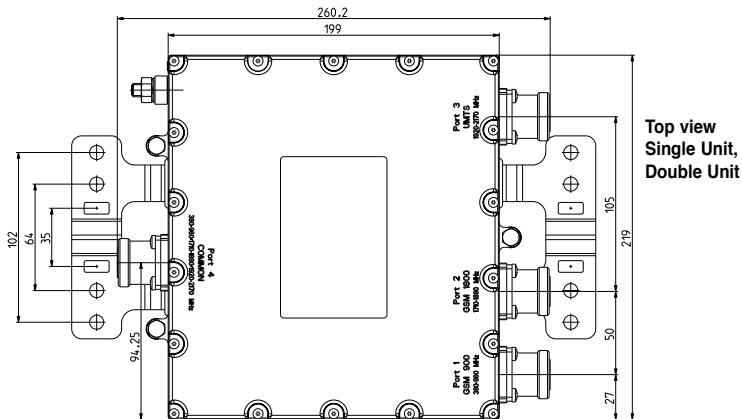
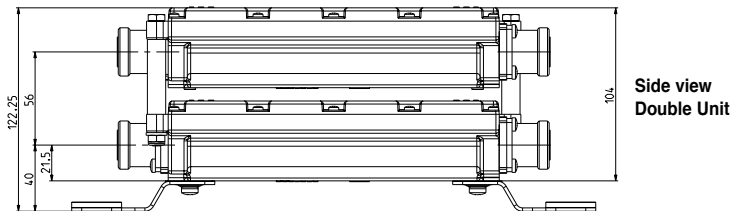
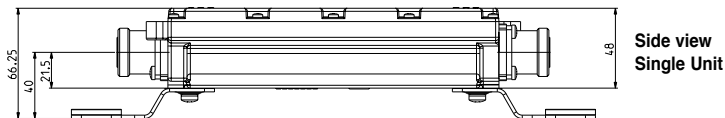
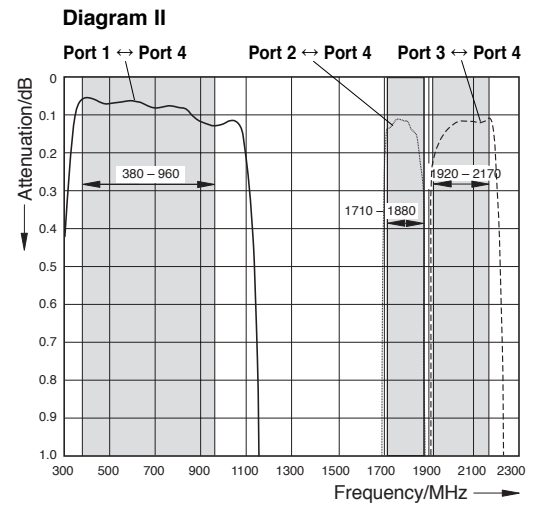
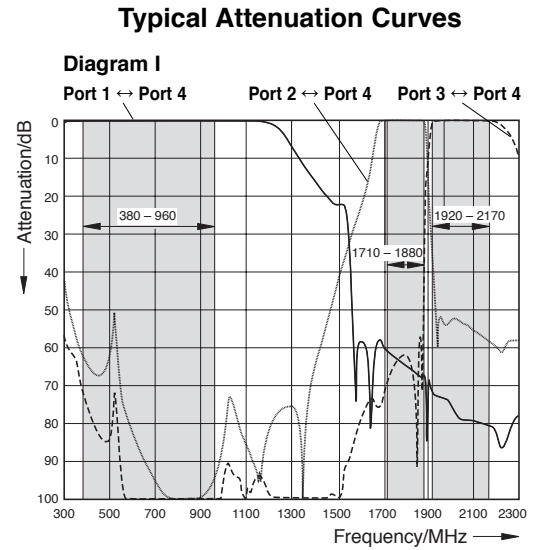
**1920 – 2170 MHz**  
UMTS 2100

## Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



Type No.	Description
782 10850	DC stop
784 10367	50-Ohm load



**Please note:**

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 12) and replaced with other means of mounting, always provided that the max. drilled depth of 7.5 mm is respected with the choice of replacement screws.



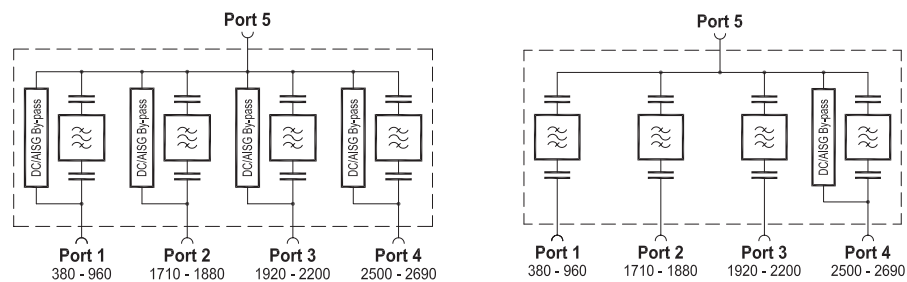
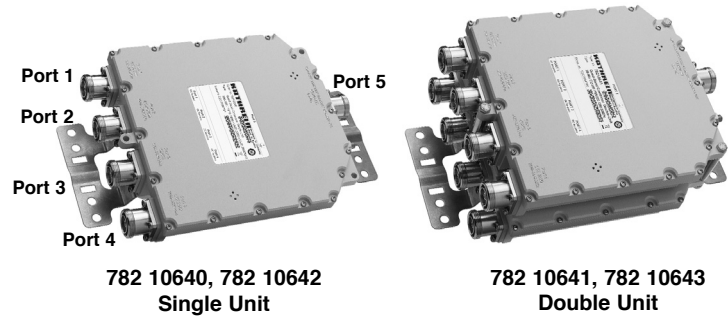
# Quad-Band Combiner

**KATHREIN**

Antennen · Electronic

<b>380 – 960 MHz</b> TETRA / LTE 800 / CDMA 850 / GSM 900	<b>1710 – 1880 MHz</b> GSM 1800	<b>1920 – 2200 MHz</b> UMTS 2100	<b>2500 – 2690 MHz</b> LTE 2600
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- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC Stop available as an accessory



## Technical Data

Type No.	<b>782 10640</b> Single Unit	<b>782 10642</b> Single Unit
	<b>782 10641</b> Double Unit	<b>782 10643</b> Double Unit
Pass band Band 1 (TETRA ... GSM 900) Band 2 (GSM 1800) Band 3 (UMTS) Band 4 (LTE 2600)	380 – 960 MHz 1710 – 1880 MHz 1920 – 2200 MHz 2500 – 2690 MHz	
Insertion loss Port 1 ↔ Port 5 Port 2 ↔ Port 5 Port 3 ↔ Port 5 Port 4 ↔ Port 5	< 0.2 dB ( 380 – 960 MHz) < 0.3 dB (1710 – 1880 MHz) < 0.3 dB (1920 – 2200 MHz) < 0.2 dB (2500 – 2690 MHz)	
Isolation Port 1 ↔ Port 2 Port 1 ↔ Port 3 Port 1 ↔ Port 4 Port 2 ↔ Port 3 Port 2 ↔ Port 4 Port 3 ↔ Port 4	> 45 dB (380 – 600 MHz) / > 50 dB (600 – 960 / 1710 – 1880 MHz) > 45 dB (380 – 600 MHz) / > 50 dB (600 – 960 / 1920 – 2200 MHz) > 45 dB (380 – 600 MHz) / > 50 dB (600 – 960 / 2500 – 2690 MHz) > 50 dB (1710 – 1880 / 1920 – 2200 MHz) > 50 dB (1710 – 1880 / 2500 – 2690 MHz) > 50 dB (1920 – 2200 / 2500 – 2690 MHz)	
VSWR	< 1.25 (380 – 960 / 1710 – 1880 / 1920 – 2200 / 2500 – 2690 MHz)	
Impedance	50 Ω	
Input power Band 1 / Band 2 / Band 3 / Band 4	< 700 W / < 300 W / < 300 W / < 200 W	
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Temperature range	-40 ... +60 °C	
Connectors	7-16 female (long neck)	
Application	Indoor <i>or</i> outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 5 Port 2 ↔ Port 5 Port 3 ↔ Port 5 Port 4 ↔ Port 5	<b>By-pass</b> (max. 2500 mA) <b>By-pass</b> (max. 2500 mA) <b>By-pass</b> (max. 2500 mA) <b>By-pass</b> (max. 2500 mA)	<b>Stop</b> <b>Stop</b> <b>Stop</b> <b>By-pass</b> (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	Single Unit: 3.8 kg / Double Unit: 7.5 kg	
Packing size	Single Unit: 392 x 292 x 139 mm / Double Unit: 392 x 292 x 189 mm	
Dimensions (w x h x d)	Single Unit: 215 x 228 x 50 mm / Double Unit: 215 x 228 x 106 mm (without connectors, without mounting brackets)	

# Quad-Band Combiner

**KATHREIN**

Antennen · Electronic

<b>380 – 960 MHz</b> TETRA / LTE 800 / CDMA 850 / GSM 900	<b>1710 – 1880 MHz</b> GSM 1800	<b>1920 – 2200 MHz</b> UMTS 2100	<b>2500 – 2690 MHz</b> LTE 2600
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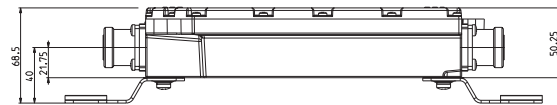
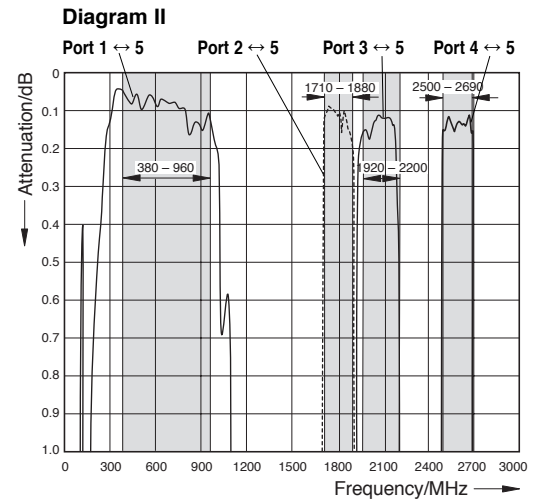
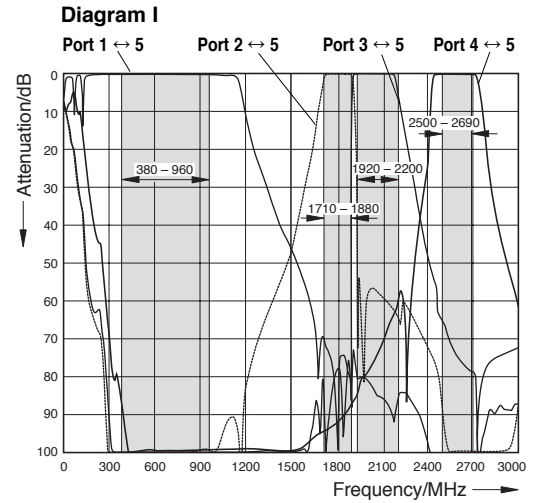
## Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

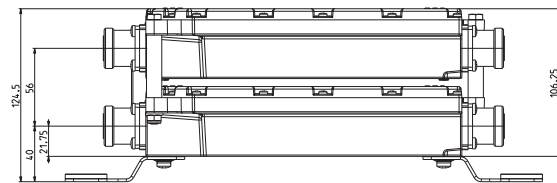


Type No.	Description
782 10850	DC stop
784 10367	50-Ohm load

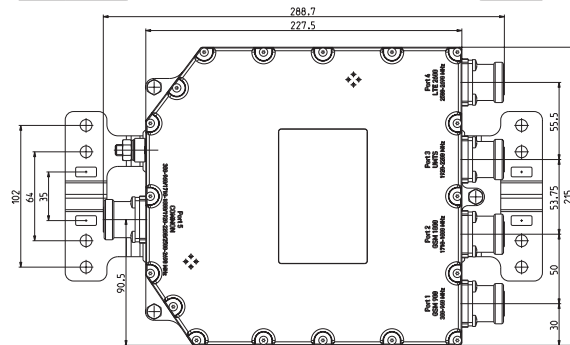
## Typical Attenuation Curves



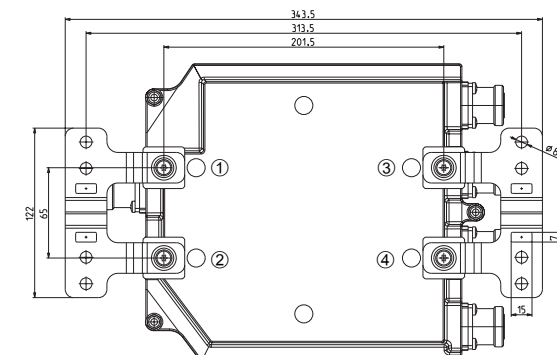
Side view  
Single Unit



Side view  
Double Unit



Top view  
Single Unit,  
Double Unit



Bottom view  
Single Unit,  
Double Unit

### Please note:

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 12) and replaced with other means of mounting, always provided that the max. drilled depth of 7.5 mm is respected with the choice of replacement screws.

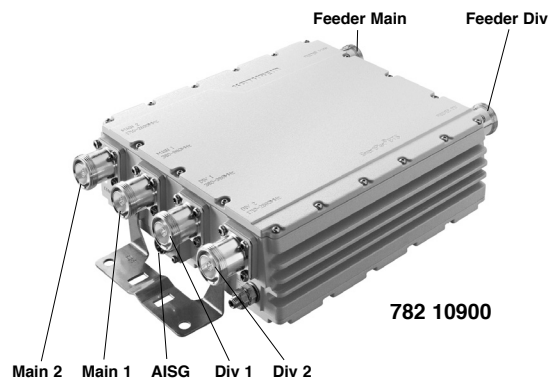
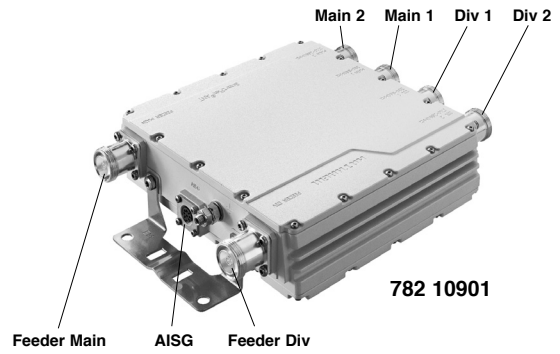


# SmartPlex® Dual-Band Combiner

**380 – 960 MHz**  
TETRA / LTE 800 / DD / CDMA / GSM 900

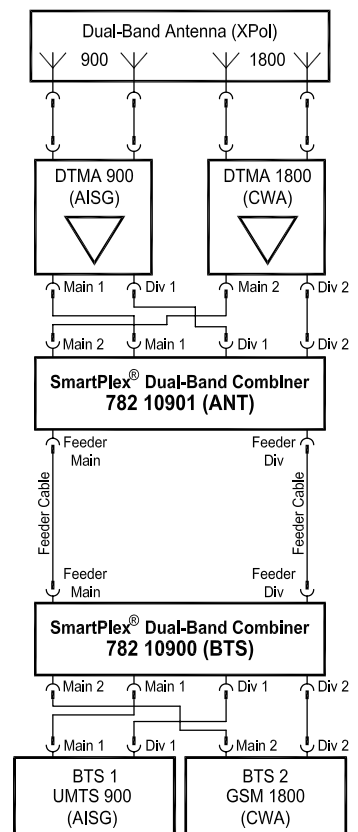
**1710 – 2690 MHz**  
GSM / PCS / AWS / UMTS 2100 / LTE

- Universal multi-protocol dual-band combiner
  - AISG 1.1
  - AISG 2.0
  - 3GPP
  - Current window alarming (CWA)
  - Vendor specific protocols
- Designed for co-siting purposes
- Enables feeder sharing
- **782 10900:** For use near the base station (**BTS**), thereby converting different base station DC voltages into one common feeder DC voltage (**multi-BTS power supply handling**)
- **782 10901:** For use near the antenna (**ANT**), thereby reproducing the base station DC voltages for the antenna line devices
- **Simultaneous** support of antenna line devices (TMA's, RET units)
- **Dynamic DC/AISG by-pass:** Automatic setting on each RF path according to the BTS and antenna line device requirements
- DC power supply either from BTS via RF path, or from an external source via AISG port (782 10900)
- Provides full **Smart Bias Tee functionality**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Double unit in one housing for XPol antennas
- Built-in lightning protection
- Very low insertion loss
- High input power



## Technical Data

Type No.	782 10901 (ANT)	782 10900 (BTS)
Pass band Band 1 / Band 2	380 – 960 / 1710 – 2690 MHz	
Insertion loss	< 0.2 dB, typically 0.15 dB (380 – 960 / 1710 – 2690 MHz)	
Isolation Main 1 ↔ Main 2 / Div 1 ↔ Div 2	> 60 dB (380 – 960 / 1710 – 2690 MHz)	
VSWR	< 1.22 (380 – 960 / 1710 – 2690 MHz)	
Impedance	50 Ohm	
Input power Band 1 / Band 2	< 500 W / < 300 W	
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Temperature range	-40 ... +60 °C	
Connectors	RF AISG	7-16 female (long neck) 8-pin, IEC 60130-9 (782 10900/901: Male/female) Pin 2: -48V DC (782 10900 only), Pin 3: RS485B, Pin 5: RS485A, Pin 6: Nominal 24 V DC, Pin 7: DC return (78210900/901: Not grounded/grounded), Other pins: Not connected
Power consumption	2 W (idle mode)	
DC supply	782 10900: 7 – 30 V DC (via RF connectors)	
Application	Indoor or outdoor (IP 67)	
DC/AISG transparency	For AISG 1.1, AISG 2.0, 3GPP, vendor specific protocols and for current window alarm (CWA) controlled TMA's	
Lightning protection	3 kA (10/350 μs pulse), 10 kA (8/20 μs pulse)	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	782 10900: 6.5 kg, 782 10901: 4.9 kg	
Dimensions (w x h x d)	782 10900: 233 x 258 x 79 mm 782 10901: 233 x 223 x 62 mm (without connectors, without mounting brackets)	



Application Example

# SmartPlex® Dual-Band Combiner

**KATHREIN**

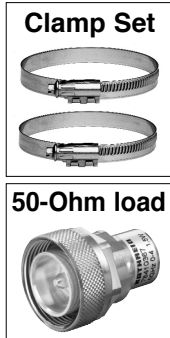
Antennen · Electronic

**380 – 960 MHz**  
TETRA / LTE 800 / DD / CDMA / GSM 900

**1710 – 2690 MHz**  
GSM / PCS / AWS / UMTS 2100 / LTE

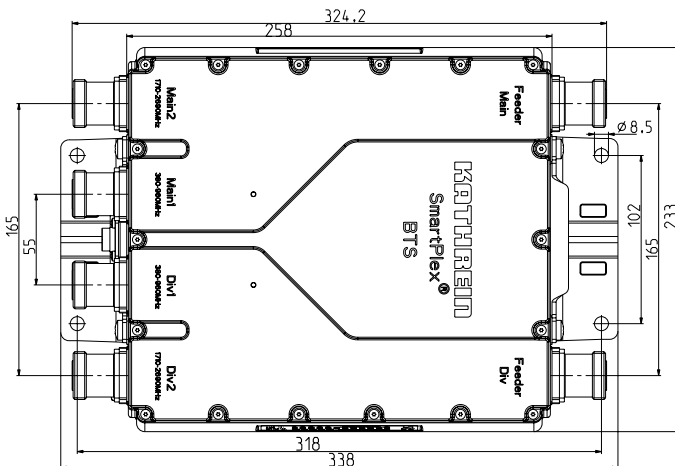
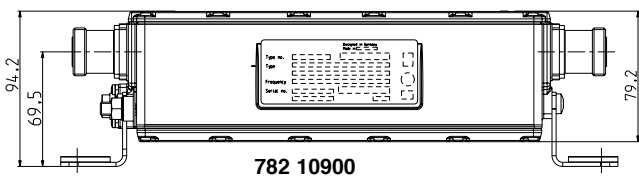
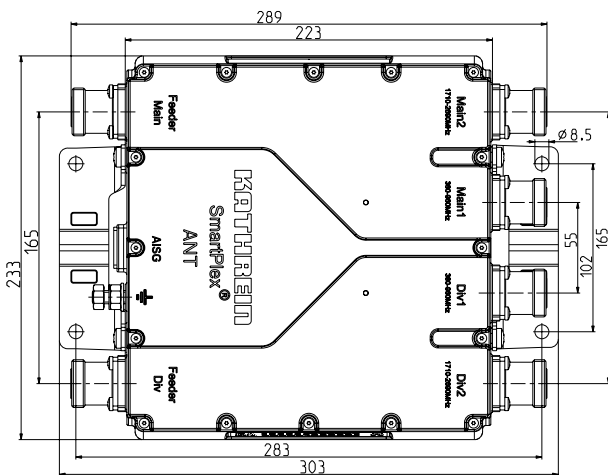
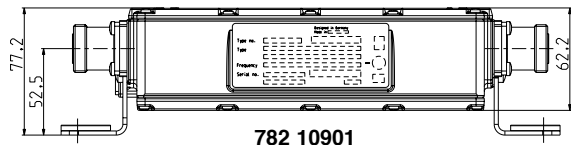
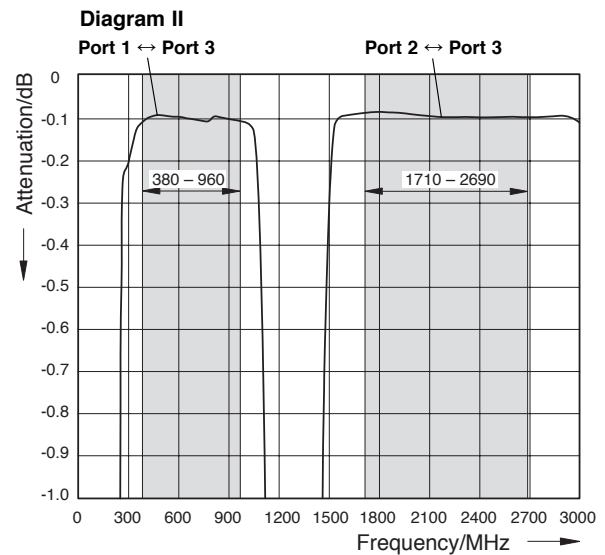
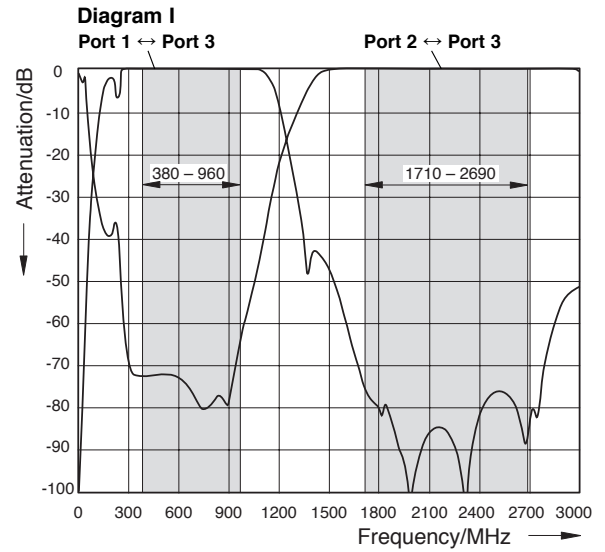
**Accessories (order separately)**

Type No.	Clamp set suitable for most diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>



Type No.	Description
<b>784 10367</b>	<b>50-Ohm load</b> 1.5 W / indoor or outdoor
<b>782 11100</b>	DC cable kit –48 VDC
<b>782 11101</b>	DC cable kit +24 VDC

**Typical Attenuation Curves**



# Dual-Band Combiner

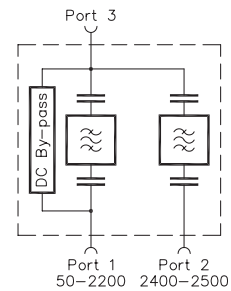
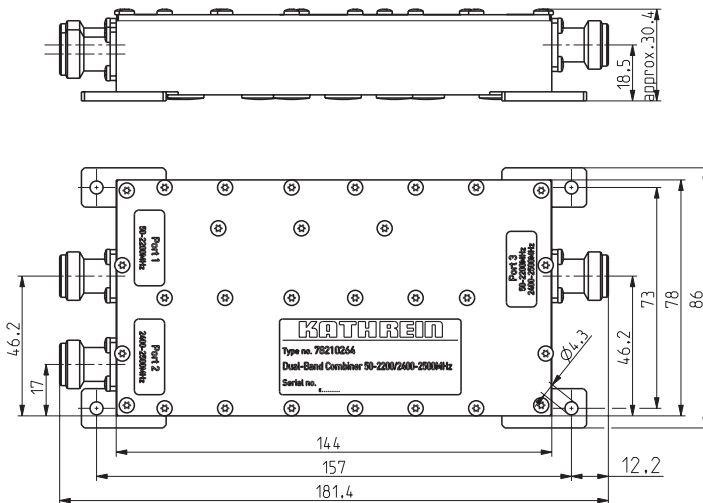
**KATHREIN**

Antennen · Electronic

**50 – 2200 MHz**  
80 / 160 / 400 / 800 / 900 / 1800 / 2100

**2400 – 2500 MHz**  
WLAN

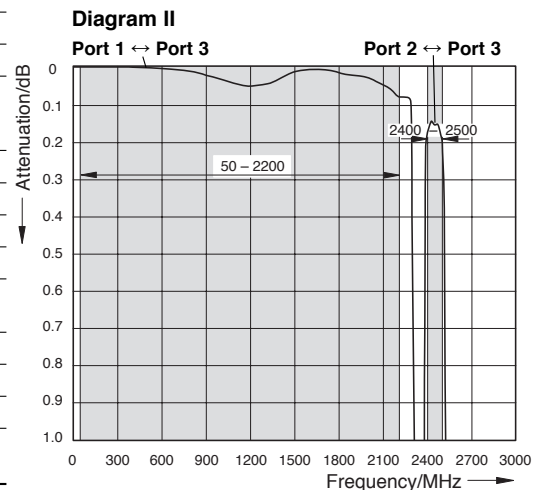
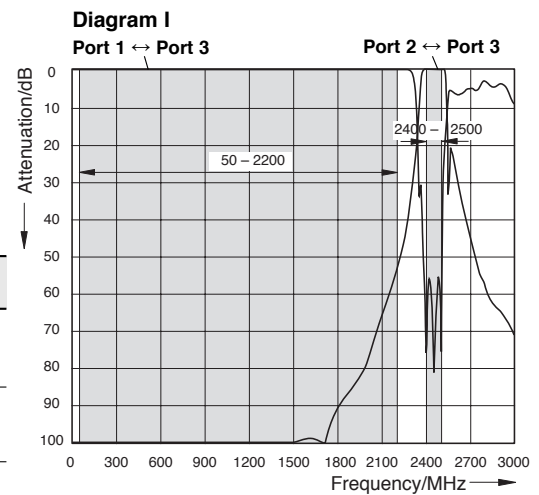
- Designed for inhouse multiband distribution networks
- Enables feeder sharing
- DC by-pass between ports 1 and 3
- Built-in DC stop between ports 2 and 3



## Technical Data

Type No.	<b>782 10264</b>
Pass band Band 1 Band 2	50 – 2200 MHz 2400 – 2500 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.1 dB (50 – 2200 MHz) < 0.2 dB (2400 – 2500 MHz)
Isolation Port 1 ↔ Port 2	> 50 dB (50 – 2200 / 2400 – 2500 MHz)
VSWR	< 1.25 (50 – 2200 / 2400 – 2500 MHz)
Impedance	50 Ω
Input power Band 1 Band 2	< 200 W < 200 W
Intermodulation products	< -150 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors	N female
Application	Indoor
Special features	Built-in DC stop between ports 2 and 3 DC by-pass between ports 1 and 3 (max. 2500 mA)
Mounting	With 4 screws (max. 4 mm diameter)
Weight	0.47 kg
Packing size	225 x 140 x 75 mm
Dimensions (w x h x d)	86 x 30.4 x 181.4 mm (including connectors and mounting feet)

## Typical Attenuation Curves



# Same-Band Combiners Hybrid Combiners

Same-Band Combiner  
Duplex Hybrid Combiner  
Active Duplex Hybrid Combiner  
Hybrid Combiner 2 : 1  
Hybrid Combiner 4 : 4  
3-dB Couplers  
Hybrid Ring Junctions

## Hybrid Combiners and Couplers:

Description	Type No.	Frequency range	Max. input power	Connector	Page
Hybrid Combiner 2:1	792 699	806 – 960 MHz	150 W per Tx/Rx port	7-16	253
Hybrid Combiner 2:1	792 702	1700 – 2200 MHz	150 W per Tx/Rx port	7-16	254
Hybrid Combiner 2:1	793 555	800 – 2200 MHz	150 W per Tx/Rx port	7-16	255
Hybrid Combiner 2:1	782 10500	806 – 960 MHz	60 W at each port	7-16	256
Hybrid Combiner 2:1	782 10502	1710 – 2170 MHz	60 W at each port	7-16	257
Hybrid Combiner 2:1	<b>782 10504</b>	698 – 2690 MHz	60 W at each port	7-16	258
Hybrid Combiner 4:4	782 10532	1710 – 2170 MHz	60 W at each port	7-16	259
Hybrid Combiner 4:4	782 10203	800 – 2200 MHz	150 W at each port	7-16	260
Hybrid Combiner 4:4	<b>782 10534</b>	698 – 2600 MHz	150 W at each port	7-16	261
Active Duplex Hybrid Combiner	<b>782 11110</b>	Rx: 880 – 915 MHz Tx: 925 – 960 MHz	250 W	7-16	262, 263
Duplex Hybrid Combiner	78210805	Rx: 880 – 915 MHz Tx: 925 – 960 MHz	250 W	7-16	264, 265
Same-Band Combiner	<b>782 10925</b>	1920 – 2170 MHz	100 W at each port	7-16	266, 267
Same-Band Combiner	<b>782 10930</b>	880 – 960 MHz	100 W at each port	7-16	268, 269
Same-Band Combiner	<b>782 10935</b>	880 – 960 MHz	100 W at each port	7-16	270, 271
Same-Band Combiner	<b>782 10936</b>	880 – 960 MHz	100 W at each port	7-16	272, 273
Hybrid Ring Junction	K 63 73 62 1	806 – 960 MHz	100 W per input	N	274, 275
Hybrid Ring Junction	790 881	890 – 960 MHz	100 W per input	N	274, 275
Hybrid Ring Junction	791 498	1710 – 1880 MHz	50 W per input	N	274, 275
3-dB Coupler	<b>782 10524</b>	698 – 2690 MHz	150 W at each port	7-16	276, 277
3-dB Coupler	793 506	806 – 960 MHz	500 W	7-16	278
3-dB Coupler	793 006	1700 – 2200 MHz	300 W	7-16	279
3-dB Coupler	793 554	800 – 2200 MHz	300 W	7-16	280

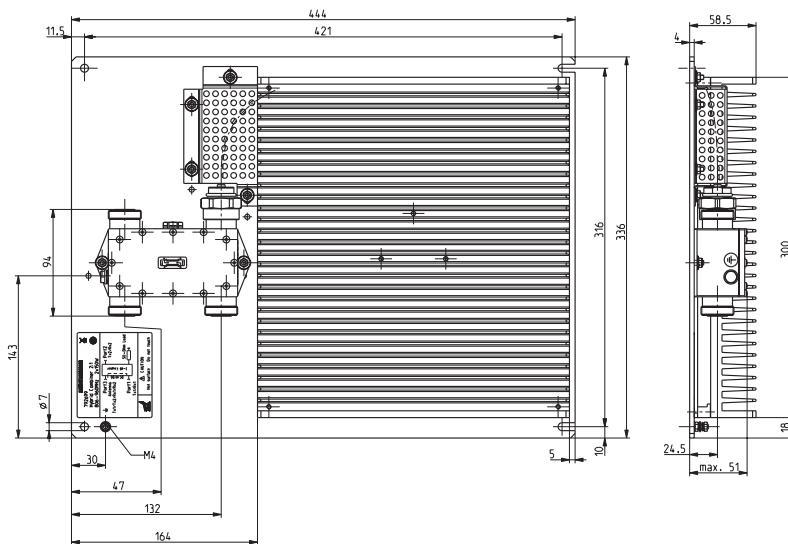
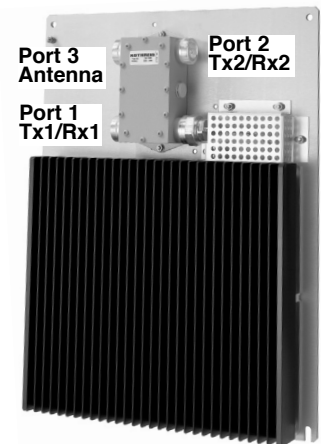
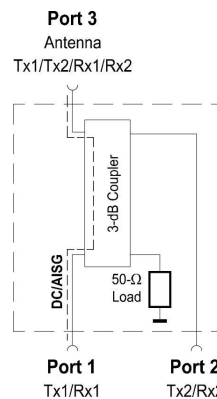
## New Products

# Hybrid Combiner 2:1

## 806 – 960 MHz

### 2 x 150 W

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor applications
- Wall or 19" rack mounting
- DC by-pass between port 1 and port 3
- External DC stop available as an accessory

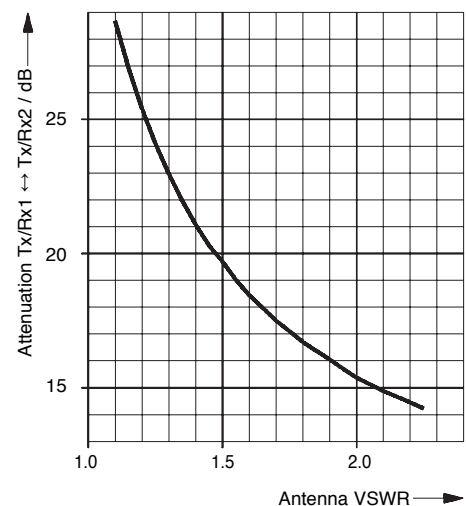


### Technical Data

Type No.	792 699
Frequency range	806 – 960 MHz
Attenuation	
Port 1 ↔ Port 3	3.1 ± 0.4 dB
Port 2 ↔ Port 3	3.1 ± 0.4 dB
Port 1 ↔ Port 2	> 27 dB *
VSWR (all ports)	< 1.11
Impedance	50 Ω
Input power	
Port 1	< 150 W (with max. 16 signals)
Port 2	< 150 W (with max. 16 signals)
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-20 ... +50 °C
Connectors	7-16 female
Application	Indoor
DC/AISG transparency	
Port 1 ↔ Port 3	By-pass (max. 2500 mA)
Port 2	Short circuit (External DC stop available as an accessory)
Mounting	Wall mounting: With 4 screws (max. 7 mm diameter) 19" rack mounting: To be inserted on pre-installed 19" sliding bars (2 height units required)
Weight	10.3 kg
Packing size	510 x 410 x 100 mm
Dimensions (w x h x d)	336 x 444 x 64 mm

\* Valid if all ports are terminated with 50-Ω loads (see diagram).

Typical attenuation Tx/Rx1 ↔ Tx/Rx2 vs. Antenna VSWR



### Note:

The input power rating of 150 W per port is specified at an ambient temperature of +55 °C with the combiner mounted vertically (see photo), without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

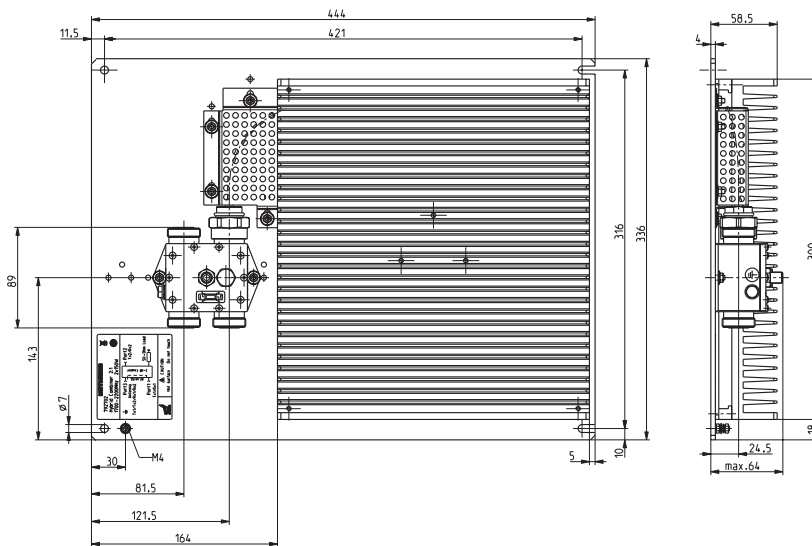
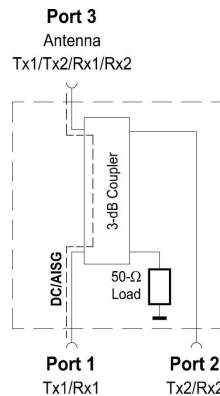
When installed in a 19" rack, it must be ensured that the max. power of 150 W is sufficiently dissipated, so that the ambient temperature does not rise above +50 °C. This can be achieved for example by the additional installation of a correspondingly dimensioned ventilator in the 19" rack or by reducing the maximum input power.

# Hybrid Combiner 2:1

## 1700 – 2200 MHz

### 2 x 150 W

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor applications
- Wall or 19" rack mounting
- DC by-pass between port 1 and port 3
- External DC stop available as an accessory

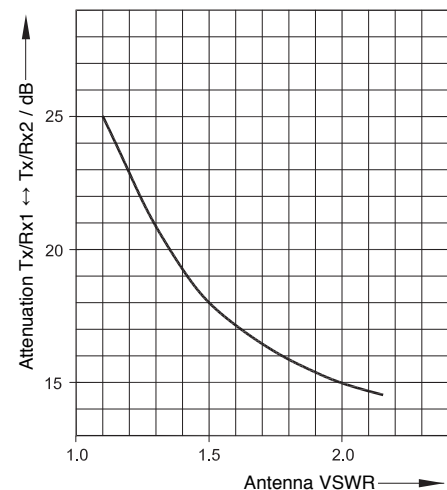


### Technical Data

Type No.	792 702
Frequency range	1700 – 2200 MHz
Attenuation	
Port 1 ↔ Port 3	3.1 ± 0.4 dB
Port 2 ↔ Port 3	3.1 ± 0.4 dB
Port 1 ↔ Port 2	> 24 dB*
VSWR (all ports)	< 1.15
Impedance	50 Ω
Input power	
Port 1	< 150 W (with max. 16 signals)
Port 2	< 150 W (with max. 16 signals)
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-20 ... +50 °C
Connectors	7-16 female
Application	Indoor
DC/AISG transparency	
Port 1 ↔ Port 3	By-pass (max. 2500 mA)
Port 2	Short circuit (External DC stop available as an accessory)
Mounting	Wall mounting: With 4 screws (max. 7 mm diameter) 19" rack mounting: To be inserted on pre-installed 19" sliding bars (2 height units required)
Weight	9.8 kg
Packing size	510 x 410 x 100 mm
Dimensions (w x h x d)	336 x 444 x 64 mm

\* Valid if all ports are terminated with 50-Ω loads (see diagram).

Typical attenuation Tx/Rx1 ↔ Tx/Rx2 vs. Antenna VSWR



### Note:

The input power rating of 150 W per port is specified at an ambient temperature of +55 °C with the combiner mounted vertically (see photo), without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

When installed in a 19" rack, it must be ensured that the max. power of 150 W is sufficiently dissipated, so that the ambient temperature does not rise above +50 °C. This can be achieved for example by the additional installation of a correspondingly dimensioned ventilator in the 19" rack or by reducing the maximum input power.

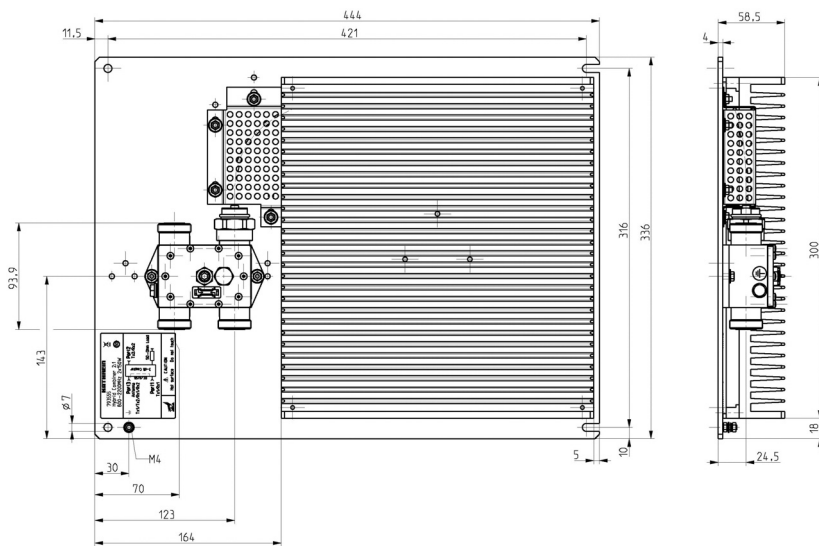
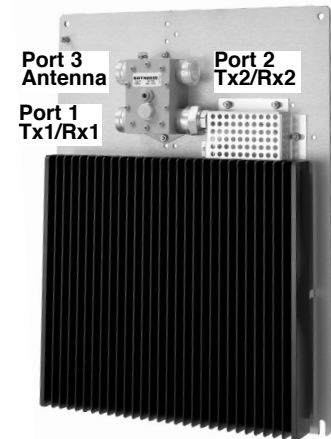
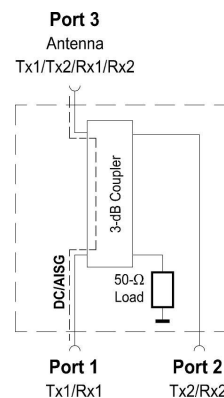


# Hybrid Combiner 2:1

## 800 – 2200 MHz

### 2 x 150 W

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor applications
- Wall or 19" rack mounting
- DC by-pass between port 1 and port 3
- External DC stop available as an accessory

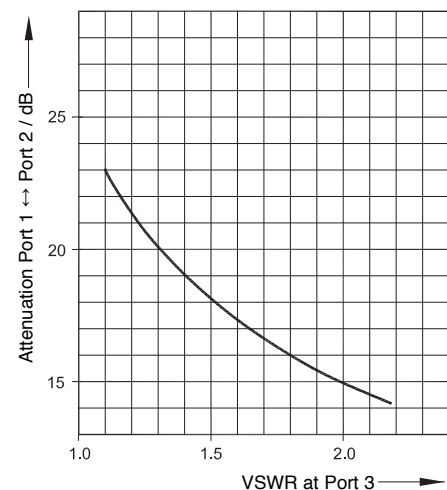


### Technical Data

Type No.	793 555
Frequency range	800 – 2200 MHz
Attenuation	
Port 1 ↔ Port 3	3.1 ±1.2 dB
Port 2 ↔ Port 3	3.1 ±1.2 dB
Port 1 ↔ Port 2	> 22 dB*
VSWR (all ports)	< 1.2
Impedance	50 Ω
Input power	
Port 1	< 150 W (with max. 16 signals)
Port 2	< 150 W (with max. 16 signals)
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-20 ... +50 °C
Connectors	7-16 female
Application	Indoor
DC/AISG transparency	
Port 1 ↔ Port 3	By-pass (max. 2500 mA)
Port 2	Short circuit (External DC stop available as an accessory)
Mounting	Wall mounting: With 4 screws (max. 7 mm diameter) 19" rack mounting: To be inserted on pre-installed 19" sliding bars (2 height units required)
Weight	10 kg
Packing size	510 x 410 x 100 mm
Dimensions (w x h x d)	336 x 444 x 64 mm

\* Valid if all ports are terminated with 50-Ω loads (see diagram)

Typical attenuation Port 1 ↔ Port 2 vs. VSWR at Port 3



### Note:

The input power rating of 150 W per port is specified at an ambient temperature of +55 °C with the combiner mounted vertically (see photo), without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

When installed in a 19" rack, it must be ensured that the max. power of 150 W is sufficiently dissipated, so that the ambient temperature does not rise above +50 °C. This can be achieved for example by the additional installation of a correspondingly dimensioned ventilator in the 19" rack or by reducing the maximum input power.

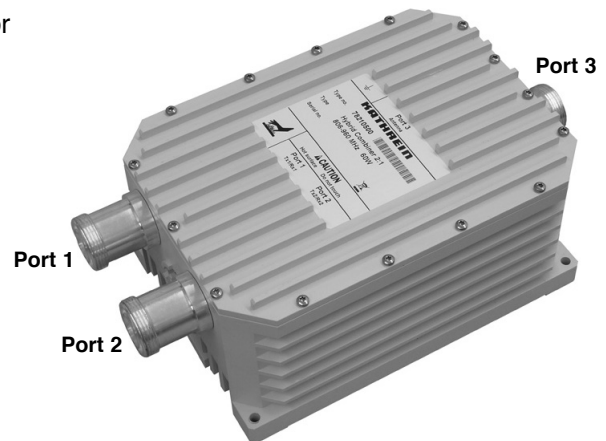


# Hybrid Combiner 2:1

## 806 – 960 MHz

### 2 x 60 W

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- DC by-pass between all ports
- External DC stop available as an accessory



#### Technical Data

Type No.	782 10500
Frequency range	806 – 960 MHz
Attenuation	
Port 1 ↔ Port 3	3.1 ± 0.5 dB
Port 2 ↔ Port 3	3.1 ± 0.5 dB
Port 1 ↔ Port 2	> 23 dB*
VSWR (all ports)	< 1.15
Impedance	50 Ω
Input power	
Port 1	< 60 W
Port 2	< 60 W
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +55 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency	By-pass between all ports (max. 2500 mA) AISG: Attenuation 3 dB with / 6 dB without external DC stop at either Port 1 or Port 2
Mounting	Wall mounting: With 4 screws (max. 6.5 mm diameter) Mast mounting: With additional clamp set (see data sheet)
Weight	3.7 kg
Packing size	377 x 232 x 189 mm
Dimensions (w x h x d)	143.6 x 258 x 97.5 mm (including connectors)

\* Valid if all ports are terminated with 50-Ω loads.

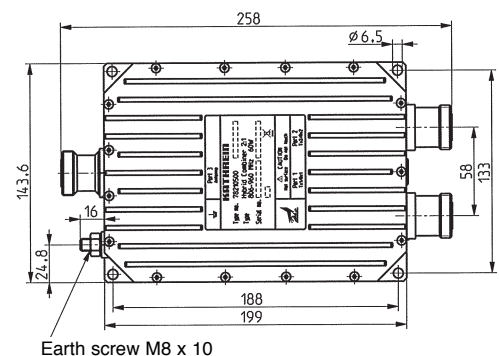
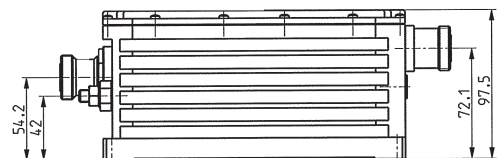
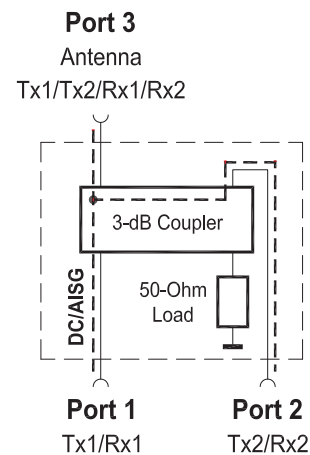
#### Note:

The input power rating of 60 W per port is specified at an ambient temperature of +55 °C with the combiner mounted horizontally, without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

If mounted vertically and/or used at a lower ambient temperature, then a higher input power in accordance with the following table is possible:

#### Max. input power per port

	Mounted horizontally	Mounted vertically
Max. ambient temperature		
+55 °C	60 W	70 W
+40 °C	70 W	80 W
+25 °C	75 W	85 W

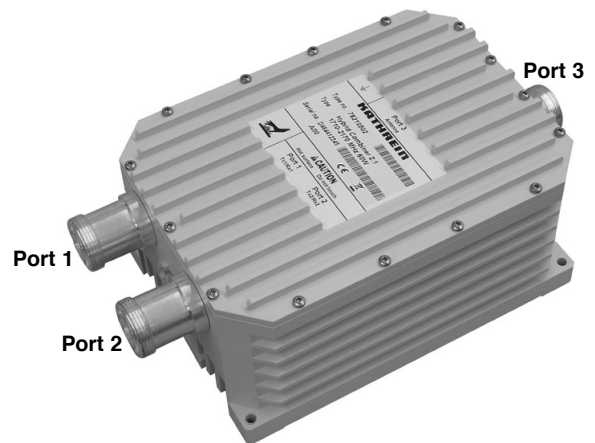


# Hybrid Combiner 2:1

## 1710 – 2170 MHz

### 2 x 60 W

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- DC by-pass between all ports
- External DC stop available as an accessory



#### Technical Data

Type No.	782 10502
Frequency range	1710 – 2170 MHz
Attenuation	
Port 1 ↔ Port 3	3.1 ±0.5 dB
Port 2 ↔ Port 3	3.1 ±0.5 dB
Port 1 ↔ Port 2	> 22 dB*
VSWR (all ports)	< 1.25
Impedance	50 Ω
Input power	
Port 1	< 60 W
Port 2	< 60 W
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +55 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency	By-pass between all ports (max. 2500 mA) AISG: Attenuation 3 dB with / 6 dB without external DC stop at either Port 1 or Port 2
Mounting	Wall mounting: With 4 screws (max. 6.5 mm diameter) Mast mounting: With additional clamp set
Weight	3.7 kg
Packing size	377 x 232 x 189 mm
Dimensions (w x h x d)	143.6 x 256 x 97.5 mm (including connectors)

\* Valid if all ports are terminated with 50-Ω loads.

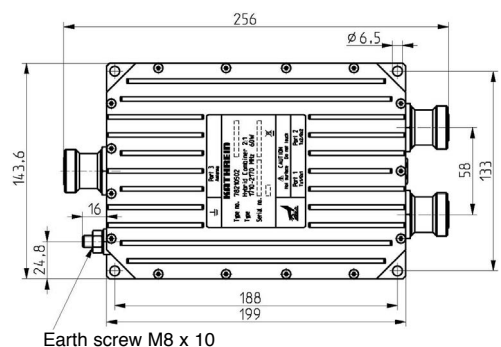
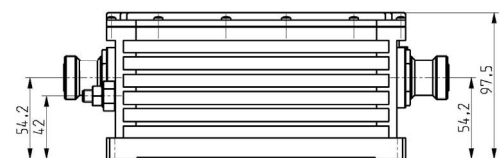
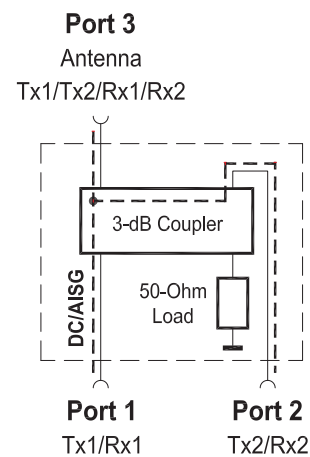
#### Note:

The input power rating of 60 W per port is specified at an ambient temperature of +55 °C with the combiner mounted horizontally, without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

If mounted vertically and/or used at a lower ambient temperature, then a higher input power in accordance with the following table is possible:

#### Max. input power per port

	Mounted horizontally	Mounted vertically
Max. ambient temperature		
+55 °C	60 W	70 W
+40 °C	70 W	80 W
+25 °C	75 W	85 W

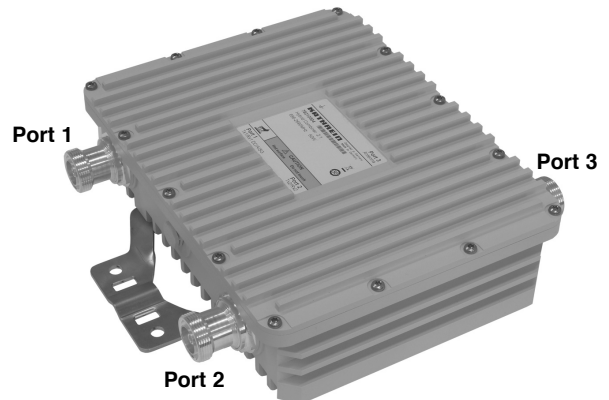


# Hybrid Combiner 2:1

## 698 – 2690 MHz

### 2 x 60 W

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- DC by-pass between port 1 and port 3



#### Technical Data

Type No.	<b>782 10504</b>
Frequency range	698 – 2690 MHz
Attenuation	
Port 1 ↔ Port 3	3.1 ±0.5 dB
Port 2 ↔ Port 3	3.1 ±0.5 dB
Port 1 ↔ Port 2	> 23 dB*
VSWR (all ports)	< 1.2 (698 – 2170 MHz) / < 1.25 (2170 – 2690 MHz)
Impedance	50 Ω
Input power	
Port 1	< 60 W
Port 2	< 60 W
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +55 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency	
Port 1 ↔ Port 3	By-pass (max. 2500 mA)
Port 2 ↔ Port 3	Stop
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	4.3 kg
Packing size	385 x 345 x 168 mm
Dimensions (w x h x d)	264 x 203 x 72.5 mm (without connectors, without mounting brackets)

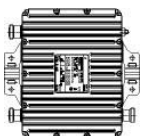
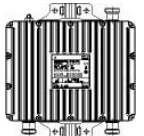
\* Valid if all ports are terminated with 50-Ohm loads.

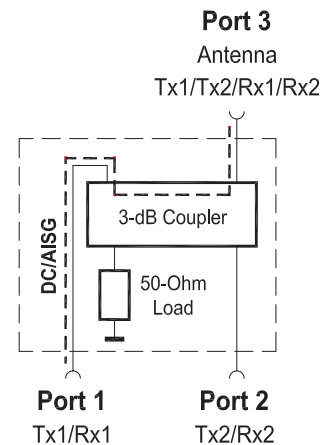
#### Note:

The input power rating of 60 W per port is specified at an ambient temperature of +55 °C with the combiner mounted vertically, without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

If used at a lower ambient temperature, then a higher input power in accordance with the following table is possible:

#### Max. input power per port

	Mounted horizontally	Mounted vertically
Max. ambient temperature		
+55 °C	55 W	<b>60 W</b>
+40 °C	70 W	75 W
+25 °C	80 W	85 W

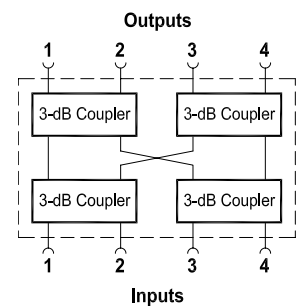
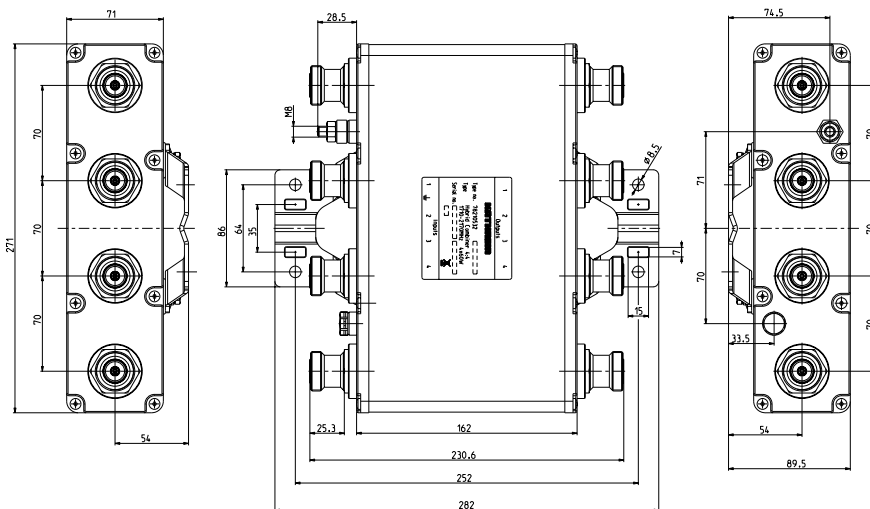
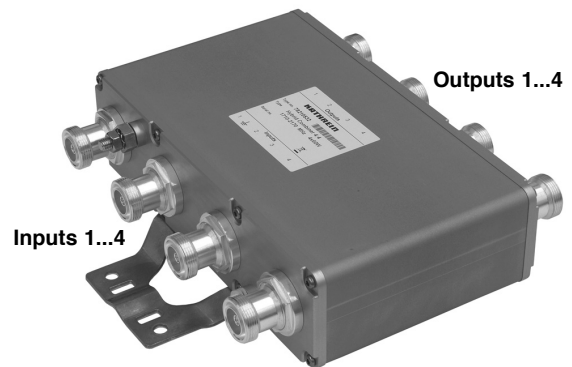


# Hybrid Combiner 4:4

## 1710 – 2170 MHz

### 4 x 60 W

- Designed for the decoupled combining of 4 transmitter or receiver signals and distributing these signals equally onto 4 antenna outputs
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- DC by-pass between all ports
- External DC stop available as an accessory



### Technical Data

Type No.	<b>782 10532</b>
Frequency range	1710 – 2170 MHz
Insertion Loss Input 1...4 ↔ Output 1...4	0.5 dB ±0.2 dB
Power distribution loss (excluding insertion loss) Input 1...4 ↔ Output 1...4	6 ±0.75 dB
Isolation Input 1...4 ↔ Input 1...4 Output 1...4 ↔ Output 1...4	> 22 dB* > 22 dB*
VSWR (all ports)	< 1.25
Impedance	50 Ω
Input power	< 60 W at each port
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency	By-pass between all ports (max. 2500 mA) External DC stop available as an accessory
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	4.4 kg
Packing size	357 x 312 x 189 mm
Dimensions (w x h x d)	271 x 262 x 89.5 mm (including connectors and mounting brackets)

\* Valid if all ports are terminated with 50-Ω loads

### Note:

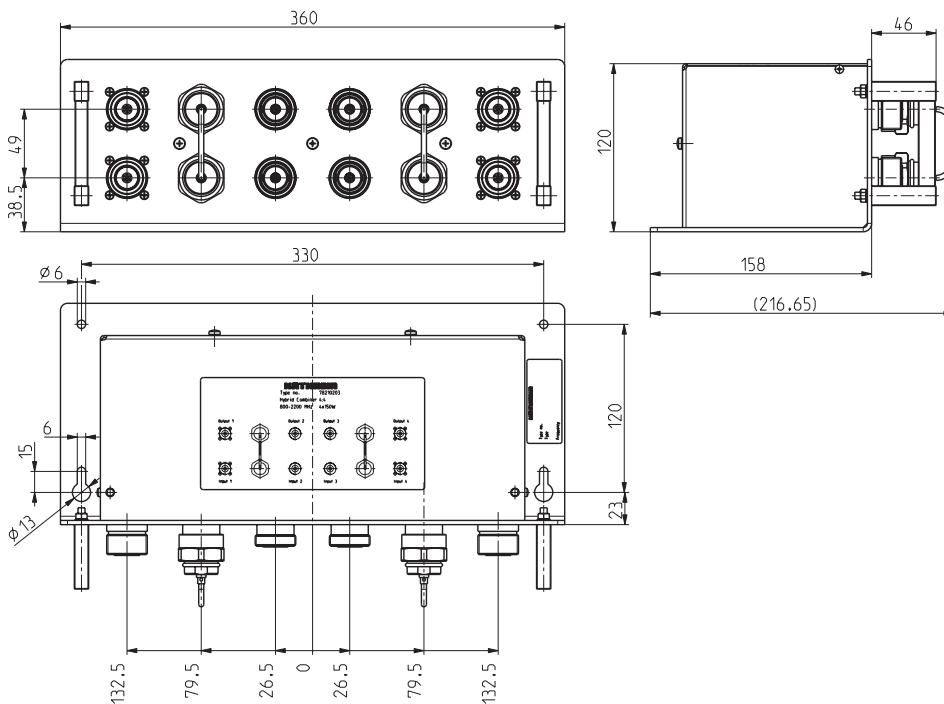
The use of fewer than 4 inputs or outputs is possible. Any unused input ports have to be terminated with low-power 50-Ohm loads (e.g. Kathrein type 784 10367), unused output ports have to be terminated with high-power 50-Ohm loads (e.g. Kathrein low-intermodulation type 782 10474).

# Hybrid Combiner 4:4

## 800 – 2200 MHz

### 4 x 150 W

- Designed for the decoupled combining of 4 transmitter or receiver signals and distributing these signals evenly onto 4 antenna outputs.



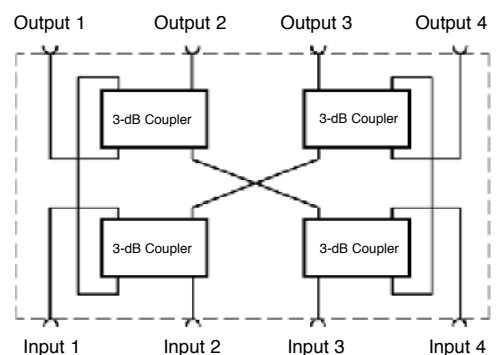
#### Technical Data

Type No.	782 10203
Frequency range	800 – 2200 MHz
Power distribution loss (including insertion loss) Input 1...4 ↔ Output 1...4	< 6.5 ±2 dB
Insertion Loss	< 0.5 dB
Isolation Input 1...4 ↔ Input 1...4 Output 1...4 ↔ Output 1...4	> 20 dB > 20 dB
VSWR (all ports)	< 1.3 *
Impedance	50 Ω
Input power	< 150 W at each port
Intermodulation products	< -155 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female
Application	Indoor
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter)
Dimensions (w x h x d)	360 x 180 x 216 mm

\* Valid if all ports are terminated with 50-Ω loads.

#### Note:

The use of fewer than 4 inputs or outputs is possible. Any unused input ports have to be terminated with low-power 50-Ω loads (e.g. Kathrein type 784 10367), unused output ports have to be terminated with high-power 50-Ω loads (e.g. Kathrein low-intermodulation type 782 10474).

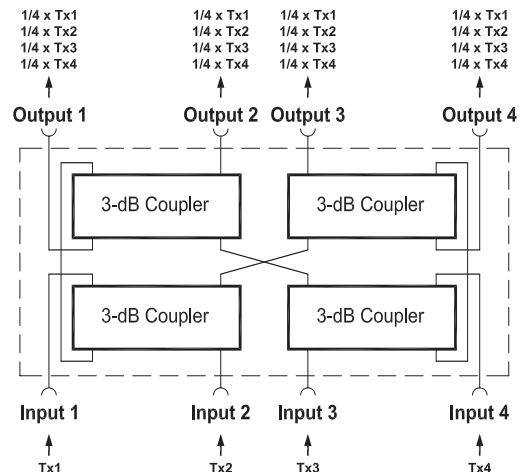
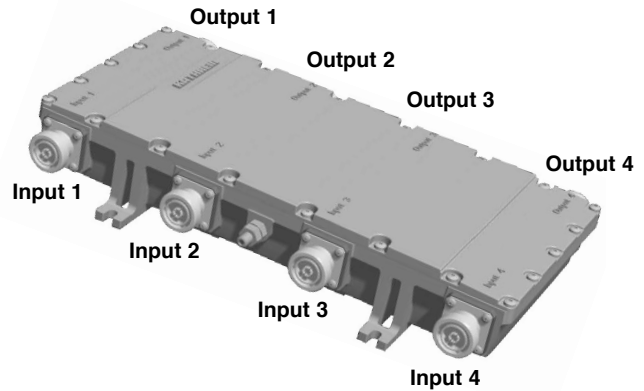
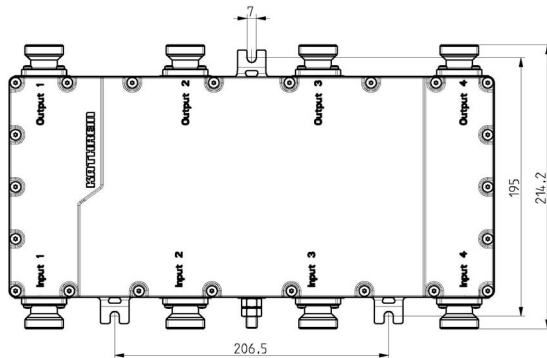
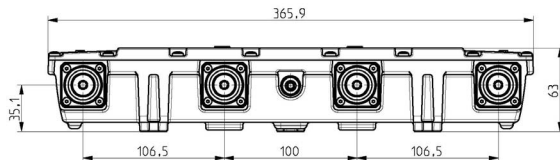


# Hybrid Combiner 4:4

## 698 – 2690 MHz

### 4 x 150 W

- Designed for the decoupled combining of 4 transmitter or receiver signals and distributing these signals equally onto 4 antenna outputs
- Suitable for indoor or outdoor applications
- DC/AISG by-pass
- External DC stop available as an accessory



#### Technical Data

Type No.	782 10534
Frequency range	698 – 2690 MHz
Insertion loss Input 1...4 ↔ Output 1...4	0.5 ±0.2 dB
Power distribution loss (excluding insertion loss) Input 1...4 ↔ Output 1...4	6 ±0.75 dB
Isolation Input 1...4 ↔ Input 1...4 Output 1...4 ↔ Output 1...4	> 22 dB* > 22 dB*
VSWR (all ports)	< 1.3
Impedance	50 Ω
Input power	< 150 W at each input port
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female
Application	Indoor or outdoor (IP 66)
DC/AISG transparency	By-pass (max. 2500 mA) between Input 1 ↔ Output 4 / Input 2 ↔ Output 2 / Input 3 ↔ Output 3 / Input 4 ↔ Output 1 External DC stop available as an accessory
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional mounting kit
Weight	Max. 3.9 kg
Packing size	452 x 272 x 124 mm
Dimensions (w x h x d)	365.9 x 63 x 214.2 mm (with connectors and mounting feet)

\* Valid if all ports are terminated with 50-Ohm loads

#### Note:

The use of fewer than 4 inputs or outputs is possible. Any unused input ports have to be terminated with low-power 50-Ohm loads (e.g. Kathrein type 784 10367), unused output ports have to be terminated with high-power 50-Ohm loads (e.g. Kathrein low-intermodulation type 782 10474).

#### Accessories (order separately)

Type No.	Description
782 10850	DC stop
782 10474	50-Ohm load (80 W)
784 10367	50-Ohm load (1.5 W)
782 10535	Mast mounting kit





# Active Duplex Hybrid Combiner (Same-Band Combiner)

880 ... 960 MHz  
EGSM 900

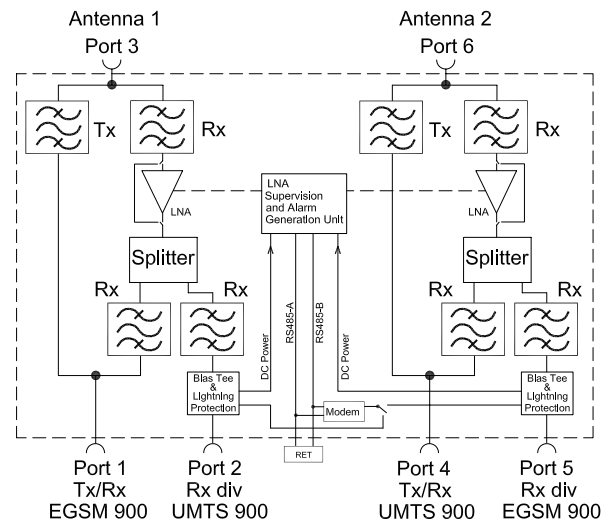
880 ... 960 MHz  
UMTS 900



- Enables antenna and feeder sharing for two base stations in the 900 MHz frequency band
- 12 dB gain over 20 MHz Rx bandwidth (factory tunable)
- Very low insertion loss over 20 MHz Tx bandwidth (factory tunable) compared to standard hybrid combiners
- Double unit in one housing for XPol antennas
- Suitable for indoor or outdoor applications
- Supports AISG 1.1 and AISG 2.0 (default)
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode (LNA) to ensure cell operation in case of DC power down
- Built-in lightning protection

**RET** = Remote Electrical Tilt

**AISG** = Antenna Interface Standards Group



## Technical Data

Type No.	782 1110
Pass band Rx Tx	20 MHz within 880 ... 915 MHz (factory tunable) 20 MHz within 925 ... 960 MHz (factory tunable)
Tx Insertion loss Port 1 ↔ Port 3 / Port 4 ↔ Port 6	< 0.2 dB (925 – 945 MHz) – see Diagram I and II
Rx gain	12 dB ±0.5 dB
Isolation Port 1 ↔ Port 2 / Port 4 ↔ Port 5	> 25 dB (880 – 900 MHz) > 35 dB (925 – 945 MHz)
VSWR	< 1.25 (880 – 900 / 925 – 945 MHz)
Impedance	50 Ω
Input power	Port 1: < 250 W Port 4: < 250 W
Intermodulation products	< -160 dBc (5 <sup>th</sup> / 7 <sup>th</sup> order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
Lightning protection	3 kA, 10/350 μs pulse
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3
DC supply	10 – 30 V
Operating current per DTMA (without RET)	Nom. 195 mA at 10 V Nom. 85 mA at 30 V
Alarm management	AISG
Connectors RF AISG	7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 10 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting	With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set

# Active Duplex Hybrid Combiner (Same-Band Combiner)

880 ... 960 MHz  
EGSM 900

880 ... 960 MHz  
UMTS 900

## Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

Type No.	Description
793 301	DC stop
784 10367	50-Ω load 1.5 W / indoor or outdoor

### Clamp Set



### DC stop



### 50-Ω load



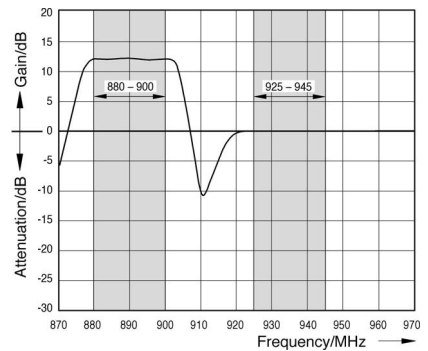
## Calculated Attenuation Curves

### Tuning example

Rx: 880 – 900 MHz, Tx: 925 – 945 MHz

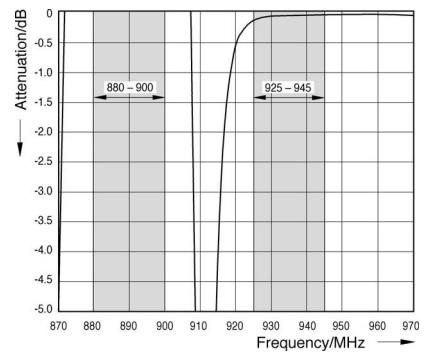
#### Diagram I

Port 1 ↔ Port 3  
Port 4 ↔ Port 6



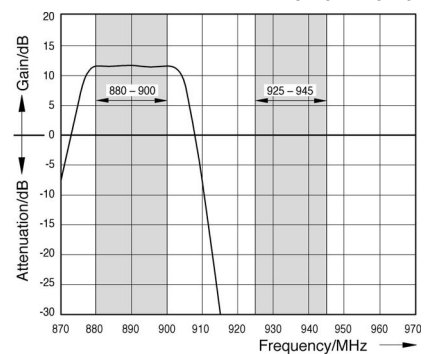
#### Diagram II

Port 1 ↔ Port 3  
Port 4 ↔ Port 6



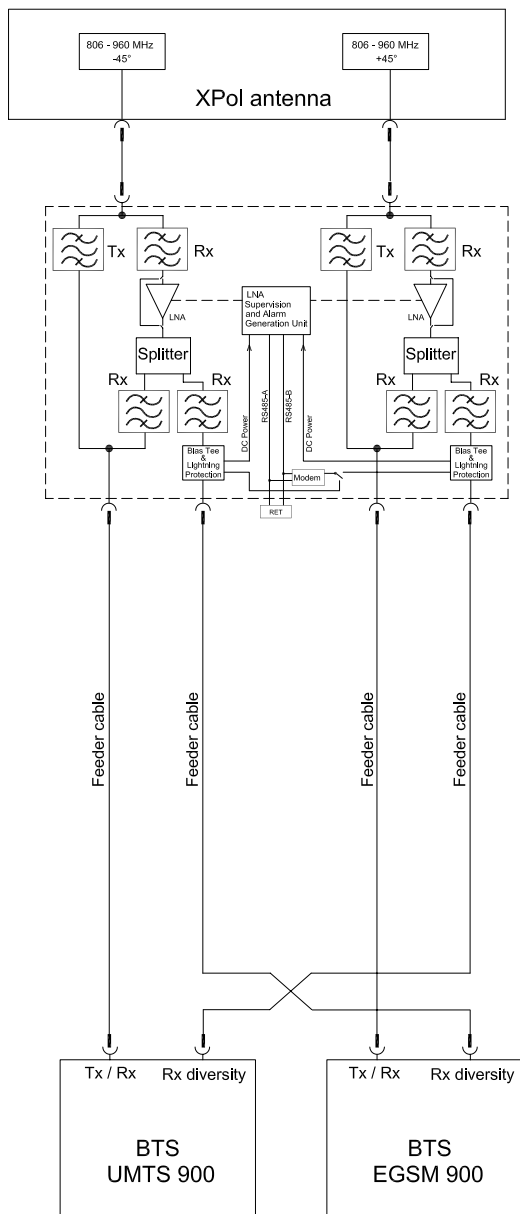
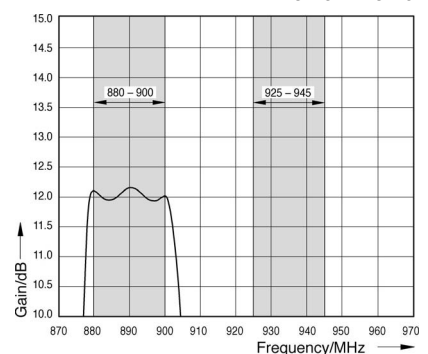
#### Diagram III

Port 2 ↔ Port 3  
Port 5 ↔ Port 6



#### Diagram IV

Port 2 ↔ Port 3  
Port 5 ↔ Port 6



Application example



# Duplex Hybrid Combiner (Same-Band Combiner)

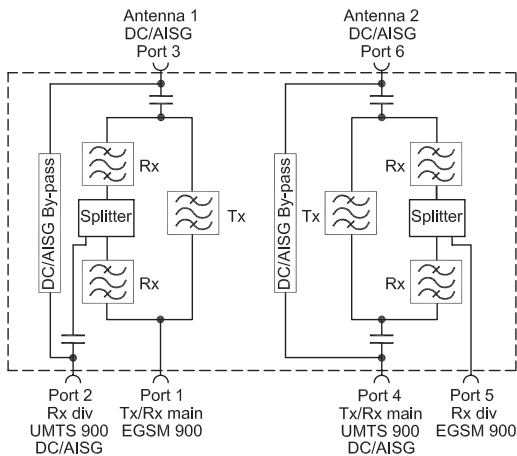
**KATHREIN**

Antennen · Electronic

880 – 960 MHz  
GSM 900

880 – 960 MHz  
UMTS 900

- Enables antenna and feeder sharing for two base stations in the 900 MHz frequency band
- Very low insertion loss over full EGSM/UMTS 900 Tx bandwith compared to standard hybrid combiners
- Double unit in one housing for XPol antennas
- Suitable for indoor or outdoor applications
- DC/AISG by-pass for DTMA supply (for UMTS paths only)



## Typical Attenuation Curves

Diagram I

Port 1 ↔ Port 3  
Port 4 ↔ Port 6

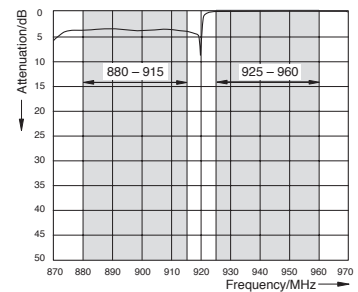


Diagram II

Port 1 ↔ Port 3  
Port 4 ↔ Port 6

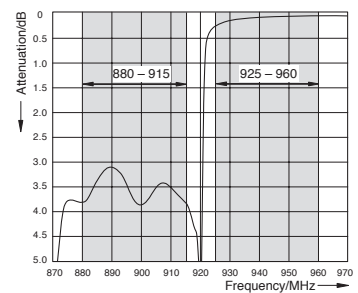


Diagram III

Port 2 ↔ Port 3  
Port 5 ↔ Port 6

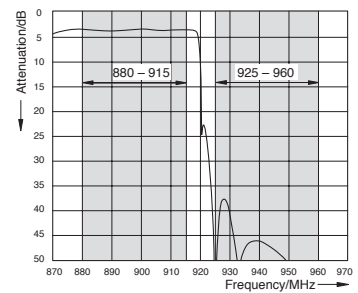
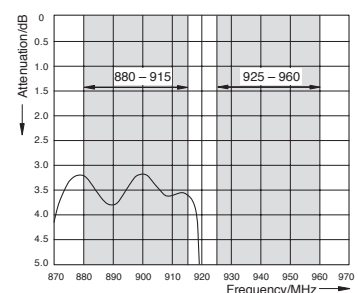


Diagram IV

Port 2 ↔ Port 3  
Port 5 ↔ Port 6



## Technical Data

Type No.	<b>782 10805</b>
Pass band Rx Tx	880 – 915 MHz 925 – 960 MHz
Insertion loss Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	< 0.4 dB, typically 0.2 dB (925 – 960 MHz) – see Diagram I and II < 4.3 dB, typically 3.6 dB (880 – 915 MHz) – see Diagram I and II < 4.0 dB, typically 3.5 dB (880 – 915 MHz) – see Diagram III and IV
Isolation Port 1 ↔ Port 2 / Port 4 ↔ Port 5	> 25 dB (880 – 915 MHz) > 35 dB (925 – 960 MHz)
VSWR	< 1.2 (880 – 915 / 925 – 960 MHz)
Impedance	50 Ω
Input power	Port 1: < 250 W Port 4: < 250 W
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency Port 1 ↔ Port 3 / Port 5 ↔ Port 6 Port 2 ↔ Port 3 / Port 4 ↔ Port 6	Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse
Mounting	With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	6.5 kg
Packing size	390 x 470 x 160 mm
Dimensions (w x h x d)	287.1 x 278.6 x 71 mm (without connectors, without mounting brackets)

# Duplex Hybrid Combiner (Same-Band Combiner) **KATHREIN**

Antennen · Electronic

880 – 960 MHz  
GSM 900

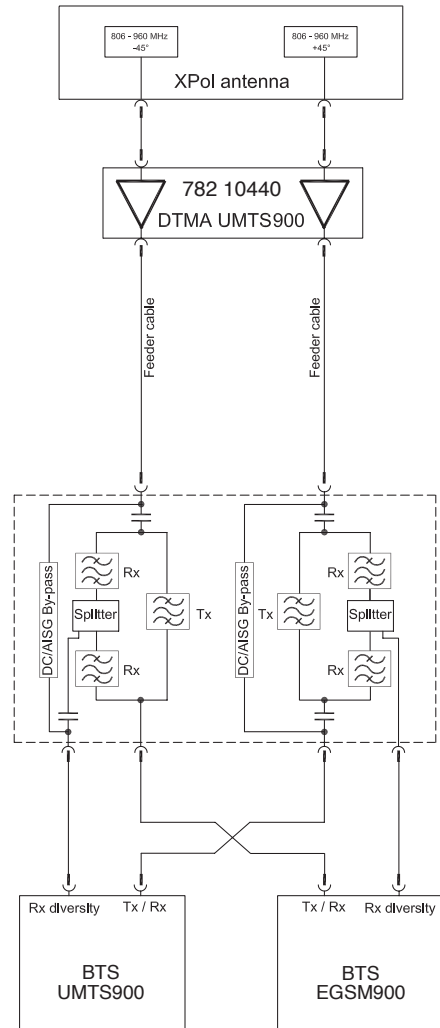
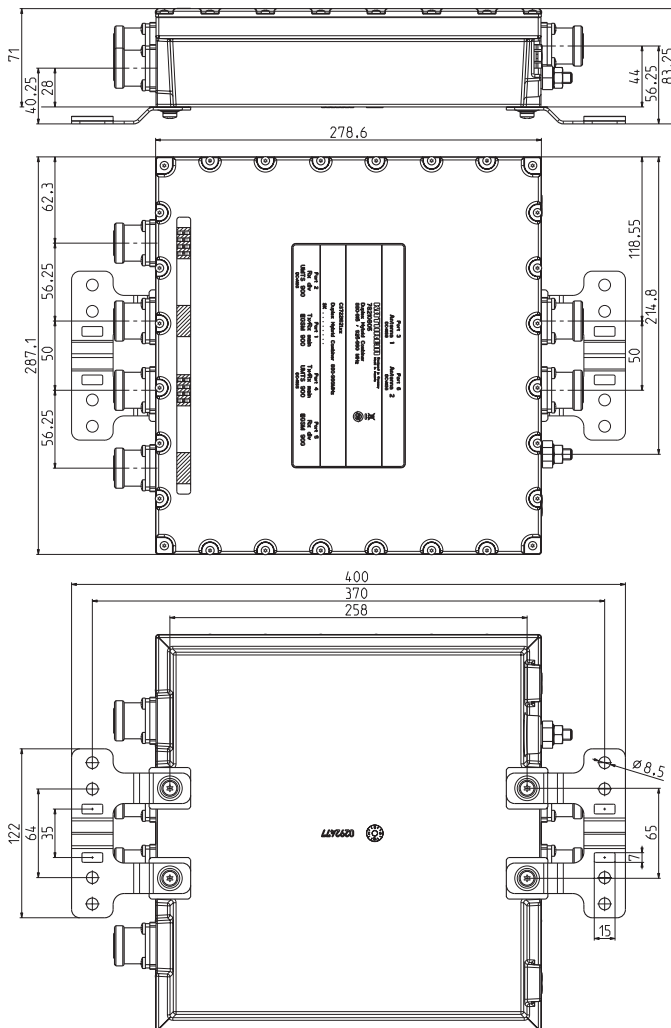
880 – 960 MHz  
UMTS 900

## Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	45 – 125 mm

Type No.	Description
793 301	DC stop
784 10367	50-Ω load 1.5 W indoor or outdoor



Application example

# Same-Band Combiner

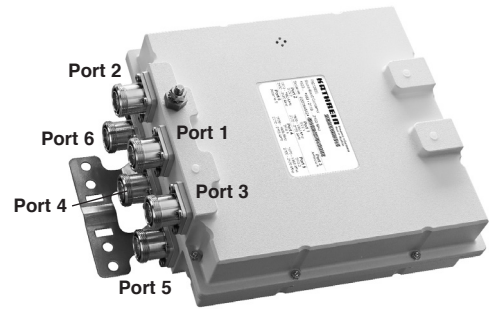
**KATHREIN**

Antennen · Electronic

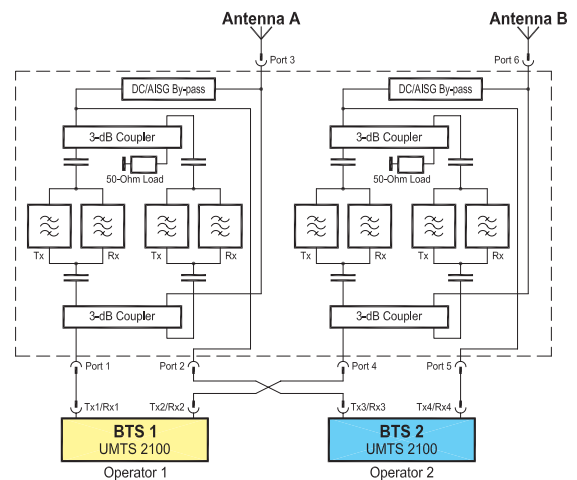
1920 – 1980 / 2110 – 2170 MHz  
UMTS 2100

1920 ... 1980 / 2110 ... 2170 MHz  
UMTS 2100 (10 MHz Bandwidth)

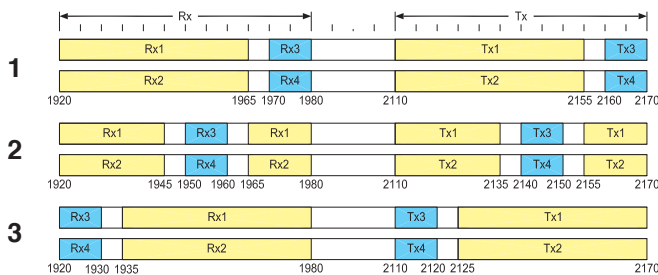
- Enables antenna and feeder sharing for two base stations in the same frequency band
- Customized 10 MHz Tx/Rx bandpass filters (factory tunable) available for inserting a second UMTS 2100 base station
- Full pass-band (without the second UMTS 2100 10 MHz Tx/Rx frequency blocks) available for the first UMTS 2100 base station
- Low insertion loss over complete UMTS 2100 Tx/Rx bandwidth compared to standard hybrid combiners
- Double unit for XPol antennas
- Suitable for indoor or outdoor applications
- DC/AISG by-pass for DTMA supply



## Block Diagram



## Tuning Examples



## Technical Data

Type No.	782 10925
Pass band BTS 1 (UMTS 2100)  BTS 2 (UMTS 2100)	Rx = 1920 – 1980 / Tx = 2110 – 2170 MHz (without assigned BTS 2 10 MHz Tx/Rx frequency blocks and ±5 MHz guard bands) Rx = 1920 ... 1980 / Tx = 2110 ... 2170 MHz (factory tunable 10 MHz frequency blocks)
Guard band	5 MHz (between Tx1/Rx1 and Tx3/Rx3, between Tx2/Rx2 and Tx4/Rx4 e.g. tuning example 1: Rx1 (Rx2) = 1920 – 1965 and Tx1 (Tx2) = 2110 – 2155 MHz Rx3 (Rx4) = 1970 – 1980 and Tx3 (Tx4) = 2160 – 2170 MHz
Insertion loss Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	< 1.2 dB – see diagram I and II for tuning example 1 < 1.2 dB – see diagram III and IV for tuning example 1
Isolation Port 1 ↔ Port 2 / Port 4 ↔ Port 5	> 30 dB (1920 – 1980 / 2110 – 2170 MHz)
VSWR	< 1.25 (pass bands)
Impedance	50 Ω
Input power Tx1 / Tx2 / Tx3 / Tx4	< 100 W / < 100 W / < 100 W / < 100 W
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP66)
DC/AISG transparency Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set
Weight	6.5 kg
Dimensions (w x h x d)	243 x 240 x 100 mm (without connectors, without mountain brackets)

# Same-Band Combiner

**KATHREIN**

Antennen · Electronic

1920 – 1980 / 2110 – 2170 MHz  
UMTS 2100

1920 ... 1980 / 2110 ... 2170 MHz  
UMTS 2100 (10 MHz Bandwidth)

Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

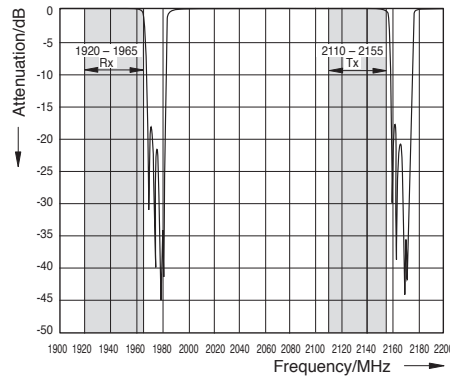
Type No.	Description
784 10367	50-Ohm load



## Calculated Attenuation Curves (Tuning Example 1)

### BTS 1 (UMTS 2100)

Diagram I (Port 1 ↔ Port 3 / Port 4 ↔ Port 6)



### BTS 2 (UMTS 2100)

Diagram III (Port 2 ↔ Port 3 / Port 5 ↔ Port 6)

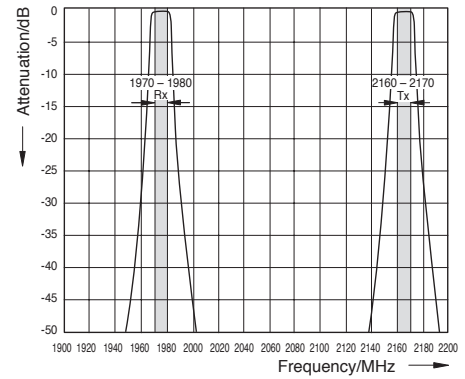


Diagram II (Port 1 ↔ Port 3 / Port 4 ↔ Port 6)

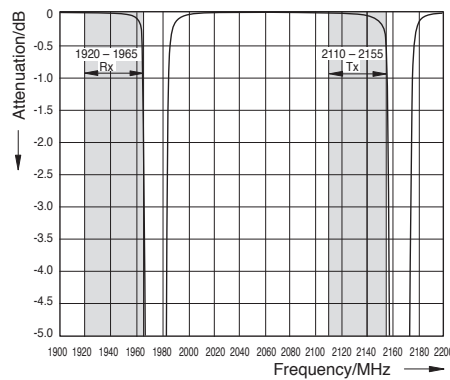
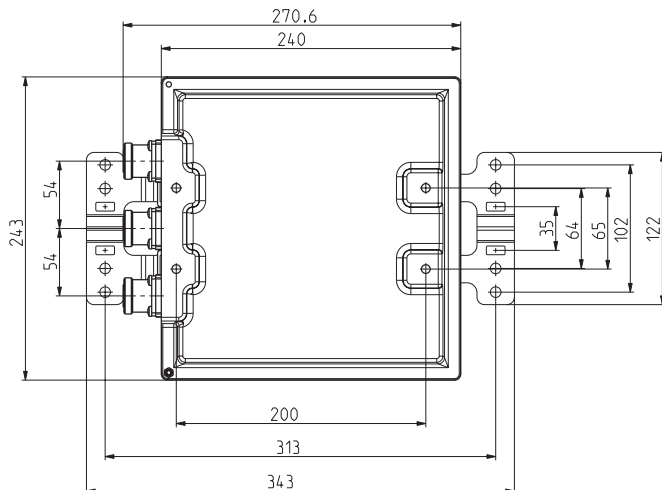
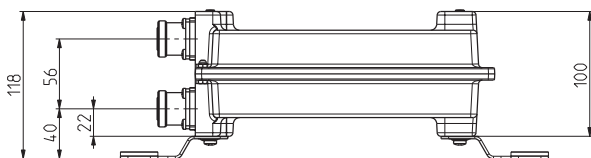
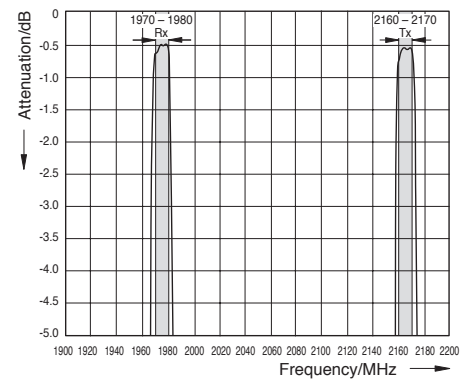


Diagram IV (Port 2 ↔ Port 3 / Port 5 ↔ Port 6)



# Same-Band Combiner

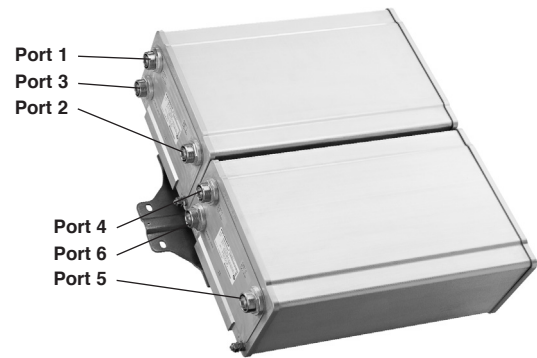
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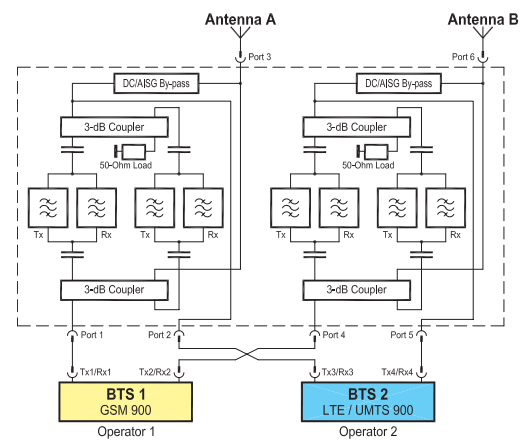
**880 – 915 / 925 – 960 MHz**  
GSM 900

**880 ... 915 / 925 ... 960 MHz**  
LTE / UMTS 900 (5 MHz Bandwidth)

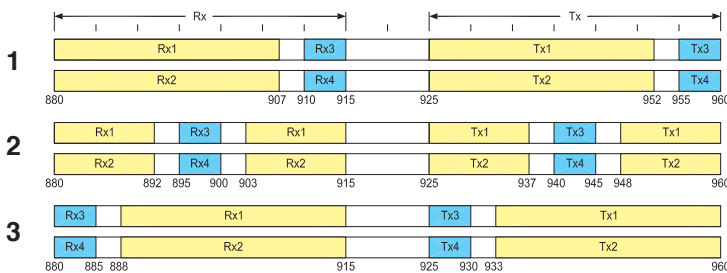
- Enables antenna and feeder sharing for two base stations in the same frequency band
- Suitable for two operators with frequency allocations within the same frequency band
- Customized 5 MHz Tx/Rx pass-band filters (factory tunable) available for inserting LTE/UMTS 900 base station
- Full pass-band (without LTE/UMTS 900 5 MHz Tx/Rx frequency blocks) available for GSM 900 base station
- Very low insertion loss over complete EGSM Tx/Rx bandwidth compared to standard hybrid combiners
- Double unit for XPol antennas
- Suitable for indoor or outdoor applications
- DC/AISG by-pass for DTMA supply



## Block Diagram



## Tuning Examples



## Technical Data

Type No.	782 10930
Pass band GSM 900	Rx = 880 – 915 / Tx = 925 – 960 MHz (without assigned LTE/UMTS 900 5 MHz TX/Rx frequency blocks and ± 3 MHz guard bands)
LTE/UMTS 900	Rx = 880 ... 915 / Tx = 925 ... 960 MHz (factory tunable 5 MHz frequency blocks)
Guard band	3 MHz (between Tx/Rx1 and Tx/Rx3, between Tx/Rx2 and Tx/Rx4) – e.g. tuning example 1: Rx1 (Rx2) = 880 – 892 / 903 – 915 and Tx1 (Tx2) = 925 – 937 / 948 – 960 MHz Rx3 (Rx4) = 895 – 900 and Tx3 (Tx4) = 940 – 945 MHz
Insertion loss Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	< 0.5 dB (typically 0.1 dB) – see diagram I and II for tuning example 1 < 0.5 dB – see diagram III and IV for tuning example 1
Isolation Port 1 ↔ Port 2 / Port 4 ↔ Port 5	> 30 dB (880 – 915 / 925 – 960 MHz)
VSWR	< 1.25 (pass bands)
Group delay variation GSM 900 LTE/UMTS 900	< 20 ns (200 kHz) < 50 ns (5 MHz)
Impedance	50 Ω
Input power Tx1 / Tx2 / Tx3 / Tx4	< 100 W / < 100 W / < 100 W / < 100 W
Intermodulation products	< –160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	–40 ... +60 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP66)
DC/AISG transparency Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set
Dimensions (w x h x d)	498 x 455 x 154.5 mm (without connectors, without mounting brackets)

# Same-Band Combiner

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**880 – 915 / 925 – 960 MHz**  
GSM 900

**880 ... 915 / 925 ... 960 MHz**  
LTE / UMTS 900 (5 MHz Bandwidth)

Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>

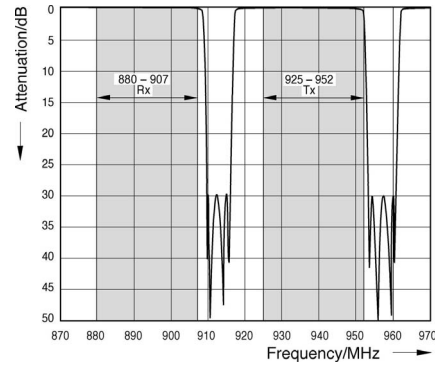
Type No.	Description
<b>784 10367</b>	<b>50-Ohm load</b>



## Calculated Attenuation Curves (Tuning Example 1)

### BTS 1 (GSM 900)

Diagram I (Port 1 ↔ Port 3 / Port 4 ↔ Port 6)



### BTS 2 (LTE/UMTS 900)

Diagram III (Port 2 ↔ Port 3 / Port 5 ↔ Port 6)

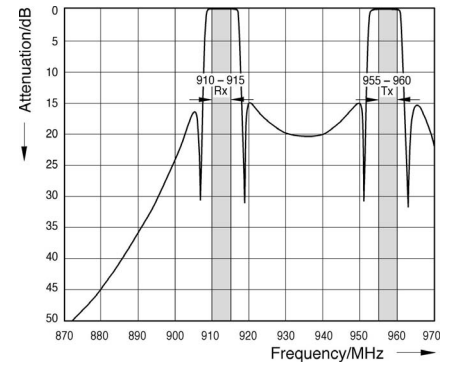


Diagram II (Port 1 ↔ Port 3 / Port 4 ↔ Port 6)

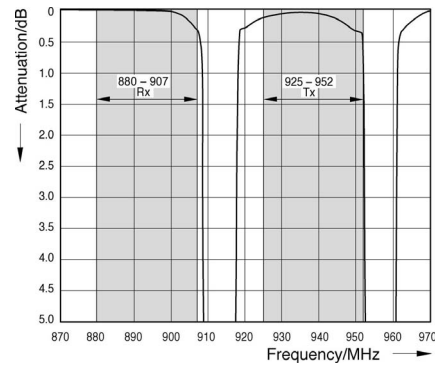
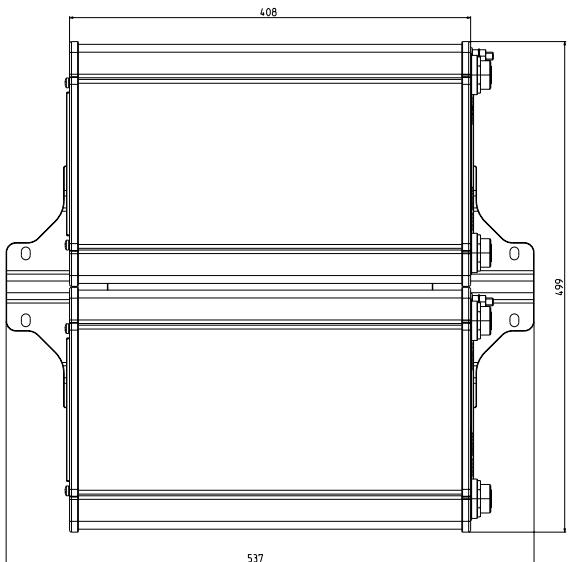
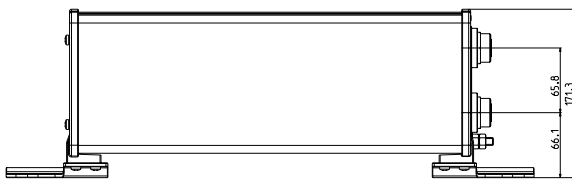
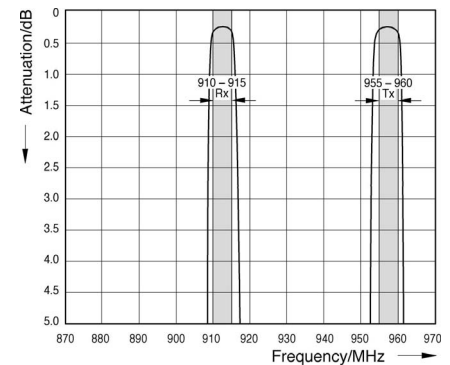


Diagram IV (Port 2 ↔ Port 3 / Port 5 ↔ Port 6)



# Same-Band Combiner

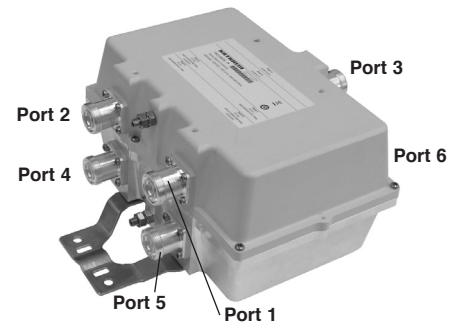
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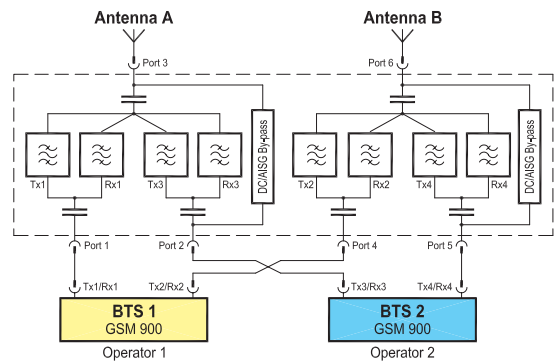
**880 – 886 / 925 – 931 MHz**  
GSM900 (6 MHz Bandwidth)

**903 – 915 / 948 – 960 MHz**  
GSM900 (12 MHz Bandwidth)

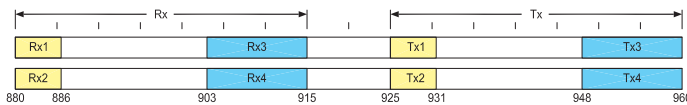
- Enables antenna and feeder sharing for two base stations in the same frequency band
- Suitable for two operators with frequency allocations within the same frequency band
- Very low Tx/Rx insertion loss compared to standard hybrid combiners
- Double unit for XPol antennas
- Suitable for indoor or outdoor applications
- DC/AISG by-pass for DTMA supply



## Block Diagram



## Tuning Diagram



## Technical Data

Type No.	782 10935
Pass band BTS 1 (GSM900 / Operator 1) BTS 2 (GSM900 / Operator 2)	Rx1/Rx2 = 880 – 886 MHz, Tx1/Tx2 = 925 – 931 MHz Rx3/Rx4 = 903 – 915 MHz, Tx3/Tx4 = 948 – 960 MHz
Insertion loss Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	< 0.4 dB (880 – 886 MHz) / < 0.6 dB (925 – 931 MHz) < 0.6 dB (903 – 915 MHz) / < 0.4 dB (948 – 960 MHz)
Isolation Port 1 ↔ Port 2 / Port 4 ↔ Port 5	> 30 dB (880 – 886 / 903 – 915 / 925 – 931 / 948 – 960 MHz)
VSWR	< 1.2 (pass bands)
Impedance	50 Ω
Input power Tx1 / Tx2 / Tx3 / Tx4	< 100 W / < 100 W / < 100 W / < 100 W
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP66)
DC/AISG transparency Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set
Weight	6.9 kg
Dimensions (w x h x d)	275 x 176 x 140 mm (without connectors, without mounting brackets)



# Same-Band Combiner

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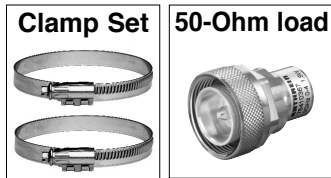
**880 – 886 / 925 – 931 MHz**  
GSM900 (6 MHz Bandwidth)

**903 – 915 / 948 – 960 MHz**  
GSM900 (12 MHz Bandwidth)

## Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>

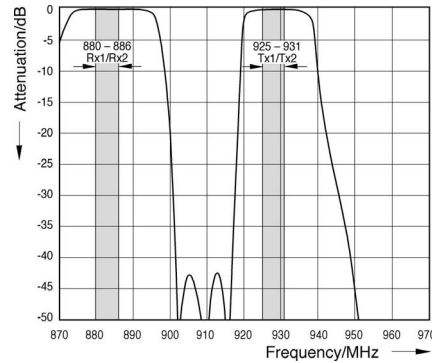
Type No.	Description
<b>784 10367</b>	<b>50-Ohm load</b>



## Typical Attenuation Curves

### BTS 1 (GSM 900)

Diagram I (Port 1 ↔ Port 3 / Port 4 ↔ Port 6)



### BTS 2 (GSM 900)

Diagram III (Port 2 ↔ Port 3 / Port 5 ↔ Port 6)

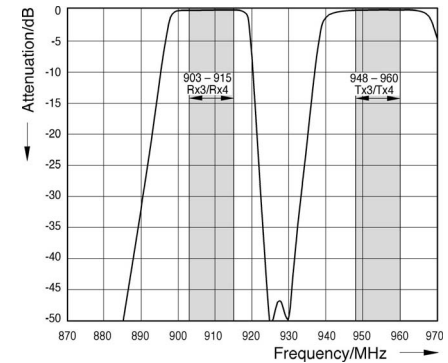


Diagram II (Port 1 ↔ Port 3 / Port 4 ↔ Port 6)

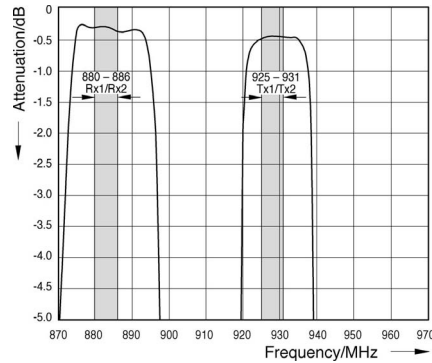
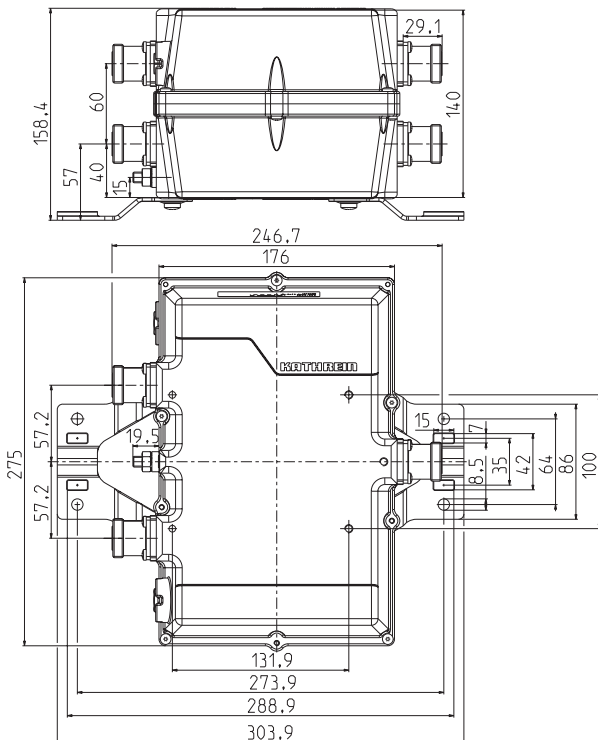
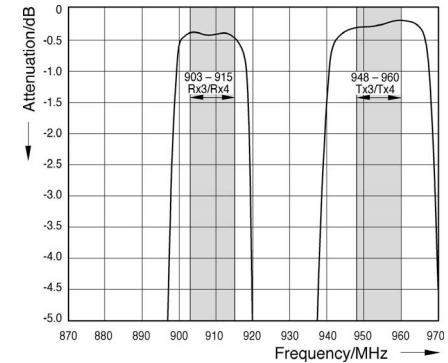


Diagram IV (Port 2 ↔ Port 3 / Port 5 ↔ Port 6)



### Please note:

As a result of more stringent legal regulations and judgements regarding product liability, we are obliged to point out certain risks that may arise when products are used under extraordinary operating conditions.

Extraordinary operating conditions, such as heavy icing or exceptional dynamic stress (e.g. strain caused by oscillating support structures), may result in the breakage of a mast mounted device or even cause it to fall to the ground.

These facts must be considered during the site planning process.

The Same-band Combiner is designed to operate under the environmental conditions as described in ETS 300 019-1-4 class 4.1 E and have passed environmental tests as recommended in ETS 300 019-2-4.

The installation team must be properly qualified and also be familiar with the relevant national safety regulations.

The details given in our data sheets have to be followed carefully when installing the antennas, filters, combiners, amplifiers and accessories.

The limits for the coupling torque of RF connectors, recommended by the connector manufacturers must be obeyed.

Terminate unused inputs with a suitable 50-Ohm load, e.g. 784 10367.

Any previous datasheet issues have now become invalid.





# Same-Band Combiner

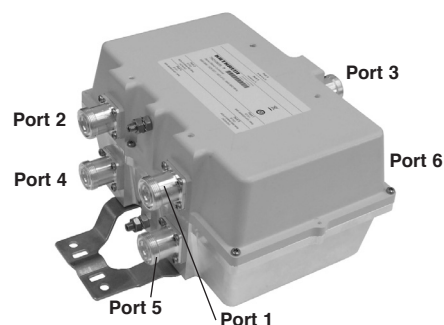
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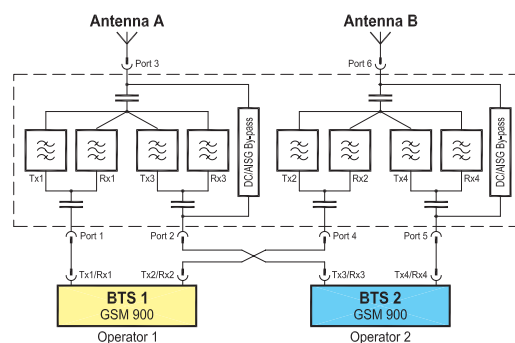
**880 – 890 / 925 – 935 MHz**  
GSM900 (10 MHz Bandwidth)

**902.5 – 915 / 947.5 – 960 MHz**  
GSM900 (12.5 MHz Bandwidth)

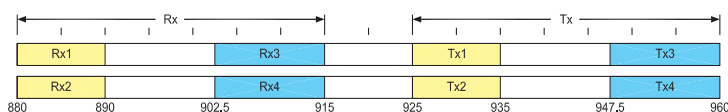
- Enables antenna and feeder sharing for two base stations in the same frequency band
- Suitable for two operators with frequency allocations within the same frequency band
- Very low Tx/Rx insertion loss compared to standard hybrid combiners
- Double unit for XPol antennas
- Suitable for indoor or outdoor applications
- DC/AISG by-pass for DTMA supply



**Block Diagram**



**Tuning Diagram**



## Technical Data

Type No.	782 10936
Pass band BTS 1 (GSM900 / Operator 1) BTS 2 (GSM900 / Operator 2)	Rx1/Rx2 = 880 – 890 MHz, Tx1/Tx2 = 925 – 935 MHz Rx3/Rx4 = 902.5 – 915 MHz, Tx3/Tx4 = 947.5 – 960 MHz
Insertion loss Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	< 0.5 dB, typically 0.3 dB (880 – 890 MHz) / < 0.7 dB, typically 0.4 dB (925 – 935 MHz) < 0.7 dB, typically 0.5 dB (902.5 – 915 MHz) / < 0.5 dB, typically 0.3 dB (947.5 – 960 MHz)
Isolation Port 1 ↔ Port 2 / Port 4 ↔ Port 5	> 30 dB (880 – 890 / 902.5 – 915 / 925 – 935 / 947.5 – 960 MHz)
VSWR	< 1.2 (pass bands)
Impedance	50 Ω
Input power Tx1 / Tx2 / Tx3 / Tx4	< 100 W / < 100 W / < 100 W / < 100 W
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP66)
DC/AISG transparency Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set
Weight	6.9 kg
Dimensions (w x h x d)	275 x 176 x 140 mm (without connectors, without mounting brackets)

# Same-Band Combiner

**KATHREIN**

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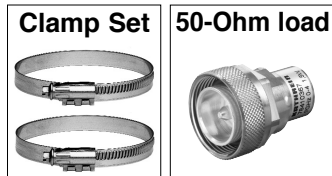
**880 – 890 / 925 – 935 MHz**  
GSM900 (10 MHz Bandwidth)

**902.5 – 915 / 947.5 – 960 MHz**  
GSM900 (12.5 MHz Bandwidth)

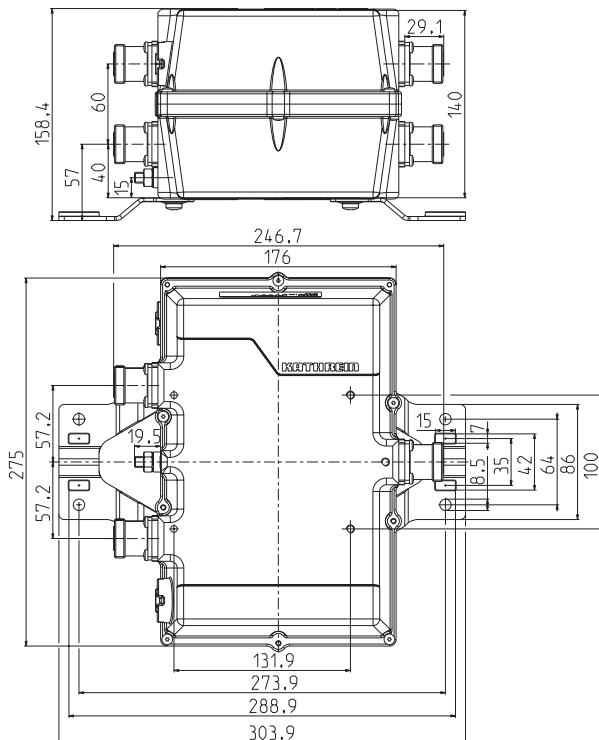
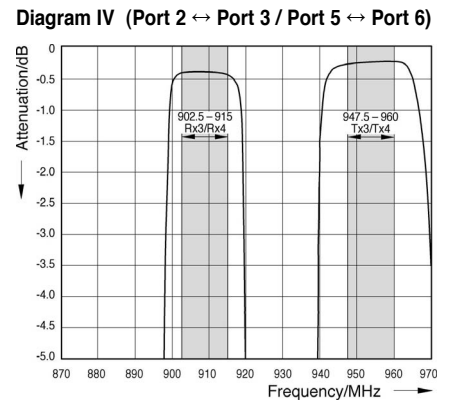
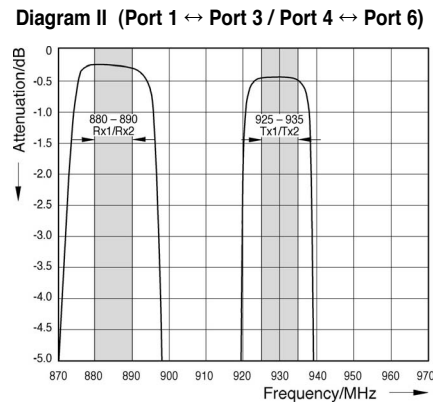
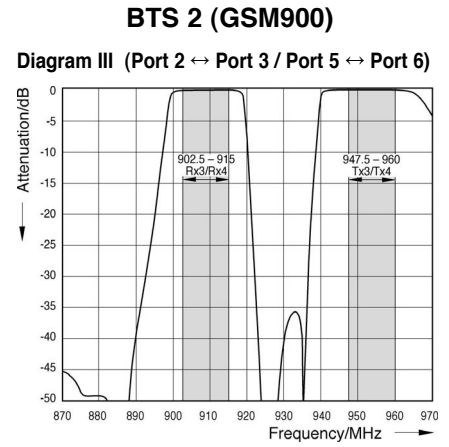
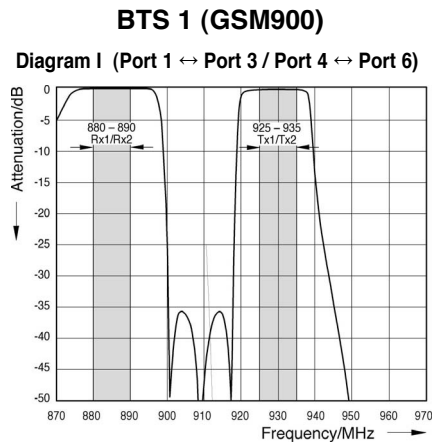
## Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>

Type No.	Description
<b>784 10367</b>	<b>50-Ohm load</b>



## Typical Attenuation Curves



# Hybrid Ring Junction (180° Hybrid)

## 806 – 960 MHz / 1710 – 1880 MHz

### The hybrid ring junction can be used:

- as a power splitter with a ratio of 1:1,
- for the decoupled combining of two transmitters with arbitrarily low frequency spacing ( at 3 dB loss),
- for the decoupled combining of two receivers with arbitrarily low frequency spacing,
- for the decoupled combining of two transmitter/receiver units, whose integrated duplexers are within the same frequency range,
- as component to form combiners.

### Description:

The hybrid ring junction has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into ports 2 and 4, port 3 is decoupled and without power if ports 2 and 4 are ideally matched. In practice an absorber of suitable power at port 3 is to be planned for according to the mismatch of ports 2 and 4.

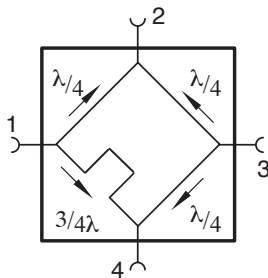
Decoupled combining can be made via ports 1 and 3 or 2 and 4.



K 63 73 621  
790 881



791 498



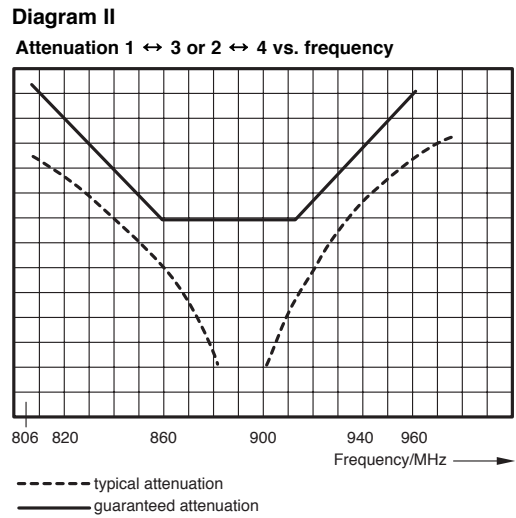
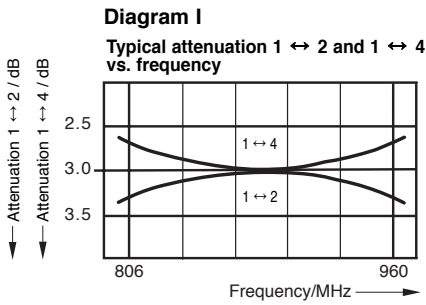
### Technical Data

Type No.	K 63 73 621	790 881	791 498
Frequency range	806 – 960 MHz	890 – 960 MHz	1710 – 1880 MHz
Attenuation 1 ↔ 2 or 1 ↔ 4	3 ±0.4 dB (see diagram I)	3 ±0.3 dB (see diagram I)	3 ±0.4 dB (see diagram I)
Attenuation 1 ↔ 3 or 2 ↔ 4	See diagram II		See diagram II
VSWR	< 1.2		< 1.3
Impedance	50 Ω		50 Ω
Input power	< 100 W per input		< 50 W per input
Connectors	N female		N female
Application	Indoor		Indoor
Mounting	With 2 screws (max. 4.5 mm diameter)		With 4 screws (max. 4.5 mm diameter)
Weight	0.32 kg		0.25 kg
Packing size	Approx. 160 x 40 x 105 mm		90 x 40 x 110 mm
Dimensions (w x h x d)	150 x 30 x 87 mm (including connectors)		80 x 26 x 106 mm (including connectors)

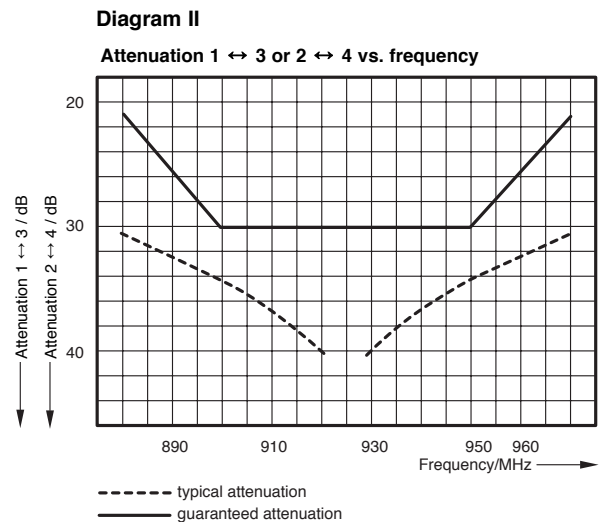
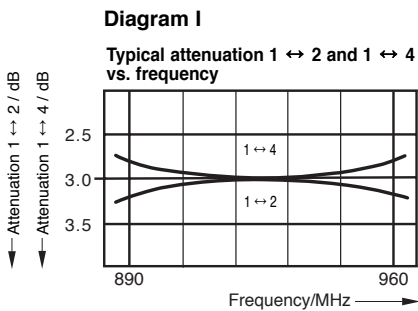
**Note:** VSWR and attenuation values are measured when the remaining ports are terminated with 50-Ω loads.

### Typical Attenuation Curves

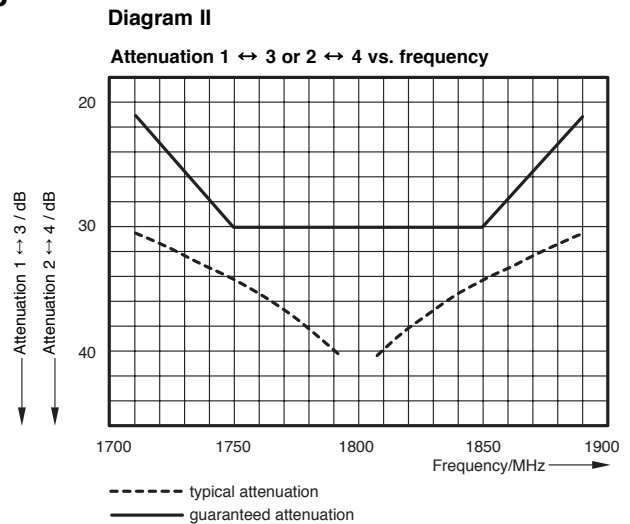
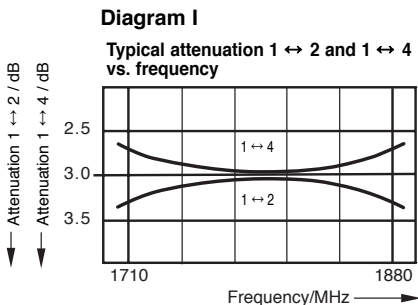
**K 63 73 621**



**790 881**

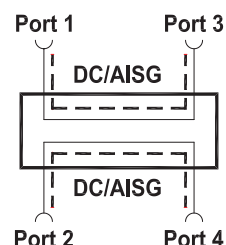
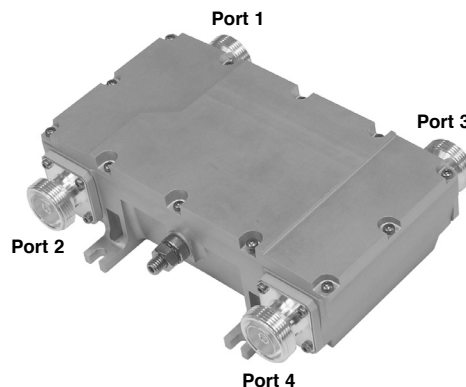


**791 498**



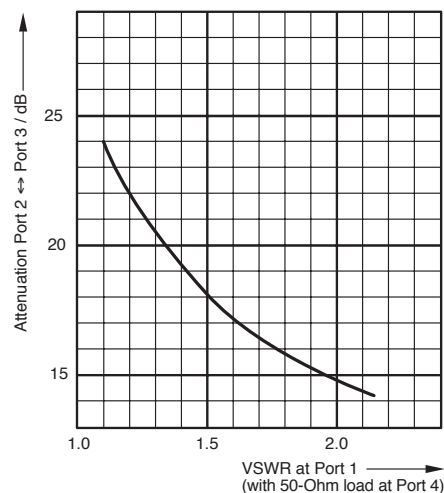
# 3-dB Coupler Hybrid Combiner 2 : 2 698 – 2690 MHz

- Can be used for the decoupled combining of 2 transmitters onto a common antenna with frequency spacing as narrow as desired (3 dB loss) – see application example 1
- Can be used for the decoupled combining of 2 transmitters onto two antennas with frequency spacing as narrow as desired – see application example 2
- Can be used as a decoupled 2-way splitter – see application example 3
- Can be used as a frequency-independant 90° phase shifter (90° Hybrid)
- Suitable for indoor or outdoor applications
- DC/AISG by-pass
- External DC stop available as an accessory



## Diagram

Typical attenuation Port 2 ↔ Port 3 vs. VSWR at Port 1



## Technical Data

Type No.	<b>782 10524</b>
Frequency range	698 – 2690 MHz
Attenuation	
Port 1 ↔ Port 2	3.1 ±0.5 dB
Port 1 ↔ Port 3	3.1 ±0.5 dB
Port 2 ↔ Port 3	See diagram
Directivity	> 20 dB
VSWR	< 1.25
Impedance	50 Ω
Input power	< 150 W at each input port
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +70 °C
Connectors	7-16 female
Application	Indoor or outdoor (IP66)
DC/AISG transparency	By-pass between Port 1 ↔ Port 3 / Port 2 ↔ Port 4 (max. 2500 mA) External DC stop available as an accessory
Mounting	With 4 screws (max. 6.5 mm diameter)
Weight	1.5 kg
Packing size	268 x 115 x 203 mm
Dimensions (w x h x d)	205.4 x 60 x 104 mm (without connectors and mounting feet)

### Note:

VSWR and attenuation values only valid if all ports are terminated with 50-Ohm loads.

## Accessories (order separately)

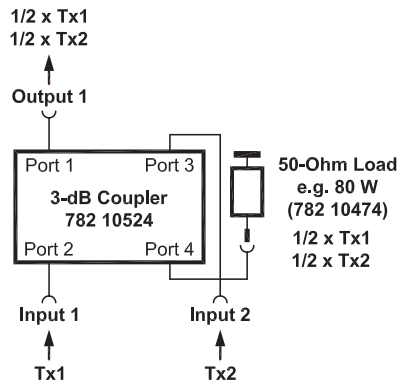
Type No.	Description
<b>782 10850</b>	<b>DC stop</b>
<b>782 10474</b>	<b>50-Ohm load (80 W)</b>
<b>784 10367</b>	<b>50-Ohm load (1.5 W)</b>



# 3-dB Coupler Hybrid Combiner 2 : 2 698 – 2690 MHz

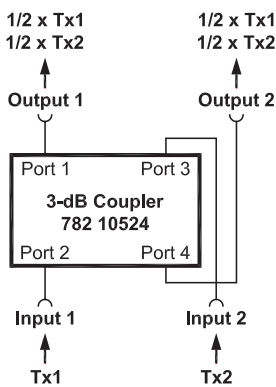
## Application Example 1: Hybrid Combiner 2:1

Tx1 and Tx2 signals combined onto **one** output (antenna)  
Half the power dissipated in absorber  
(suitably dimensioned 50-Ohm load required - to be ordered separately)



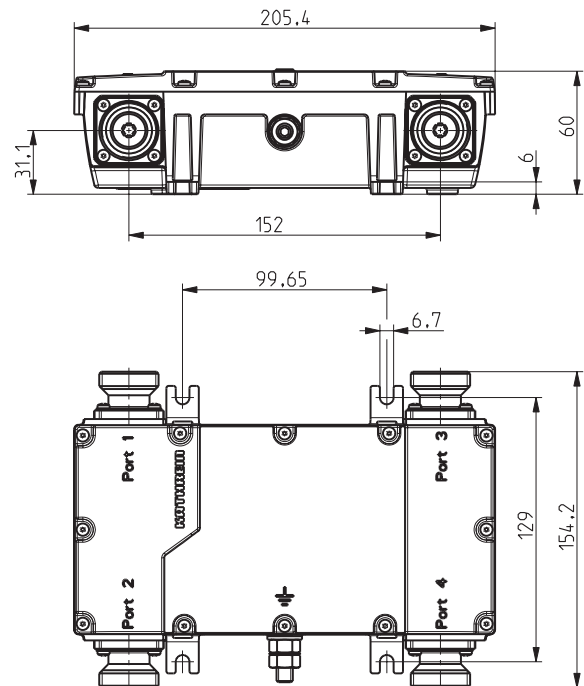
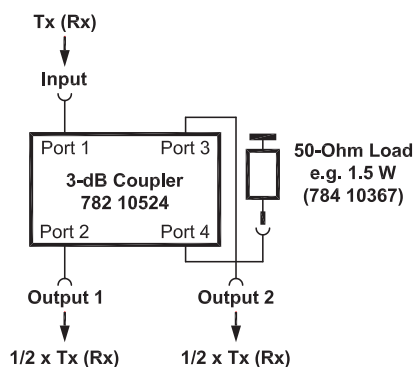
## Application Example 2: Hybrid Combiner 2:2

Tx1 and Tx2 signals combined and distributed equally  
onto **two** outputs (antennas)



## Appl. Example 3: Decoupled 2-way Splitter

Tx (or Rx) signal distributed equally onto two outputs  
(suitably dimensioned 50-Ohm load required - to be ordered separately)



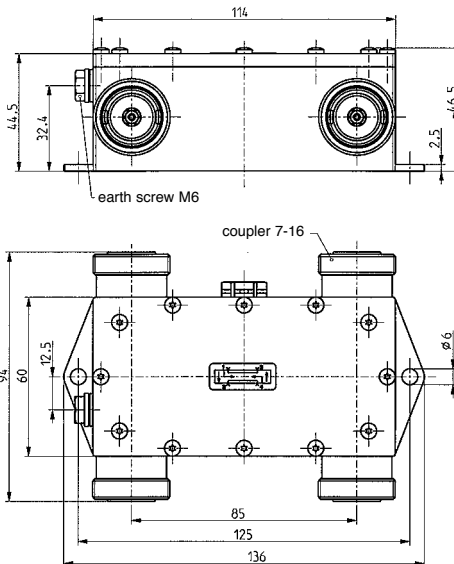
# 3-dB Coupler (90° Hybrid) 806 – 960 MHz

### The 3-dB coupler can be used:

- as a decoupled power splitter with a ratio of 1:1,
- for the decoupled combining of two transmitters with frequency spacing as narrow as desired (at 3 dB loss),
- for the decoupled combining of two receivers with frequency spacing as narrow as desired,
- for the decoupled combining of two transmitter/receiver units, whose integrated duplexers are within the same frequency range,
- as a frequency-independent 90° phase shifter,
- as a component to form combiners.

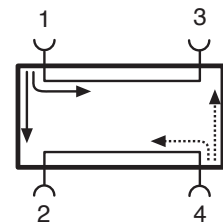
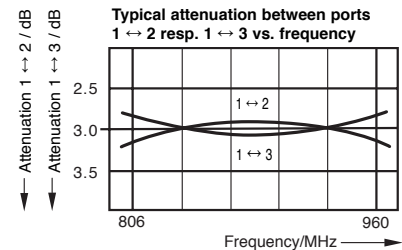
### Function:

The 3-dB coupler has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into ports 2 and 3. Port 4 is decoupled and without power if ports 2 and 3 are ideally matched. In practice an absorber of suitable power at port 4 is to be planned in accordance with the mismatch of ports 2 and 3. Decoupled combining can be achieved via the diagonally opposite ports 2 and 3 or 1 and 4.



**Diagram I**

Typical attenuation between ports 1 ↔ 2 resp. 1 ↔ 3 vs. frequency

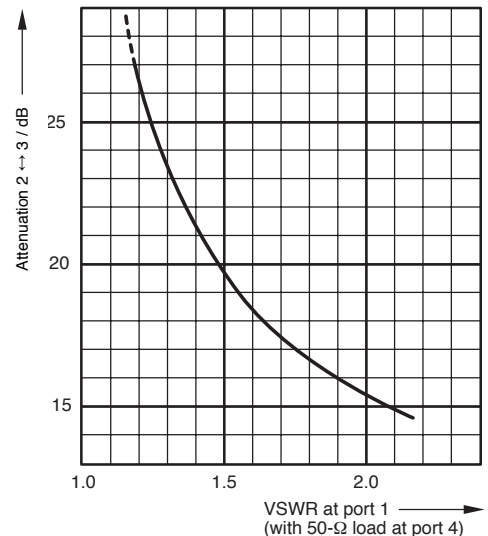


### Technical Data

Type No.	793 506
Frequency range	806 – 960 MHz
Attenuation 1 ↔ 2 / 1 ↔ 3	3 ± 0.4 dB (see diagram I)
Attenuation 2 ↔ 3	See diagram II
Directivity	> 30 dB
VSWR	< 1.1
Impedance	50 Ω
Input power	< 500 W total power at two inputs, with max. 350 W at one input
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-30 ... +70 °C
Connectors	7-16 female
Application	Indoor or <b>outdoor</b> (IP66)
Mounting	With 2 screws (max. 6 mm diameter)
Weight	1.8 kg
Packing size	160 x 95 x 65 mm
Dimensions (w x h x d)	136 x 46.5 x 94 mm (including connectors)

**Diagram II**

Typical attenuation 2 ↔ 3 vs. VSWR at port 1



**Note:** VSWR and attenuation values are measured when the remaining ports are terminated with 50-Ω loads.



# 3-dB Coupler (90° Hybrid) 1700 – 2200 MHz

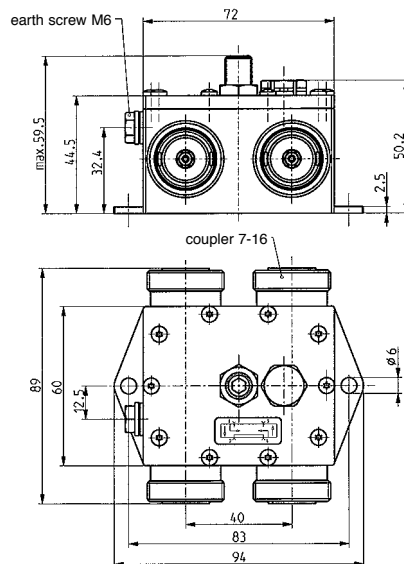
### The 3-dB coupler can be used:

- as a decoupled power splitter with a ratio of 1:1,
- for the decoupled combining of two transmitters with frequency spacing as narrow as desired (at 3 dB loss),
- for the decoupled combining of two receivers with frequency spacing as narrow as desired,
- for the decoupled combining of two transmitter/receiver units, whose integrated duplexers are within the same frequency range,
- as a frequency-independent 90° phase shifter,
- as a component to form combiners.



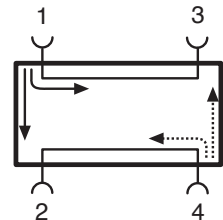
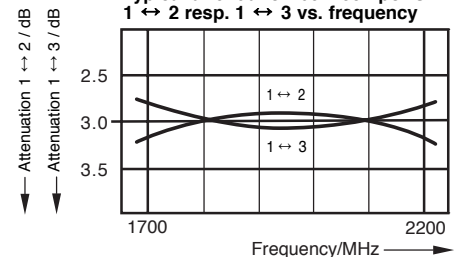
### Function:

The 3-dB coupler has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into ports 2 and 3. Port 4 is decoupled and without power if ports 2 and 3 are ideally matched. In practice an absorber of suitable power at port 4 is to be planned in accordance with the mismatch of ports 2 and 3. Decoupled combining can be achieved via the diagonally opposite ports 2 and 3 or 1 and 4.



**Diagram I**

Typical attenuation between ports  
1 ↔ 2 resp. 1 ↔ 3 vs. frequency

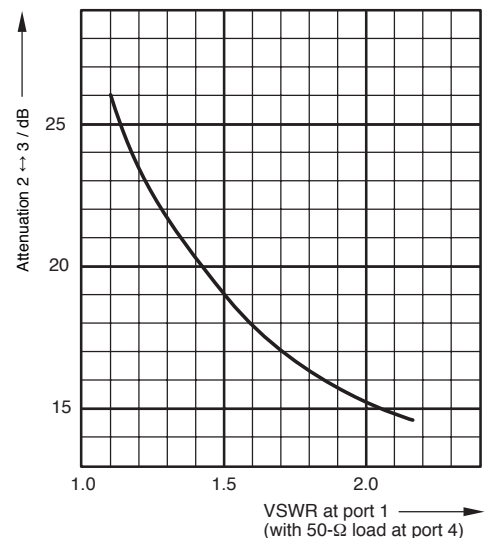


### Technical Data

Type No.	793 006
Frequency range	1700 – 2200 MHz
Attenuation 1 ↔ 2 / 1 ↔ 3	3 ± 0.4 dB (see diagram I)
Attenuation 2 ↔ 3	See diagram II
Directivity	> 25 dB
VSWR	< 1.15
Impedance	50 Ω
Input power	< 300 W total power at two inputs, with max. 200 W at one input
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-30 ... +70 °C
Connectors	7-16 female
Application	Indoor or outdoor (IP66)
Mounting	With 2 screws (max. 5.5 mm diameter)
Weight	1.3 kg
Packing size	160 x 95 x 65 mm
Dimensions (w x h x d)	94 x 59.5 x 89 mm (including connectors)

**Diagram II**

Typical attenuation 2 ↔ 3 vs. VSWR at port 1



**Note:** VSWR and attenuation values are measured when the remaining ports are terminated with 50-Ω loads.



# 3-dB Coupler (90° Hybrid) 800 – 2200 MHz

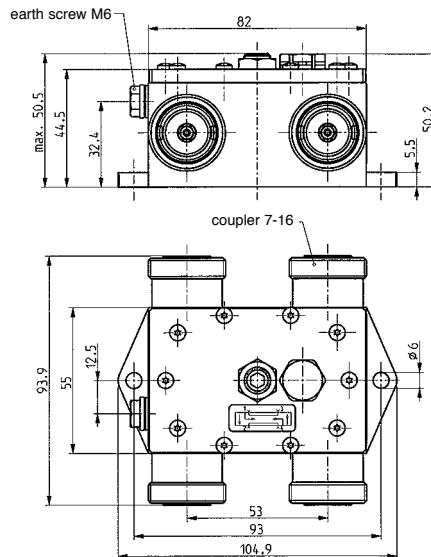
## The 3-dB coupler can be used:

- as a decoupled power splitter with a ratio of 1 : 1,
- for the decoupled combining of two transmitters with frequency spacing as narrow as desired (at 3 dB loss),
- for the decoupled combining of two receivers with frequency spacing as narrow as desired,
- for the decoupled combining of two transmitter/receiver units whose integrated duplexers are within the same frequency range,
- as a frequency-independent 90° phase shifter,
- as a combiner component.

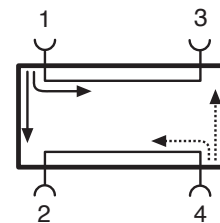
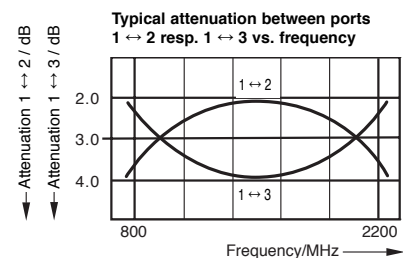
## Function:

The 3-dB coupler has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into the ports 2 and 3. Port 4 is decoupled and without power if ports 2 and 3 are ideally matched. In practice an absorber of suitable power at port 4 is to be planned for according to the mismatch of ports 2 and 3.

Decoupled combining can be achieved via the diagonally opposite ports 2 and 3 respectively 1 and 4.



**Diagram I**

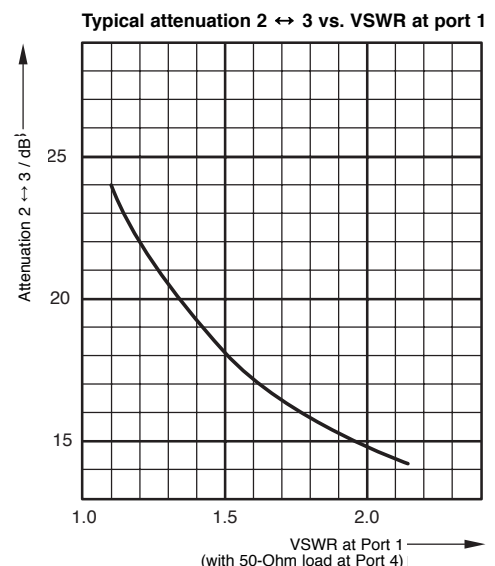


## Technical Data

Type No.	793 554
Frequency range	800 – 2200 MHz
Attenuation 1 ↔ 2 / ↔ 3	3 ±1.2 dB (see diagram I)
Attenuation 2 ↔ 3	See diagram II
Directivity	> 20 dB
VSWR	< 1.2
Impedance	50 Ω
Input power	< 300 W total power at two inputs, with max. 200 W at one input
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperatur range	-30 ... +70 °C
Connectors	7-16 female
Application	Indoor or outdoor (IP66)
Mounting	With 2 screws (max. 5.5 mm diameter)
Weight	1.3 kg
Packing size	160 x 95 x 65 mm
Dimensions (w x h x d)	104.9 x 50.2 x 93.9 mm (including connectors)

**Note:** VSWR and attenuation values are measured when the remaining ports are terminated with 50-Ω loads.

**Diagram II**



# System Components

Bias Tees  
Measuring Directional Couplers  
DC-Stops  
Attenuators  
50-Ω Loads  
Power Distribution Unit

## System Components:

Description	Type No.	Frequency range	Max. input power	Page
DC Stop	793 301	800 – 2170 MHz	750 W	283
DC Stop	<b>782 10850</b>	250 – 2700 MHz	750 W	284
Bias Tee	793 304	800 – 2170 MHz	250 W	285
Bias Tee AISG	782 10429	800 – 2170 MHz	250 W	286
Bias Tee AISG/Bulkhead	782 10550	1710 – 2170 MHz	250 W	287
Bias Tee, outdoor	<b>782 10577</b>	690 – 2700 MHz	250 W	288
Bias Tee, outdoor (AISG)	<b>782 10578</b>	690 – 2700 MHz	250 W	289
Smart Bias Tee 12 V / BTS	782 10253	800 – 2170 MHz	750 W	290, 291
Smart Bias Tee 12 V / Antenna	782 10254	800 – 2170 MHz	750 W	290, 291
Smart Bias Tee 24 V / BTS	782 10255	800 – 2170 MHz	750 W	290, 291
Smart Bias Tee 24 V / Antenna	782 10256	800 – 2170 MHz	750 W	290, 291
Smart Bias Tee 12 V / BTS	782 10453	800 – 2170 MHz	750 W	290, 291
Smart Bias Tee 12 V / Antenna	782 10454	800 – 2170 MHz	750 W	290, 291
Smart Bias Tee 24 V / BTS	782 10455	800 – 2170 MHz	750 W	290, 291
Smart Bias Tee 24 V / Antenna	782 10456	800 – 2170 MHz	750 W	290, 291
Smart Bias Tee	<b>782 11055</b>	690 – 2700 MHz	750 W	292, 293
Smart Bias Tee	<b>782 11056</b>	690 – 2700 MHz	750 W	292, 293
50-Ω Load (N male)	K 62 26 61 1	0 – 2700 MHz	0.5 W	296
50-Ω Load (7-16 male)	784 10367	0 – 4000 MHz	1.5 W	296
50-Ω Load (7-16 female)	784 10470	0 – 4000 MHz	1.5 W	296
50-Ω Load (N male)	K 62 26 11 1	0 – 2700 MHz	2 W	296
50-Ω Load (N female)	K 62 26 40 1	0 – 2700 MHz	10 W	296
50-Ω Load (N male)	K 62 26 41 1	0 – 2700 MHz	10 W	296
50-Ω Load (N female)	K 62 26 20 1	0 – 2700 MHz	25 W	297
50-Ω Load (N male)	K 62 26 21 1	0 – 2700 MHz	25 W	297
50-Ω Load (7-16 female)	K 62 26 20 7	0 – 2700 MHz	25 W	297
50-Ω Load (7-16 male)	K 62 26 21 7	0 – 2700 MHz	25 W	297
50-Ω Load (N female)	K 62 26 30 1	0 – 2700 MHz	50 W	297
50-Ω Load (N male)	K 62 26 31 1	0 – 2700 MHz	50 W	297
50-Ω Load (7-16 female)	K 62 26 30 7	0 – 2700 MHz	50 W	297
50-Ω Load (7-16 male)	K 62 26 31 7	0 – 2700 MHz	50 W	297
50-Ω Load (N female)	K 62 26 50 1	0 – 1000 MHz	100 W	297
50-Ω Load (N male)	K 62 26 51 1	0 – 1000 MHz	100 W	297
50-Ω Load (7-16 female)	K 62 26 50 7	0 – 1000 MHz	100 W	297
50-Ω Load (7-16 female) Low IM	782 10474	800 – 2700 MHz	80 W	298
Attenuator 3 dB	784 10235	0 – 4000 MHz	2 W	299
Attenuator 6 dB	784 10236	0 – 4000 MHz	2 W	299
Attenuator 10 dB	784 10237	0 – 4000 MHz	2 W	299
Attenuator 20 dB	784 10238	0 – 4000 MHz	2 W	299
Attenuator 3 dB	791 918	0 – 4000 MHz	15 W	299
Attenuator 6 dB	791 919	0 – 4000 MHz	12 W	299
Attenuator 10 dB	791 920	0 – 4000 MHz	10 W	299
Attenuator 20 dB	791 921	0 – 4000 MHz	10 W	299
Measuring Directional Coupler	792 972	824 – 960 MHz 960 – 2500 MHz	800 W 200 W	300

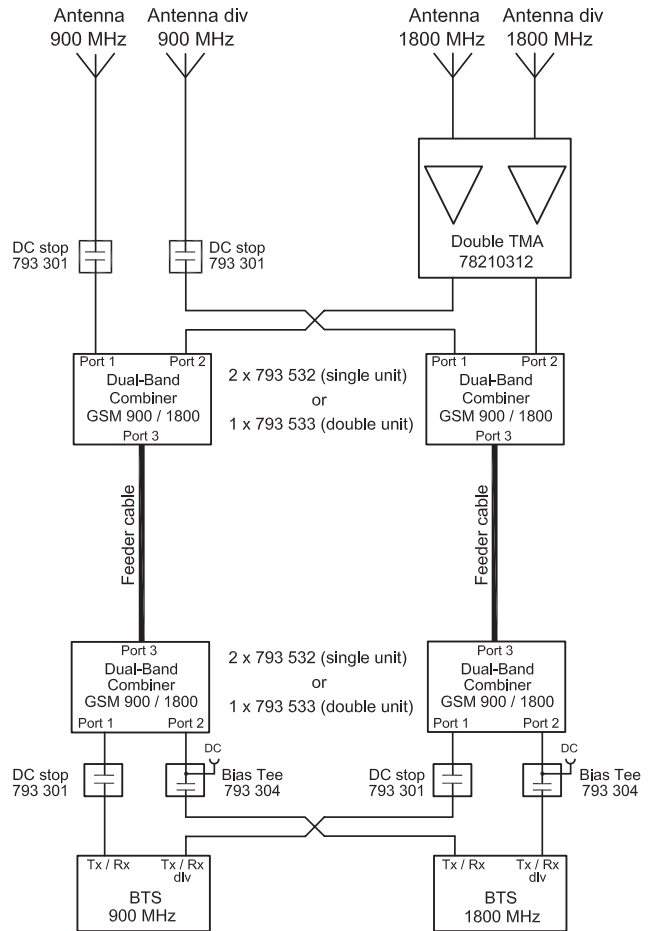
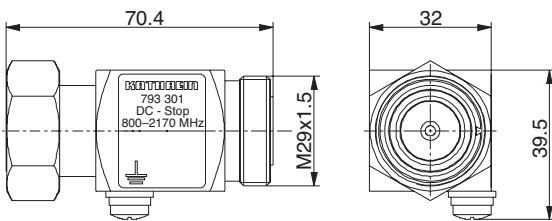
Description	Type No.	Power supply (DC input)	Page
Power Distribution Unit (PDU)	782 10344	38 ... 72 V DC	294, 295

### New Products

# DC Stop 800 – 2170 MHz

DC Stop is used in dual- or multi-band antenna systems where one or more antenna systems require a DC supply for an installed mast head amplifier. The DC Stop prevents DC voltage from being shorted within the non-biased antenna system(s) and isolates the corresponding base station output(s) from DC voltage.

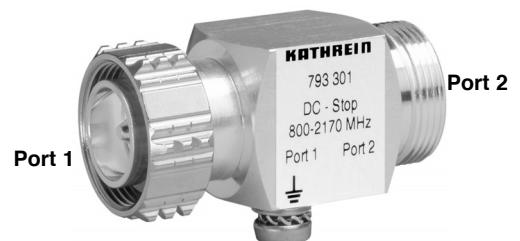
- Low RF signal insertion loss
- High DC signal isolation from port 1 to port 2 and vice versa
- Suitable for indoor or outdoor applications



Application Example

## Technical Data

Type No.	793 301
Frequency range	800 – 2170 MHz
Insertion loss Port 1 ↔ Port 2	< 0.1 dB (800 – 2170 MHz)
Isolation Port 1 ↔ Port 2	> 70 dB (DC)
VSWR	< 1.1 ( 800 – 2000 MHz) < 1.2 (2000 – 2170 MHz)
Impedance	50 Ω
Input power	< 750 W (800 – 2170 MHz)
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +70 °C
Connectors Port 1 Port 2	7-16 male 7-16 female
Application	Indoor or outdoor (IP 67)
Weight	0.32 kg
Dimensions (w x h x d)	70.4 mm x 39.5 mm x 32 mm (including connectors and earthing screw of 6 mm diameter)

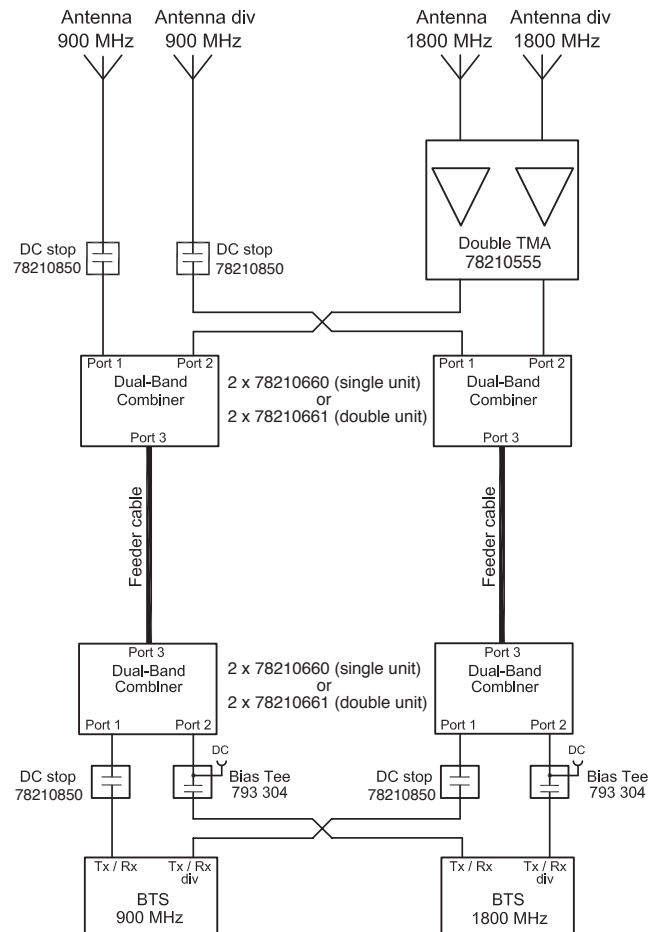
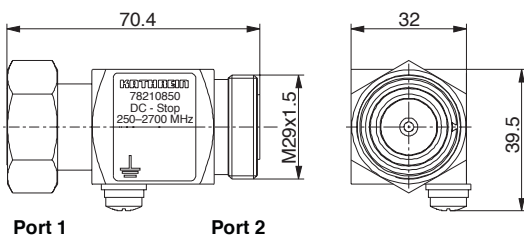


# DC Stop

## 250 – 2700 MHz

DC Stop is used in dual- or multi-band antenna systems where one or more antenna systems require a DC supply for an installed mast head amplifier. The DC Stop prevents DC voltage from being shorted within the non-biased antenna system(s) and isolates the corresponding base station output(s) from DC voltage.

- Low RF signal insertion loss
- High DC signal isolation from port 1 to port 2 and vice versa
- Suitable for indoor or outdoor applications



Application Example

### Technical Data

Type No.	782 10850
Frequency range	250 – 2700 MHz
Insertion loss Port 1 ↔ Port 2	< 0.1 dB (250 – 2700 MHz)
Isolation Port 1 ↔ Port 2	> 70 dB (DC)
VSWR	< 1.1 (380 – 2700 MHz) < 1.2 (250 – 380 MHz)
Impedance	50 Ω
Input power	< 750 W (250 – 2700 MHz)
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +70 °C
Connectors Port 1 Port 2	7-16 male 7-16 female
Application	Indoor or outdoor (IP 67)
Weight	0.32 kg
Dimensions (w x h x d)	70.4 mm x 39.5 mm x 32 mm (including connectors and earthing screw of 6 mm diameter)

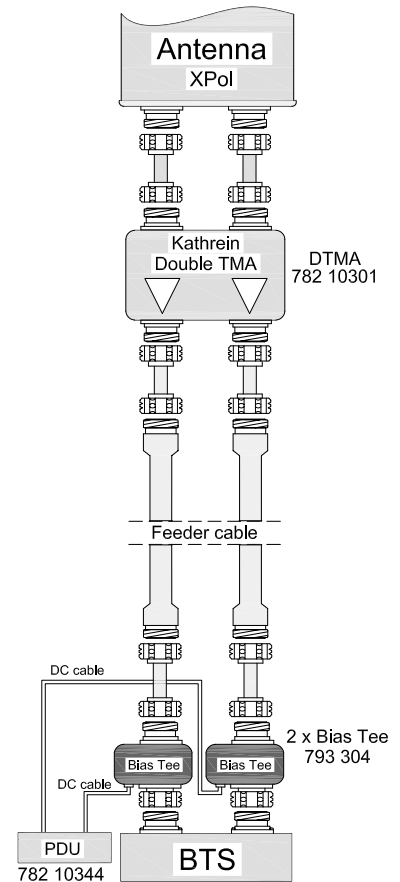
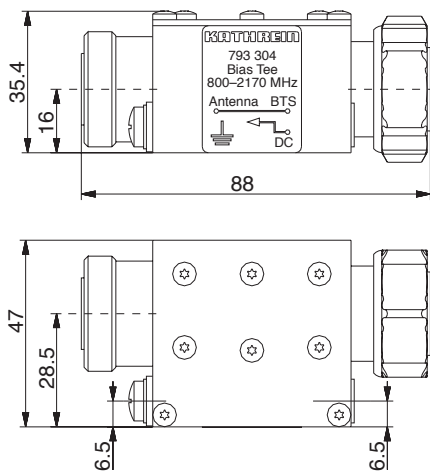


# Bias Tee

## 800 – 2170 MHz

The Bias Tee is suitable to feed DC voltage into the feeder cable of a receiving and/or transmitting antenna system in order to provide the operating voltage for a mast head amplifier.

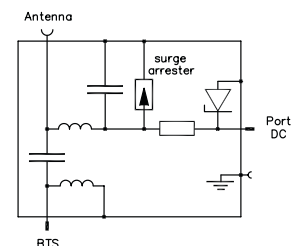
- The Bias Tee provides low RF signal insertion loss from the BTS to the antenna port and vice versa.
- The DC voltage is fed from the DC port to the antenna port while providing a high level of DC isolation from the DC to the BTS port and from the antenna to the BTS port.
- The measures taken to protect against static discharge and lightning ensure a high level of reliability and operational safety.



Application Example

### Technical Data

Type No.	793 304
Frequency range	800 – 2170 MHz
Insertion loss BTS ↔ Antenna	< 0.1 dB (800 – 2170 MHz)
Isolation BTS ↔ Antenna BTS ↔ DC	> 70 dB (DC) > 70 dB (DC)
VSWR	< 1.1 (800 – 2170 MHz)
Impedance	50 Ω
Input power BTS DC	< 250 W (800 – 2170 MHz) < 1000 mA / 0 ... +30 VDC
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Lightning protection	5 kA, 8/20 μs pulse
Temperature range	-40 ... +70 °C
Connectors BTS Antenna Port DC	7-16 male 7-16 female SMB male
Application	Indoor
Weight	0.6 kg
Packing size	145 x 145 x 50 mm
Dimensions (w x h x d)	88 x 47 x 35.4 mm (including connectors and earthing screw of 6 mm diameter)



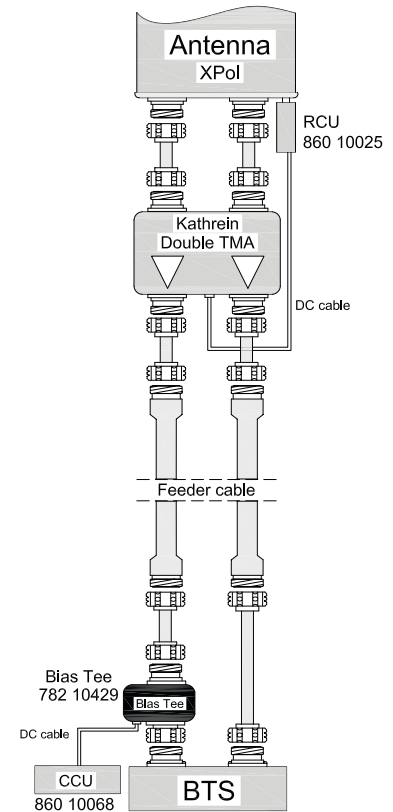
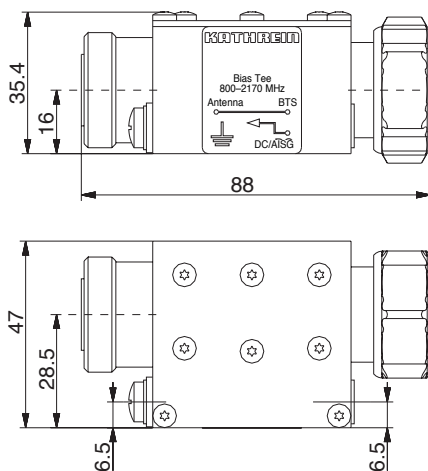
# Bias Tee

## 800 – 2170 MHz

The Bias Tee is suitable to feed DC voltage and AISG control signals into the feeder cable in order to provide operating voltage and control signals via the RF feeder cable to the TMA or RCU.



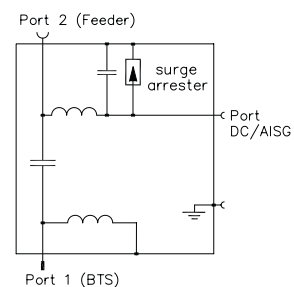
- The Bias Tee provides low RF signal insertion loss from the BTS to the antenna port and vice versa.
- The DC voltage and AISG control signal (2.176 MHz) is fed from the DC port to the antenna port while providing a high level of DC isolation from the DC to the BTS port and from the antenna to the BTS port.
- The measures taken in conjunction with the CCU-LOC to protect against static discharge and lightning ensure a high level of reliability and operational safety.



**Application Example**

### Technical Data

Type No.	782 10429
Frequency range	800 – 2170 MHz
Insertion loss BTS ↔ Antenna	< 0.1 dB (800 – 2170 MHz)
Isolation BTS ↔ Antenna BTS ↔ DC/AISG	> 70 dB (DC) > 70 dB (DC)
VSWR	< 1.1 (800 – 2170 MHz)
Impedance	50 Ω
Input power BTS DC/AISG	< 250 W (800 – 2170 MHz) < 1.8 A / 13 VDC < 0.8 A / 29 VDC
Lightning protection	3 kA, 10/350 μs pulse
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +70 °C
Connectors Port 1 BTS Port 2 Antenna Port DC/AISG	7-16 male 7-16 female SMB male
Application	Indoor
Weight	0.6 kg
Packing size	145 x 145 x 50 mm
Dimensions (w x h x d)	88 x 47 x 35.4 mm (including connectors and earthing screw of 6 mm diameter)



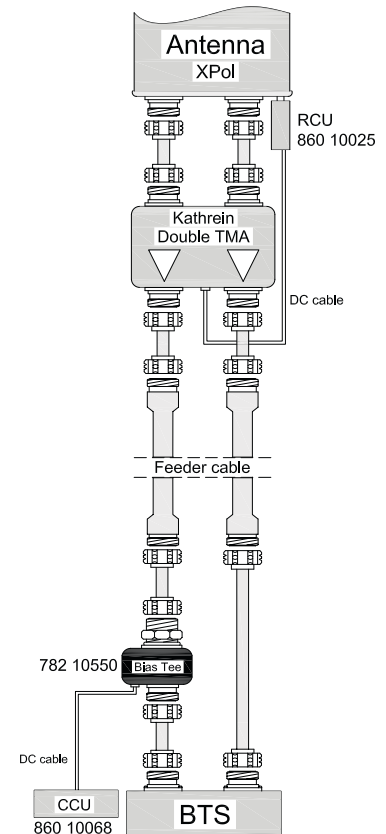
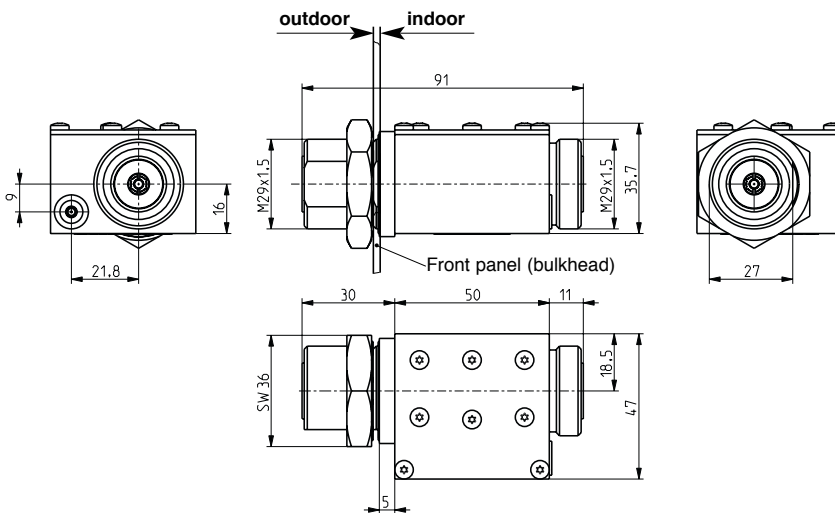
# Bias Tee

## 1710 – 2170 MHz



The Bias Tee is suitable to feed DC voltage and AISG control signals into the feeder cable in order to provide operating voltage and control signals via the RF feeder cable to the TMA or RCU.

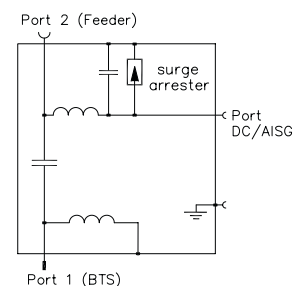
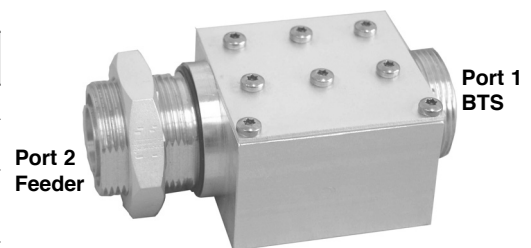
- The Bias Tee provides low RF signal insertion loss from the BTS to the antenna port and vice versa.
- The DC voltage and AISG control signal (2.176 MHz) is fed from the DC port to the antenna port while providing a high level of DC isolation from the DC to the BTS port and from the antenna to the BTS port.
- The measures taken in conjunction with the CCU-LOC to protect against static discharge and lightning ensure a high level of reliability and operational safety
- Designed for front panel mounting (Bulkhead version).



Application Example

### Technical Data

Type No.	782 10550
Frequency range	1710 – 2170 MHz
Insertion loss BTS ↔ Antenna	< 0.1 dB (1710 – 2170 MHz)
Isolation BTS ↔ Antenna BTS ↔ DC/AISG	> 70 dB (DC) > 70 dB (DC)
VSWR	< 1.1 (1710 – 2170 MHz)
Impedance	50 Ω
Input power BTS DC/AISG	< 250 W (1710 – 2170 MHz) < 1.8 A / 13 VDC < 0.8 A / 29 VDC
Lightning protection	3 kA, 10/350 μs pulse; 20 kA, 8/20 μs pulse
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +70 °C
Connectors Port 1 BTS Port 2 Antenna Port DC/AISG	7-16 female 7-16 female SMB male
Application	Indoor, port 2 connector outdoor with sealing (O-ring)
Weight	0.6 kg
Packing size	145 x 145 x 50 mm
Dimensions (w x h x d)	91 x 47 x 35.4 mm (including connectors)





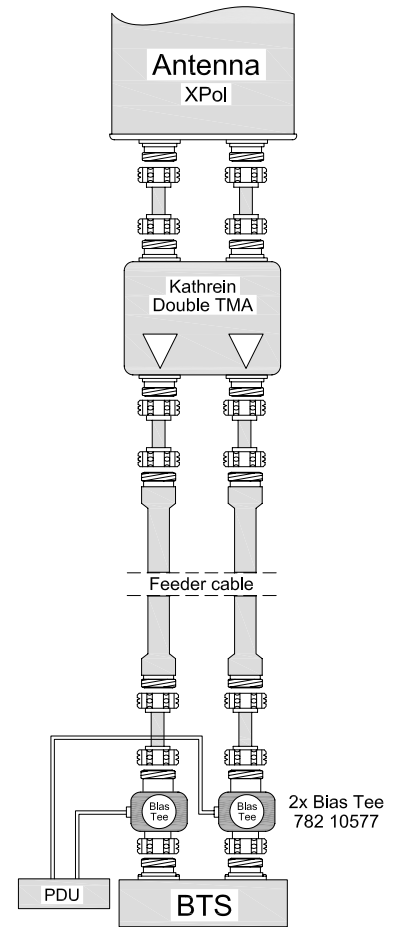
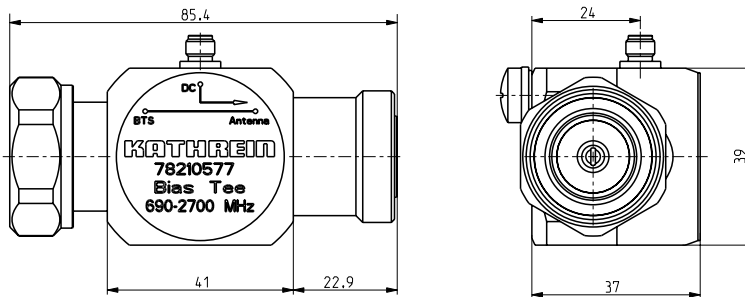
# Bias Tee

## 690 – 2700 MHz

The Bias Tee is suitable to feed DC voltage into the feeder cable of a receiving and/or transmitting antenna system in order to provide the operating voltage for a mast head amplifier.

- The Bias Tee provides low RF signal insertion loss from the BTS to the antenna port and vice versa.
- The DC voltage is fed from the DC port to the antenna port while providing a high level of DC isolation from the DC to the BTS port and from the antenna to the BTS port.
- The measures taken to protect against static discharge and lightning ensure a high level of reliability and operational safety.

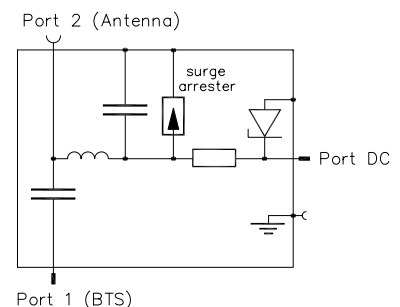
936.3769 Subject to alteration.



Application Example

### Technical Data

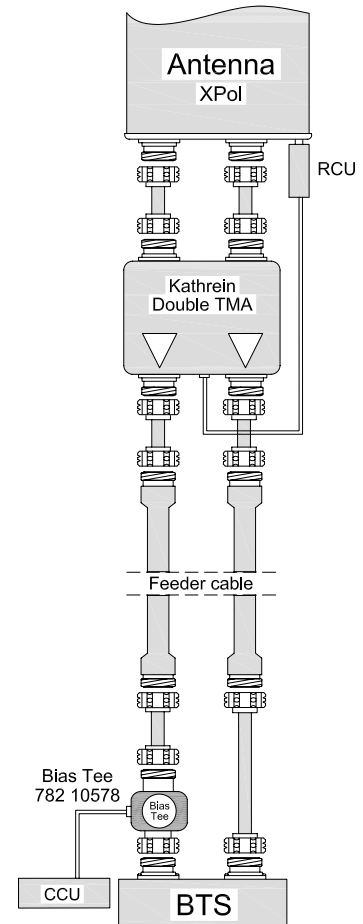
Type No.	782 10577
Frequency range	690 – 2700 MHz
Insertion loss Port 1 ↔ Port 2	< 0.1 dB (690 – 2700 MHz)
Isolation Port 1 ↔ Port 2 Port 1 ↔ DC	> 70 dB (DC) > 70 dB (DC)
VSWR	< 1.1 (690 – 2700 MHz)
Impedance	50 Ω
Input power Port 1 DC	< 250 W (690 – 2700 MHz) < 1 A / 0 ... +30 VDC
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Lightning protection	3 kA, 10/350 μs pulse
Temperature range	-40 ... +70 °C
Connectors Port 1 (BTS) Port 2 (Antenna) Port DC	7-16 male 7-16 female SMA female
Application	Indoor or outdoor (IP 66)
Weight	0.47 kg
Packing size	128 x 75 x 88 mm
Dimensions (w x h x d)	85.4 x 45 x 46.2 mm (including connectors and earthing screw of 6 mm diameter)



# Bias Tee (AISG) 690 – 2700 MHz

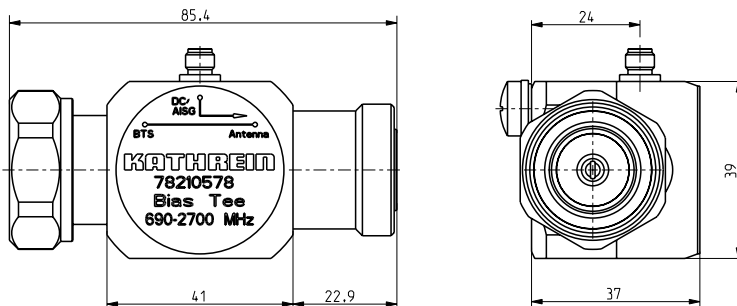
The Bias Tee is suitable to feed DC voltage and AISG control signals into the feeder cable in order to provide operating voltage and control signals via the RF feeder cable to the TMA or RCU.

- The Bias Tee provides low RF signal insertion loss from the BTS to the antenna port and vice versa.
- The DC voltage and AISG control signal (2.176 MHz) is fed from the DC port to the antenna port while providing a high level of DC isolation from the DC to the BTS port and from the antenna to the BTS port.
- The measures taken in conjunction with the CCU-LOC to protect against static discharge and lightning ensure a high level of reliability and operational safety.



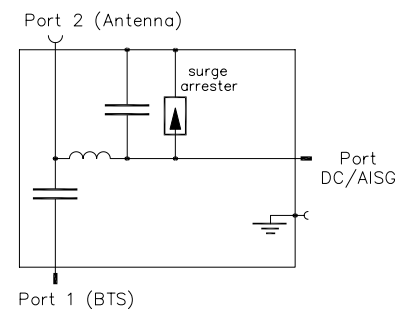
Application Example

936.3771 Subject to alteration.



## Technical Data

Type No.	782 10578
Frequency range	690 – 2700 MHz
Insertion loss Port 1 ↔ Port 2	< 0.1 dB (690 – 2700 MHz)
Isolation Port 1 ↔ Port 2 Port 1 ↔ Port DC/AISG	> 70 dB (DC) > 70 dB (DC)
VSWR	< 1.1 (690 – 2700 MHz)
Impedance	50 Ω
Input power Port 1 Port DC/AISG	< 250 W (690 – 2700 MHz) < 1 A / 0 ... +30 VDC
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Lightning protection	3 kA, 10/350 μs pulse
Temperature range	-40 ... +70 °C
Connectors Port 1 (BTS) Port 2 (Antenna) Port DC/AISG	7-16 male 7-16 female SMA female
Application	Indoor or outdoor (IP 66)
Weight	0.47 kg
Packing size	128 x 75 x 88 mm
Dimensions (w x h x d)	85.4 x 45 x 46.2 mm (including connectors and earthing screw of 6 mm diameter)



# Smart Bias Tee

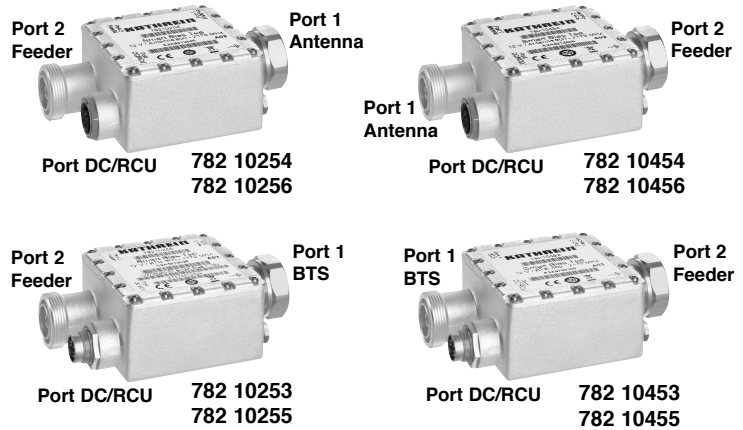
## 800 – 2170 MHz



The **Smart Bias Tee** combines the performance of a standard Bias Tee (e.g. type 793 304) with the function of an additional modem (AISG standard) in order to provide either DC voltage as well as remote control signals via an RF feeder cable to a TMA or RCU.

The **Smart Bias Tee** provides low RF signal insertion loss from port 1 to port 2 and vice versa. The measures taken to protect against static discharge and lightning ensure a high level of reliability and operational safety.

- **782 10253, 782 10453:** 12 V version for use near the BTS, in order to feed-in DC voltage and RCU control signals into a feeder cable
- **782 10254, 782 10454:** 12 V version for use near the antenna, in order to control an RCU (only required if no TMA is in use)
- **782 10255, 782 10455:** 24 V version for use near the BTS, in order to feed-in DC voltage and RCU control signals into a feeder cable
- **782 10256, 782 10456:** 24 V version for use near the antenna, in order to control an RCU (only required if no TMA is in use)



### Abbreviations:

**RCU** = Remote Control Unit for remote electrical control of antenna tilt

**BTS** = Base Transceiver Station

**TMA** = Tower Mounted Amplifier

**AISG** = Antenna Interface Standards Group

**Port 1** = Port for BTS or for Antenna

**Port 2** = Port for Feeder Cable

**Port DC/RCU** = Port for DC voltage and remote control unit signals

### Pin connections

	782 10253	782 10254	782 10255	782 10256
	782 10453	782 10454	782 10455	782 10456
8-pin connector (IEC 60130-9)				
Pin 1	12 VDC in	12 VDC out	Not connected	Not connected
Pin 2	Not connected	Not connected	Not connected	Not connected
Pin 3	RS485-B	RS485-B	RS485-B	RS485-B
Pin 4	Not connected	Not connected	Not connected	Not connected
Pin 5	RS485-A	RS485-A	RS485-A	RS485-A
Pin 6	Not connected	Not connected	24 VDC in	24 VDC out
Pin 7	DC return (grounded)	DC return (grounded)	DC return (grounded)	DC return (grounded)
Pin 8	Not connected	Not connected	Not connected	Not connected

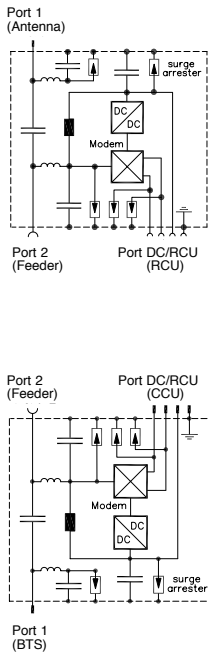
### Technical Data

Type No.	782 10253 12 V / BTS	782 10254 12 V / Antenna	782 10255 24 V / BTS	782 10256 24 V / Antenna
<b>Port 1: 7-16 male</b>	BTS	Antenna	BTS	Antenna
<b>Port 2: 7-16 female</b>	Feeder	Feeder	Feeder	Feeder
Type No.	782 10453 12 V / BTS	782 10454 12 V / Antenna	782 10455 24 V / BTS	782 10456 24 V / Antenna
<b>Port 1: 7-16 female</b>	BTS	Antenna	BTS	Antenna
<b>Port 2: 7-16 male</b>	Feeder	Feeder	Feeder	Feeder
Frequency range	800 – 2170 MHz			
Insertion loss Port 1 ↔ Port 2	< 0.1 dB (800 – 2170 MHz)			
Isolation for DC and RCU signals Port 1 ↔ Port 2 Port 1 ↔ Port DC/RCU Port 2 ↔ Port DC/RCU	> 70 dB > 70 dB > 0 dB			
VSWR	< 1.1 (800 – 2170 MHz)			
Impedance	50 Ω			
Input power Port 1 or port 2 Port DC/RCU	< 750 W (800 – 2170 MHz) < 2.5 A / +8 ... +14 VDC		< 750 W (800 – 2170 MHz) < 2.5 A / +8 ... +30 VDC	
Power consumption	Typically 0.6 W			
Lightning protection	3 kA, 10/350 μs pulse			
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)			
Temperature range	-40 ... +60 °C			
Modem carrier frequency	2.176 MHz			
Application	Indoor or outdoor (IP66)			
Weight	1.5 kg			
Packing size	167 x 102 x 86 mm			
Dimensions (w x h x d)	79 x 79 x 43.5 mm (without connectors)			

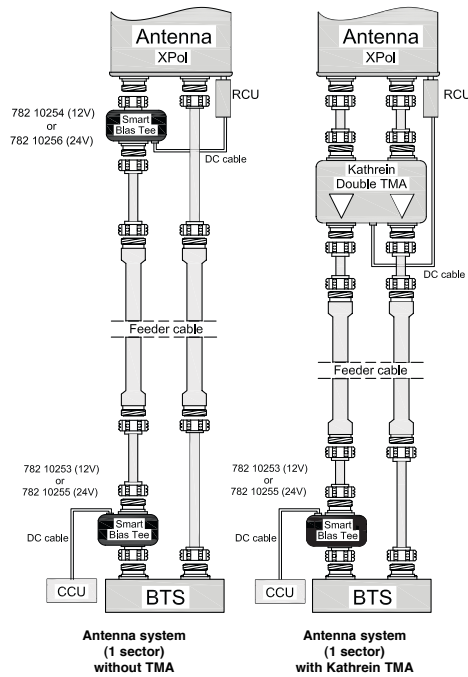
# Smart Bias Tee 800 – 2170 MHz



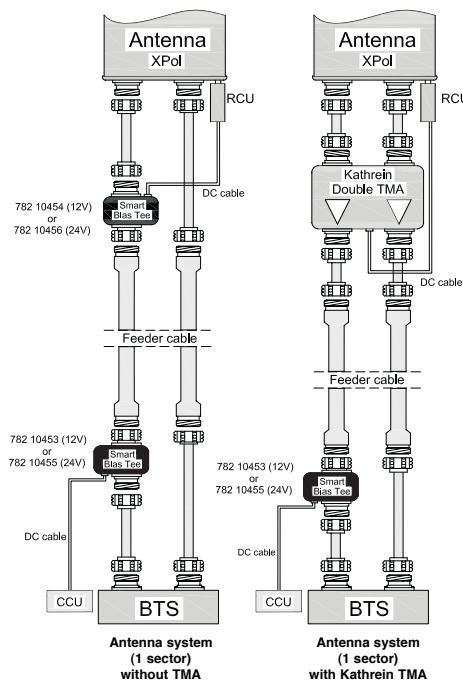
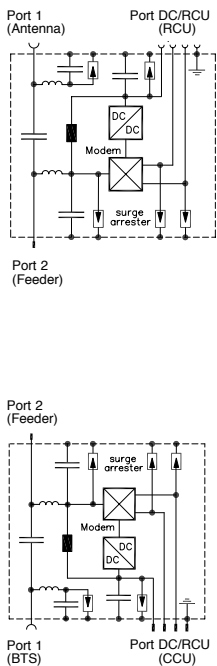
## Block diagrams



## Application Examples



**Warning:**  
Don't mix 12 V and 24 V  
Bias Tees in any configuration.  
Always choose corresponding  
voltage to suit the TMA.

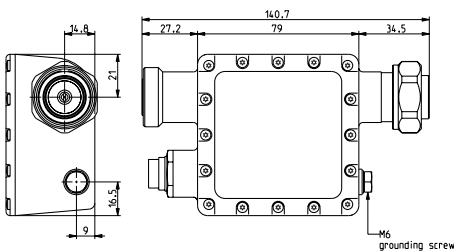


**Please note:**  
The Smart Bias Tees are designed to operate under the environmental conditions as described in ETS 300 019-1-4 class 4.1 E and have passed environmental tests as recommended in ETS 300 019-2-4.

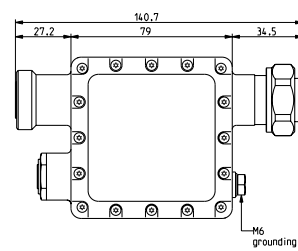
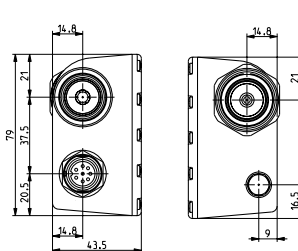
The installation team must be properly qualified and also be familiar with the relevant national safety regulations.

The coupling torque at 7-16 connectors is 25 – 30 Nm! Hold the smart bias tee housing securely while tightening the 7-16 locking nut. The tightening torque for fixing the AISG connector must be 0.5 – 1.0 Nm ('hand-tightened').

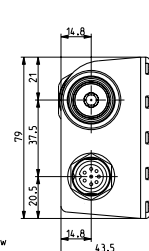
## Dimensional Drawings



782 10253, 782 10255  
782 10453, 782 10455



782 10254, 782 10256  
782 10454, 782 10456



# Smart Bias Tee

## 690 – 2700 MHz



- The **Smart Bias Tee** combines the performance of a standard Bias Tee (e.g. type 793 304) with the function of an additional modem (AISG standard) in order to provide either DC voltage as well as remote control signals via an RF feeder cable to a TMA or RCU.
- The **Smart Bias Tee** provides low RF signal insertion loss from port 1 to port 2 and vice versa. The measures taken to protect against static discharge and lightning ensure a high level of reliability and operational safety.
- **782 11055**: +8 ... +30 V DC version (DC on pin 6) for use near the BTS, in order to feed-in DC voltage and RCU control signals into a feeder cable
- **782 11056**: +8 ... +30 V DC version (DC on pin 6) for use near the antenna, in order to control an RCU (only required if **no TMA** is in use)

**RCU** = Remote Control Unit for remote electrical control of antenna tilt

**BTS** = Base Transceiver Station

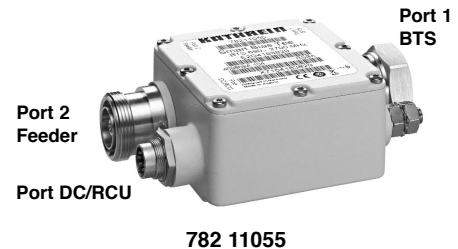
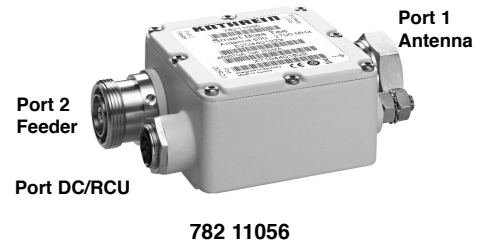
**TMA** = Tower Mounted Amplifier

**AISG** = Antenna Interface Standards Group

**Port 1** = Port for BTS or for Antenna

**Port 2** = Port for Feeder Cable

**Port DC/RCU** = Port for DC voltage and remote control unit signals



### Technical Data

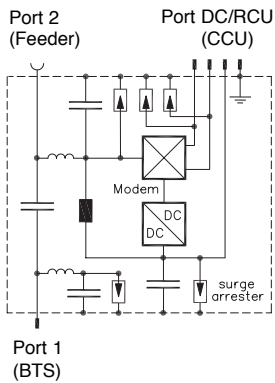
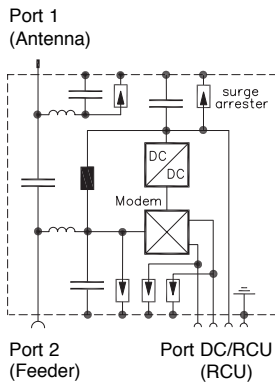
Type No.	782 11055 BTS	782 11056 Antenna
<b>Port 1: 7-16 male</b>	BTS	Antenna
<b>Port 2: 7-16 female</b>	Feeder	Feeder
Frequency range	690 – 2700 MHz	
Insertion loss Port 1 ↔ Port 2	< 0.1 dB (690 – 2700 MHz)	
Isolation for DC and RCU signals Port 1 ↔ Port 2	> 70 dB	
Port 1 ↔ Port DC/RCU	> 70 dB	
Port 2 ↔ Port DC/RCU	> 0 dB	
VSWR	< 1.1 (690 – 2700 MHz)	
Impedance	50 Ω	
Input power Port 1 or port 2	< 750 W (690 – 2700 MHz)	
Port DC/RCU	< 2.5 A / +8 ... +30 VDC	
Power consumption	Typically 0.6 W	
Lightning protection	3 kA, 10/350 μs pulse	
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)	
Temperature range	-40 ... +60 °C	
Modem carrier frequency	2.176 MHz	
Application	Indoor or outdoor (IP66)	
Weight	0.8 kg	
Packing size	167 x 102 x 86 mm	
Dimensions (w x h x d)	81 x 81 x 46 mm (without connectors)	

### Pin Connections

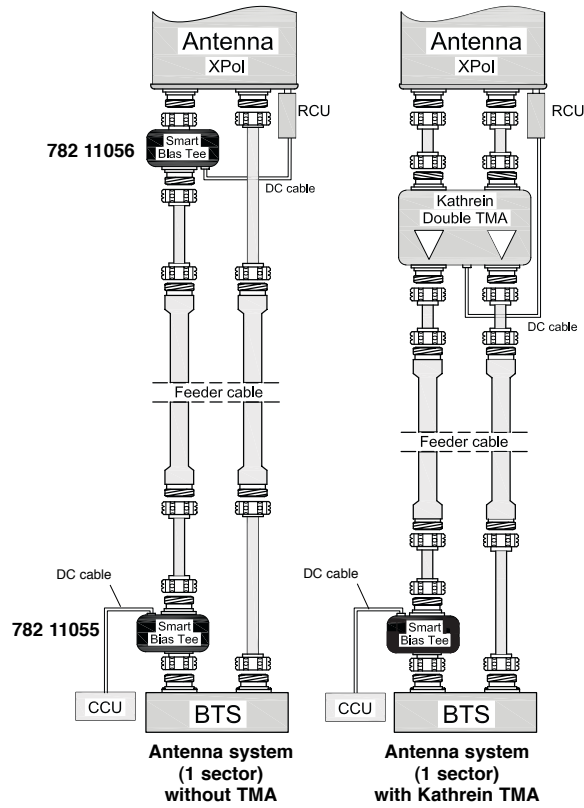
	782 11055	782 11056
8-pin connector (IEC 60130-9)		
	male	female
Pin 1	Not connected	Not connected
Pin 2	Not connected	Not connected
Pin 3	RS485-B	RS485-B
Pin 4	Not connected	Not connected
Pin 5	RS485-A	RS485-A
Pin 6	+8...+30 VDC in	+8...+30 VDC out
Pin 7	DC return (grounded)	DC return (grounded)
Pin 8	Not connected	Not connected



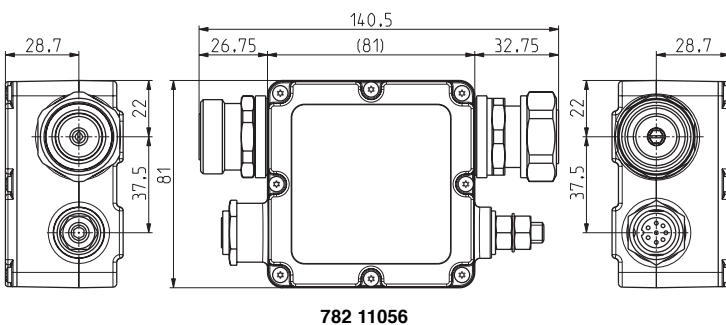
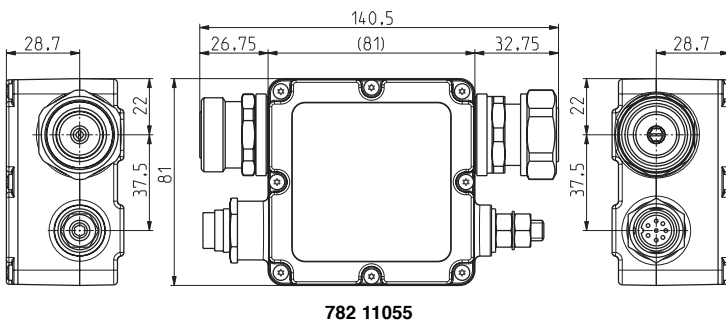
## Block Diagrams



## Application Examples



## Dimensional Drawings



### Please note:

The Smart Bias Tees are designed to operate under the environmental conditions as described in ETS 300 019-1-4 class 4.1 E and have passed environmental tests as recommended in ETS 300 019-2-4.

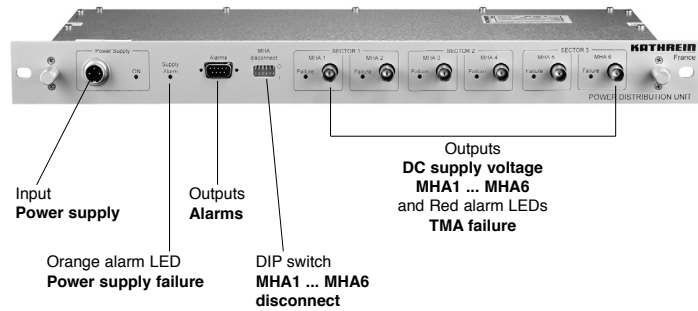
The installation team must be properly qualified and also be familiar with the relevant national safety regulations.

The coupling torque at 7-16 connectors is 25 – 30 Nm! Hold the smart bias tee housing securely while tightening the 7-16 locking nut. The tightening torque for fixing the AISG connector must be 0.5 – 1.0 Nm ('hand-tightened').



The PDU provides DC supply voltage and alarm interfacing for up to 6 TMAs / MHAs (Tower Mounted Amplifiers / Mast Head Amplifiers) with current window alarming.

- Suitable for low DC power requirements, e.g. Kathrein DTMA 782 10301 (UMTS) or 782 10312 (GSM1800)
- Alarm signals available on SubD 9-pin connector and LEDs
- Bias Tees and cable sets for connection of up to 6 Bias Tees for servicing 6 TMAs (or 3 DTMA = double TMAs) are available as accessories



**Alarm interface function:** Under normal operating conditions each TMA pulls the nominal current from the PDU. In case of failure when a TMA consumes a current outside the specified alarm window, then an internal TMA circuit pulls an increased alarm current. Once the respective TMA failure detection threshold is registered by the PDU, then the following alarms are activated:

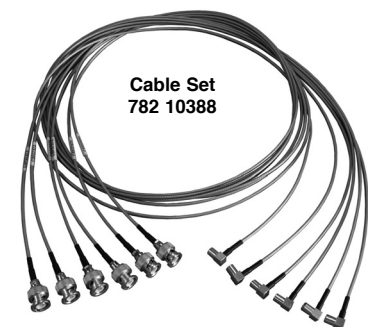
1. The DC supply voltage for the defective TMA is switched off.
  2. The corresponding red alarm LED lights up.
  3. The contacts 4 and 5 on the SubD 9-pin connector are closed. In addition, the respective pins 1 (TMA1), 2 (TMA2), 3 (TMA3), 6 (TMA4), 7 (TMA5), or 8 (TMA6) are grounded. This contact status can be used for monitoring purposes.
- If required, the additional DIP switch can be used to override the individual alarm and turn off the respective TMA supply voltage (1 = supply voltage and red LED alarm OFF, 0 = supply voltage and red LED alarm ON).

## Technical Data

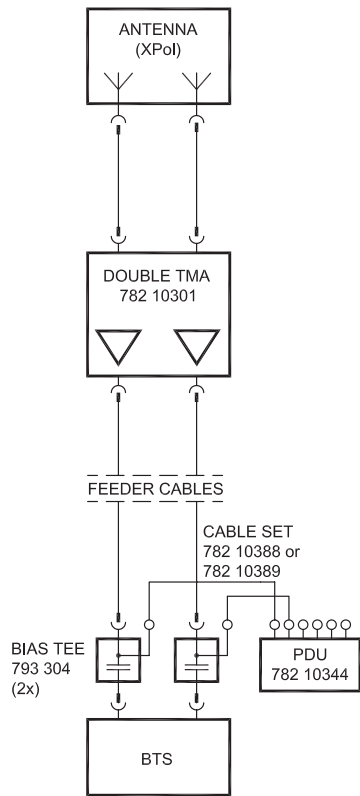
<b>Type No.</b>	<b>782 10344</b>
Power supply (DC input)	38 ... 72 V DC
DC supply voltage (DC outputs to MHA1 ... MHA6)	6x +12 ±0.3 V / nominal current: <b>110 mA ±20%</b>
Failure detection threshold	<b>&gt; 230 mA ±10%</b>
Alarms LED indicators	Red LED ON = TMA failure at indicated DC output Orange LED ON = power supply failure (back-up power supply in use), Green LED ON = power supply ON
SubD 9-pin connector	Contact pins 4 + 5 closed when failure detection threshold is exceeded = MHA or power supply failure Contact pins 1 ... 3, 6 ... 8 grounded when failure detection threshold is exceeded = MHA failure
Electrical protection against	Reverse voltage on DC outputs Reverse polarity voltage, over-current and over-voltage on DC input (power supply)
Temperature range	-40 ... +60 °C
Connectors	Power supply: DIN 3-pin male DC supply voltage: BNC female (6x) Alarms: SubD 9-pin
Scope of delivery	PDU, 3 m power supply cable with DIN 3-pin female connector, (brown (+), blue (-), green-yellow (grd))
MTBF	> 450 000 hours
Mounting	With 2 screws (M6)
Application	Indoor (IP20)
Weight	2.2 kg
Dimensions (w x h x d)	19 " drawer, 2 height units, plug-in depth 171 mm

## Accessories (order separately)

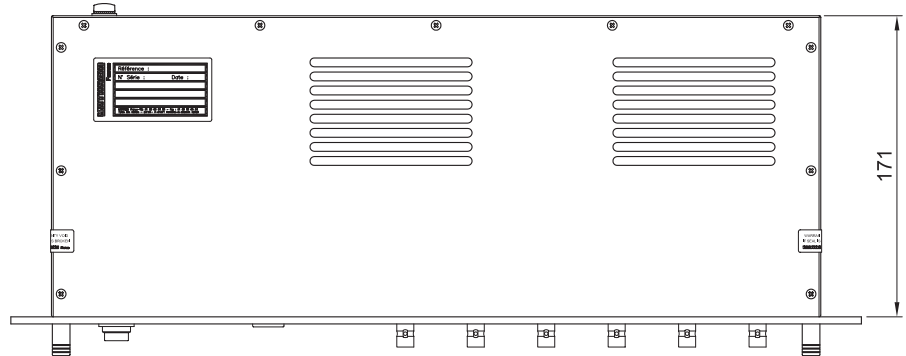
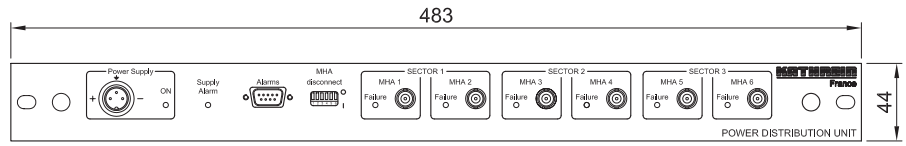
Type No.	Description	Technical data
<b>782 10388</b>	<b>Cable set 2 m (6 cables)</b>	Lenth: 2.0 m Cable type: RG 316 Connectors: BNC male / SMB female Voltage drop at 110 mA nominal current: < 0.2 V
<b>782 10389</b>	<b>Cable set 5 m (6 cables)</b>	Lenth: 5.0 m Cable type: RG 316 Connectors: BNC male / SMB female Voltage drop at 110 mA nominal current: < 0.2 V
<b>793 304</b>	<b>Bias Tee</b>	Please see separate data sheet



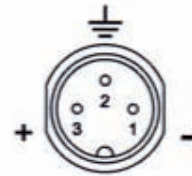
**Bias Tee 793 304**



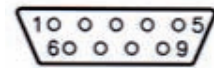
**Application example**  
Antenna system (1 sector) with  
Kathrein PDU 782 10344,  
Bias Tees 793 304 and  
UMTS Double TMA 782 10301



**Detail**  
Power supply  
connector



**Detail**  
SupD 9-pin  
connector



## SubD 9-pin connector and LED alarms

		SubD 9-pin connector pin #									Red alarm LED #						Orange alarm LED	Green alarm LED
		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6		
<b>MHA1</b>	failure	grd	-	-	contacts closed if at least 1 failure	-	-	-	grd	ON	-	-	-	-	-	-	-	ON
	no failure	open	-	-		-	-	-	grd	OFF	-	-	-	-	-	-	-	ON
<b>MHA2</b>	failure	-	grd	-		-	-	-	grd	-	ON	-	-	-	-	-	-	ON
	no failure	-	open	-		-	-	-	grd	-	OFF	-	-	-	-	-	-	ON
<b>MHA3</b>	failure	-	-	grd		-	-	-	grd	-	-	ON	-	-	-	-	-	ON
	no failure	-	-	open		-	-	-	grd	-	-	OFF	-	-	-	-	-	ON
<b>MHA4</b>	failure	-	-	-		-	grd	-	grd	-	-	-	ON	-	-	-	-	ON
	no failure	-	-	-		-	open	-	grd	-	-	-	OFF	-	-	-	-	ON
<b>MHA5</b>	failure	-	-	-		contacts open if no failure	-	grd	-	grd	-	-	-	-	ON	-	-	ON
	no failure	-	-	-			-	open	-	grd	-	-	-	-	OFF	-	-	ON
<b>MHA6</b>	failure	-	-	-			-	-	grd	grd	-	-	-	-	-	ON	-	ON
	no failure	-	-	-			-	-	open	grd	-	-	-	-	OFF	-	ON	
<b>Power supply</b>	failure	-	-	-	-		-	-	grd	-	-	-	-	-	-	-	ON	ON
	no failure	-	-	-	-		-	-	grd	-	-	-	-	-	-	-	OFF	ON

- contact status not defined  
grd contact grounded



# 50-Ohm Load

## 0 ... 4000 MHz

### 0.5 ... 100 W

- Standard 50-Ohm terminations for small and medium power
- Suitable for terminating open ports on RF equipment for indoor and/or outdoor applications

#### 0.5 Watt \*

Type No.	K 62 26 61 1
Connector	N male
Frequency range	0 – 2700 MHz
VSWR	
0 – 1000 MHz	< 1.08
1000 – 2000 MHz	< 1.15
2000 – 2700 MHz	< 1.20
Application	Indoor
Weight	40 g
Packing size	90 x 60 x 25 mm
Dimensions	33 / 21 mm diameter



K 62 26 61 1

#### 1.5 Watt \*

Type No.	784 10367	784 10470
Connector	7-16 male	7-16 female
Frequency range	0 – 4000 MHz	
VSWR		
0 – 2000 MHz	< 1.10	
2000 – 4000 MHz	< 1.30	
Application	Indoor or outdoor (IP65)	
Weight	120 g	
Packing size	Approx. 50 x 90 x 100 mm	
Dimensions	40 / 32 mm diameter	42 / 29 mm diameter



784 10367

#### 2 Watt \*

Type No.	K 62 26 11 1
Connector	N male
Frequency range	0 – 2700 MHz
VSWR	
0 – 1000 MHz	< 1.08
1000 – 2000 MHz	< 1.15
2000 – 2700 MHz	< 1.20
Application	Indoor
Weight	40 g
Packing size	90 x 60 x 25 mm
Dimensions	30 / 21 mm diameter



K 62 26 11 1

#### 10 Watt \*

Type No.	K 62 26 40 1	K 62 26 41 1
Connector	N female	N male
Frequency range	0 – 2700 MHz	
VSWR		
0 – 1000 MHz	< 1.08	
1000 – 2000 MHz	< 1.15	
2000 – 2700 MHz	< 1.20	
Application	Indoor	
Weight	Approx. 250 g	
Packing size	50 x 90 x 100 mm	
Dimensions (w x h x d)	40 x 82 x 77 mm (including connector)	40 x 82 x 85 mm (including connector)



K 62 26 40 1

# 50-Ohm Load

## 0 ... 4000 MHz

### 0.5 ... 100 W

#### 25 Watt \*

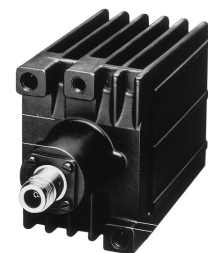
Type No.	K 62 26 20 1	K 62 26 21 1	K 62 26 20 7	K 62 26 21 7
Connector	N female	N male	7-16 female	7-16 male
Frequency range	0 – 2700 MHz			
VSWR	0 – 1000 MHz < 1.08 1000 – 2000 MHz < 1.15 2000 – 2700 MHz < 1.20			
Application	Indoor			
Weight	Approx. 0.5 kg			
Packing size	50 x 100 x 135 mm			
Dimensions (w x h x d)	35 x 94 x 113 mm (incl. connector)	35 x 94 x 121 mm (incl. connector)	35 x 94 x 125 mm (incl. connector)	35 x 94 x 124 mm (incl. connector)



K 62 26 20 1

#### 50 Watt \*

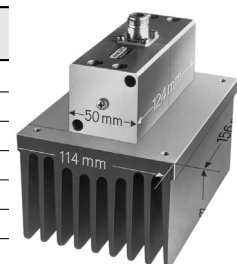
Type No.	K 62 26 30 1	K 62 26 31 1	K 62 26 30 7	K 62 26 31 7
Connector	N female	N male	7-16 female	7-16 male
Frequency range	0 – 2700 MHz			
VSWR	0 – 1000 MHz < 1.08 1000 – 2000 MHz < 1.15 2000 – 2700 MHz < 1.20			
Application	Indoor			
Weight	Approx. 0.8 kg			
Packing size	80 x 95 x 145 mm			
Dimensions (w x h x d)	67 x 90 x 130 mm (incl. connector)	67 x 90 x 138 mm (incl. connector)	67 x 90 x 134 mm (incl. connector)	67 x 90 x 133 mm (incl. connector)



K 62 26 30 1

#### 100 Watt \*

Type No.	K 62 26 50 1	K 62 26 51 1	K 62 26 50 7
Connector	N female	N male	7-16 female
Frequency range	0 – 1000 MHz		
VSWR	0 – 1000 MHz < 1.08		
Application	Indoor		
Weight	Approx. 2.4 kg		
Packing size	130 x 195 x 180 mm		
Dimensions (w x h x d)	114 x 153 x 156 mm (including connector)	114 x 161 x 156 mm (including connector)	114 x 170 x 156 mm (including connector)



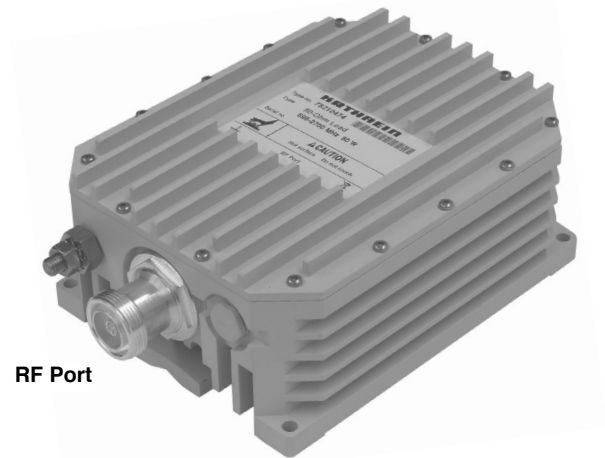
K 62 26 50 1

\* Rated power at 40 °C ambient temperature. The max. power rating increases or decreases with falling or rising ambient temperature.

**Note:** The 50-Ohm load, type 782 010474, should be used if intermodulation requirements are of high priority.

# 50-Ohm Load 698 – 2700 MHz 80 W

- Designed as 50-Ohm termination wherever improved intermodulation performance compared to standard loads is required
- **Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Built-in DC stop



RF Port

## Technical Data

Type No.	782 10474
Frequency range	698 – 2700 MHz
VSWR	< 1.12
Impedance	50 Ω
Input power	< 80 W (see table)
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-40 ... +55 °C
Connector	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency	Built-in DC stop AISG: Attenuation up to 3 dB when used in a network
Mounting	Wall mounting: With 4 screws (max. 6.5 mm diameter) Mast mounting: With additional clamp set (see data sheet)
Weight	3.1 kg
Packing size	377 x 232 x 189 mm
Dimensions (w x h x d)	143.6 x 216 x 79.2 mm (including connector)

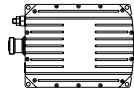
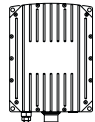
### Note:

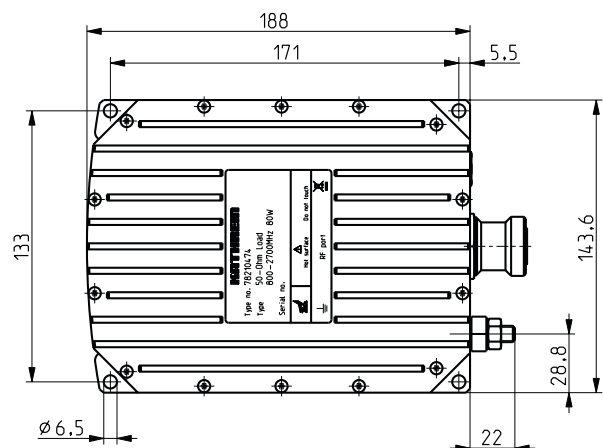
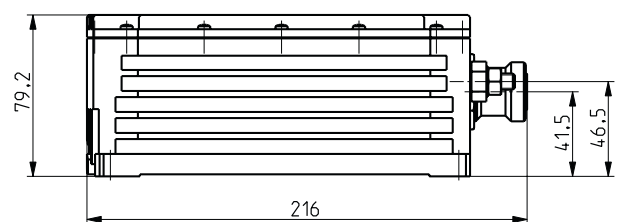
The RF port connector should always point downwards if mounted outdoors.

The input power rating of 80 W is specified at an ambient temperature of +40 °C with the combiner mounted vertically, without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

The max. power rating increases or decreases with falling or rising ambient temperature and depending on horizontal or vertical mounting in accordance with the following table:

### Max. input power

	Mounted horizontally	Mounted vertically
Max. ambient temperature		
+55 °C	50 W	60 W
+40 °C	70 W	<b>80 W</b>
+25 °C	90 W	100 W



# Attenuator

## 2 – 15 W

### 0 – 4000 MHz

#### Air-cooled attenuator for low power rating

- Signal attenuation for test, measuring or tuning purposes
- Good matching over large frequency range
- Closed metal housing, very stable and RF proof
- Free choice of mounting position due to convection-cooling



#### Technical Data

Type No.	784 10235	784 10236	784 10237	784 10238
Attenuation	3 ±0.3 dB	6 ±0.3 dB	10 ±0.3 dB	20 ±0.5 dB
Frequency range	0 – 4000 MHz			
VSWR	< 1.12			
Impedance	50 Ω			
Max. power	2 W			
Connectors	N			
IP rating	IP65			
Application	Outdoor			
Weight	60 g			
Dimensions (L x diameter)	49 x 21 mm			

#### Air-cooled attenuator for medium power rating

- Signal attenuation for test, measuring or tuning purposes
- Good matching over large frequency range
- Closed metal housing, very stable and RF proof
- Free choice of mounting position due to convection-cooling



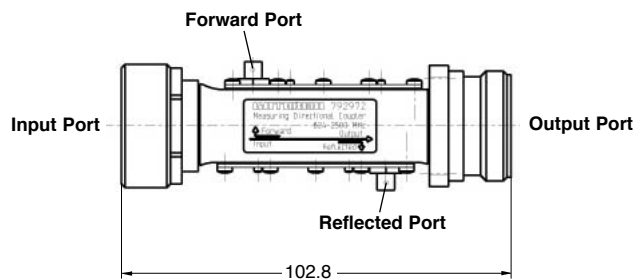
#### Technical Data

Type No.	791 918	791 919	791 920	791 921
Attenuation	3 ±0.3 dB	6 ±0.3 dB	10 ±0.3 dB	20 ±0.5 dB
Max. power	15 W	12 W	10 W	10 W
Frequency range	0 – 4000 MHz			
VSWR	< 1.15			
Impedance	50 Ω			
Connectors	N			
IP rating	IP65			
Application	Outdoor			
Weight	70 g			
Dimensions (L x diameter)	50 x 26 mm			

# Measuring Directional Coupler 824 – 2500 MHz

The Measuring Directional Coupler provides measurement ports for monitoring the forward and reflected power of a RF signal.

- Easy implementation into existing RF systems due to male/female connectors
- Input and output ports are reciprocal in nature
- Front panel mounting possible via flange
- Suitable for indoor applications



## Technical Data

Type No.	792 972
Frequency range	824 – 2500 MHz
Insertion loss Input port → Output port	< 0.05 dB (824 – 2500 MHz)
Coupling attenuation Input port → Forward port	32.0 ±0.75 dB (824 – 960 MHz) 28.5 ±1.50 dB (1710 – 2500 MHz)
Output port → Reflected port	32.0 ±0.75 dB (824 – 960 MHz) 28.5 ±1.50 dB (1710 – 2500 MHz)
Directivity	> 28 dB (824 – 2200 MHz) > 25 dB (2200 – 2500 MHz)
VSWR Input port, Output port	< 1.04 (824 – 960 MHz) < 1.08 (960 – 2500 MHz)
Forward port, Reflected port	< 1.2 (824 – 2500 MHz)
Impedance	50 Ω
Input power	< 800 W (824 – 960 MHz) < 200 W (960 – 2500 MHz)
Intermodulation products	< -160 dBc (3 <sup>rd</sup> order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors Input port	7-16 male
Output port	7-16 female
Forward port, Reflected port	MCX female
Application	Indoor
Mounting	Front panel mounting possible with 4 screws (max. 2.5 mm diameter)
Weight	0.26 kg
Dimensions (w x h x d)	32 x 32 x 102.3 mm

**DTMAs**

## DTMAs:

Description	Type No.	Frequency range	Gain	Page
<b>Single Mode AISG or CWA</b>				
DTMA-800-12-AISG	782 10430	UL: 791 – 821 / DL: 832 – 862 MHz	12 dB	303
DTMA-1800-12-CWA	782 10580	UL: 1805 – 1880 / DL: 1710 – 1785 MHz	12 dB	305
DTMA-1800-12-AISG	782 10581	UL: 1805 – 1880 / DL: 1710 – 1785 MHz	12 dB	305
DTMA-1900-850 BYP-12-AISG	782 10406	UL: 1850 – 1910 / DL: 1930 – 1990 MHz Bypass: 806 – 896 MHz	12 dB	307
DTMA-UMTS-24-AISG	782 10448	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	24 dB	311
DTMA-2600-12-AISG	782 10860	UL: 2500 – 2570 / DL: 2620 – 2690 MHz	12 dB	316
<b>Dual Mode AISG and CWA</b>				
DTMA-900-12-32-AISG-CWA	782 10440	UL: 880 – 915 / DL: 925 – 960 MHz	12/32 dB	304
DTMA-900-12-32-AISG-CWA	782 10442	UL: 880 – 915 / DL: 925 – 960 MHz	12/32 dB	304
DTMA-1800-12-AISG-CWA	782 10555	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	12 dB	306
DTMA-1800-12-AISG-CWA	782 10556	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	12 dB	306
DTMA-1800-12-AISG-CWA	782 10557	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	12 dB	306
DTMA-1800-12-AISG-CWA	782 10558	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	12 dB	306
DTMA-1900-12-AISG-CWA	782 10811	UL: 1850 – 1910 / DL: 1930 – 1990 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA	782 10153	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	12 dB	309
DTMA-UMTS-12-AISG-CWA	782 10154	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	12 dB	309
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10561	UL: 1970 – 1985 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10562	UL: 1970 – 1985 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10563	UL: 1965 – 1980 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10564	UL: 1965 – 1980 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10565	UL: 1950 – 1965 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10566	UL: 1920 – 1935 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10567	UL: 1920 – 1935 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10568	UL: 1950 – 1965 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10569	UL: 1970 – 1985 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10570	UL: 1920 – 1935 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10571	UL: 1965 – 1980 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10579	UL: 1965 – 1980 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA	782 10610	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	12 dB	312
DTMA-UMTS-12-AISG-CWA	782 10612	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	12 dB	312
DTMA-UMTS-24-AISG-CWA	782 10613	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	24 dB	313
DTMA-UMTS-BYP900/1800-12-AISG-CWA	782 10652	UL: 1920 – 1980 / DL: 2110 – 2170 MHz Bypass: 870 – 960 MHz 1710 – 1880 MHz	12 dB	314, 315
DTMA-UMTS-BYP900/1800-12-AISG-CWA	782 10653	UL: 1920 – 1980 / DL: 2110 – 2170 MHz Bypass: 870 – 970 MHz 1710 – 1880 MHz	12 dB	314, 315

### New Products

UL = Up Link / DL = Down Link

# DTMA-800-12-AISG

## Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

**KATHREIN**

Antennen · Electronic

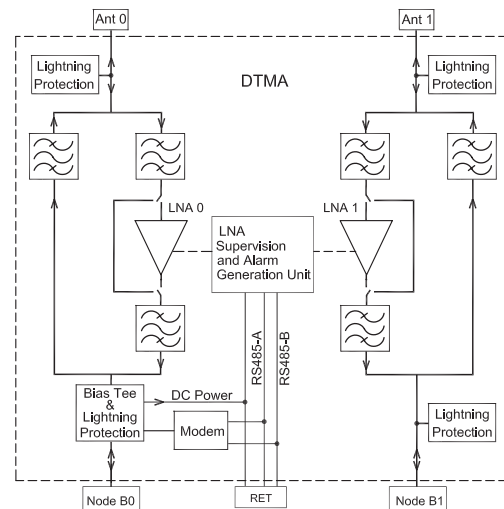
- Double unit for easy use with XPol antennas
- Supports AISG 2.0
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

**RET** = Remote Electrical Tilt  
**AISG** = Antenna Interface Standards Group



### Technical Data

Type No.	<b>782 10430</b> DTMA-800-12-AISG (12 dB gain)
<b>Tx Characteristics</b>	
Frequency range	791 – 821 MHz
Insertion loss	Typically 0.25 dB
Ripple	< 0.3 dB
Input power (per input)	< 100 W (+50 dBm) CW
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB
<b>Rx Characteristics</b>	
Frequency range	832 – 862 MHz
Loss in by-pass mode	Typically 2 dB
Return loss	> 16 dB (DC ON)
Gain	12 dB nominal
Noise figure	Typically 1.2 dB
3 <sup>rd</sup> order intercept point (OIP3)	Typically 30 dBm
<b>Environmental Characteristics</b>	
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3
<b>DC and Alarm Characteristics</b>	
DC supply	10 – 30 V DC
Operating current per DTMA (without RET)	Nom. 100 mA at 10 V DC / Nom. 50 mA at 30 V DC
Alarm management	AISG
<b>Mechanical Characteristics</b>	
Material	Aluminium housing
Connectors	RF AISG 7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 10 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	6.5 kg
Dimensions (w x h x d)	240 x 170 x 98 mm (without connectors, without mounting brackets)



### Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>





# DTMA-900-12-32-AISG-CWA

## Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

**KATHREIN**

Antennen · Electronic



- Double units for easy use with XPol antennas
- Gain setting switchable from 12 dB (default) to 32 dB
- Both versions support CWA, AISG 1.1 and AISG 2.0 (default)  
**782 10440: CWA alarm 170 – 200 mA / 800 – 900 mA**  
**782 10442: CWA alarm 230 – 295 mA / 800 – 900 mA**
- AISG and gain setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

**RET** = Remote Electrical Tilt

**AISG** = Antenna Interface Standards Group

**CWA** = Current Window Alarm



### Technical Data

Type No.	CWA alarm 170 – 200 mA / 800 – 900 mA	<b>782 10440</b> DTMA-900-12-32-AISG-CWA (12/32 dB gain)
	CWA alarm 230 – 295 mA / 800 – 900 mA	<b>782 10442</b> DTMA-900-12-32-AISG-CWA (12/32 dB gain)

#### Tx Characteristics

Frequency range	925 – 960 MHz
Insertion loss *	< 0.5 dB
Input power (per input)	< 180 W (+52.5 dBm) CW / < 1.6 kW (+62 dBm) peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB

#### Rx Characteristics

Frequency range	880 – 915 MHz
Loss in by-pass mode	< 4 dB (DC OFF)
Return loss	> 16 dB (DC ON) / > 12 dB (DC OFF)
Gain	12/32 ±0.7 dB (+22 ... +28 °C) 12/32 ±1.0 dB (-40 ... +55 °C)
Noise figure **	< 1.3 dB (+22 ... +28 °C)
Input 1-dB compression point	> -7 dBm
Input 3 <sup>rd</sup> order intercept point (IIP3)	> 5 dBm

#### Environmental Characteristics

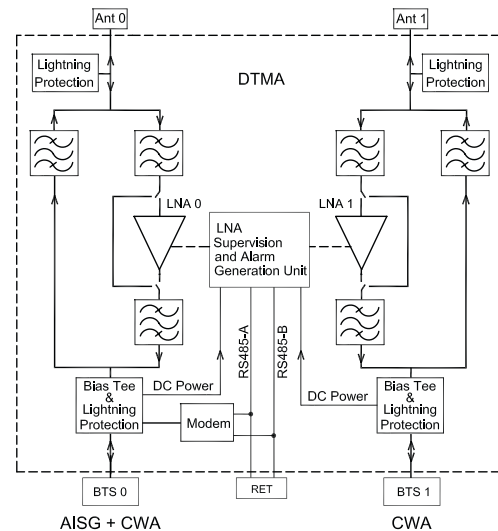
Operating temperature range	-40 ... +55 °C
IP rating	IP 67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3

#### DC and Alarm Characteristics

	CWA Mode	AISG Mode
DC supply	8.5 – 15 V	10 – 30 V
Operating current per TMA (without RET)	80 – 130 mA (12 dB gain) 360 – 400 mA (32 dB gain)	< 110 mA (12 dB gain) < 350 mA (32 dB gain)
Alarm management	12 dB gain: <b>782 10440: 170 – 200 mA</b> <b>782 10442: 230 – 295 mA</b> 32 dB gain: 800 – 900 mA	AISG ***

#### Mechanical Characteristics

Material	Aluminium housing	
Connectors	RF	7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Weight	8.7 kg	
Packing size	342 x 579 x 212 mm	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Dimensions (w x h x d)	250 x 353 x 94 mm (without connectors, without mounting brackets)	



### Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>



\* Insertion loss  $\bar{IL} = \frac{IL_{925\text{ MHz}} + 2 \times IL_{942.5\text{ MHz}} + IL_{960\text{ MHz}}}{4}$

\*\* Noise figure  $\bar{NF} = \frac{NF_{880\text{ MHz}} + 2 \times NF_{897.5\text{ MHz}} + NF_{915\text{ MHz}}}{4}$

(Additional variation at -40 ... +55 °C:  $\Delta \bar{NF} < 0.3\text{ dB}$ )

#### \*\*\* AISG and Gain Setting

The protocol of the software interface can be switched between AISG 2.0 / 3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start-up. Please contact Kathrein for further information. Gain setting according to AISG commands.

# DTMA-1800-12-CWA DTMA-1800-12-AISG

**Fullband Double Dual Duplex  
Tower Mounted Amplifier  
(Masthead Amplifier)**

**KATHREIN**  
Antennen · Electronic

- Double units for easy use with XPol antennas
- AISG setting switchable
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

**RET** = Remote Electrical Tilt

**AISG** = Antenna Interface Standards Group

**Accessories** (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>



## Technical Data

Type No.	<b>782 10580</b> DTMA-1800-12-CWA (12 dB gain)	<b>782 10581</b> DTMA-1800-12-AISG (12 dB gain)
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### Tx Characteristics

Frequency range	1805 – 1880 MHz	
Insertion loss	Typically 0.2 dB	
Input power (per input)	< 200 W (+53 dBm) CW / < 1.6 kW (+62 dBm) peak	
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)	
Return loss	> 18 dB	

### Rx Characteristics

Frequency range	1710 – 1785 MHz	
Loss in by-pass mode	Typically 1.7 dB (DC OFF)	
Return loss	> 16 dB (DC ON)	> 16 dB (DC ON) / > 15 dB (DC OFF)
Gain	12 dB nominal	
Noise figure	Typically 1.0 dB	
Output 1-dB compression point	> 10 dBm	
3 <sup>rd</sup> order intercept point (OIP3)	Typically 30 dBm	

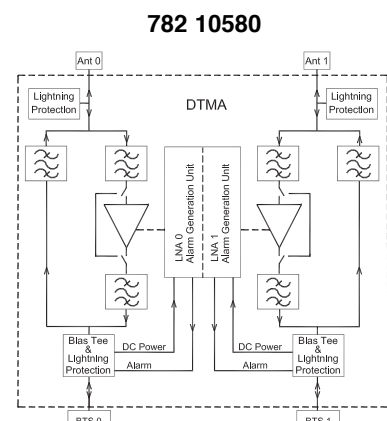
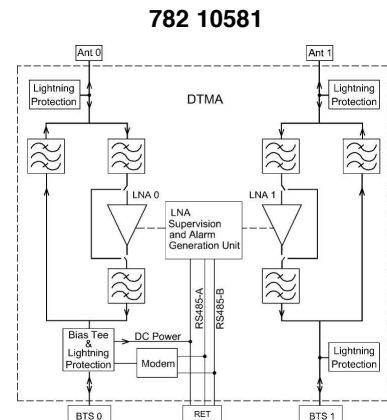
### Environmental Characteristics

Operating temperature range	-40 ... +65 °C	
IP rating	IP 67	
MTBF	> 1 000 000 hours (per TMA)	
EMC	According to ETS 300 342-3	

DC and Alarm Characteristics	<b>CWA Mode</b>	<b>AISG Mode</b>
DC supply	7.5 – 15 V	10 – 30 V
Operating current per TMA (without RET)	Typically 80 mA	Nom. 195 mA at 10 V Nom. 85 mA at 30 V
Alarm management	230 – 290 mA	AISG

### Mechanical Characteristics

Material	Aluminium housing	
Connectors	RF AISG	7-16 female (long neck) 7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: Not connected)
Weight	4 kg	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Packing size	405 x 235 x 175 mm	
Dimensions (w x h x d)	220 x 170 x 71.5 mm (without connectors, without mounting brackets)	



# DTMA-1800-12-AISG-CWA

## Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

**KATHREIN**

Antennen · Electronic

- Double units for easy use with XPol antennas
- All versions support CWA, AISG 1.1 and AISG 2.0  
**782 10555: Default setting AISG 1.1, CWA alarm 170 – 200 mA**  
**782 10556: Default setting AISG 1.1, CWA alarm 230 – 295 mA**  
**782 10557: Default setting AISG 2.0, CWA alarm 170 – 200 mA**  
**782 10558: Default setting AISG 2.0, CWA alarm 230 – 295 mA**
- AISG setting switchable
- CWA and AISG configurations
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

**RET** = Remote Electrical Tilt  
**AISG** = Antenna Interface Standards Group  
**CWA** = Current Window Alarm



### Technical Data

Default setting AISG 1.1 CWA alarm 170 – 200 mA	<b>782 10555</b> DTMA-1800-12-AISG-CWA (12 dB gain)
Default setting AISG 1.1 CWA alarm 230 – 295 mA	<b>782 10556</b> DTMA-1800-12-AISG-CWA (12 dB gain)
Default setting AISG 2.0 CWA alarm 170 – 200 mA	<b>782 10557</b> DTMA-1800-12-AISG-CWA (12 dB gain)
Default setting AISG 2.0 CWA alarm 230 – 295 mA	<b>782 10558</b> DTMA-1800-12-AISG-CWA (12 dB gain)

### Tx Characteristics

Frequency range	1805 – 1880 MHz
Insertion loss*	< 0.4 dB
Input power (per input)	< 160 W (+52 dBm) CW / < 1.6 kW (+62 dBm) peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB

### Rx Characteristics

Frequency range	1710 – 1785 MHz
Loss in by-pass mode	Typically 2.8 dB (DC OFF)
Return loss	> 18 dB (DC ON) / > 15 dB (DC OFF)
Gain	12 ±0.7 dB (+22 ... +28 °C) / 12 ±1.3 dB (-40 ... +65 °C)
Noise figure**	< 1.4 dB (+22 ... +28 °C)
Output 1-dB compression point	> 10 dBm
3 <sup>rd</sup> order intercept point (OIP3)	> 25 dBm

### Environmental Characteristics

Operating temperature range	-40 ... +65 °C
IP rating	IP 67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3

### DC and Alarm Characteristics

	CWA Mode	AISG Mode
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA (without RET)	80 – 130 mA	Nom. 95 mA at 9 V Nom. 35 mA at 30 V
Alarm management	<b>782 10555:</b> 170 – 200 mA <b>782 10556:</b> 230 – 295 mA <b>782 10557:</b> 170 – 200 mA <b>782 10558:</b> 230 – 295 mA	AISG ***

### Mechanical Characteristics

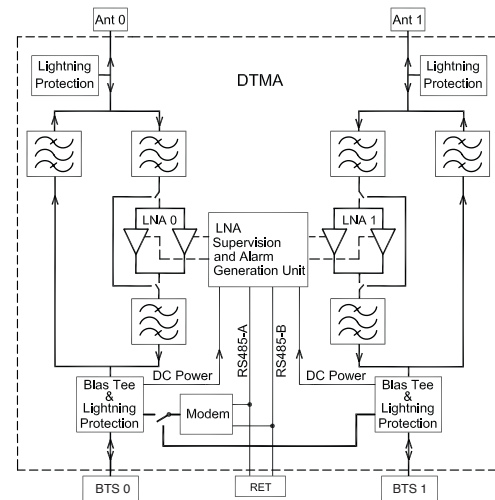
Material	Aluminium housing
Connectors	RF: 7-16 female (long neck) AISG: 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Weight	5 kg
Packing size	262 x 502 x 214 mm
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Dimensions (w x h x d)	166 x 278 x 77.5 mm (without connectors, without mounting brackets)

$$* \text{ Insertion loss } \overline{IL} = \frac{IL_{1805 \text{ MHz}} + 2 \times IL_{1842.5 \text{ MHz}} + IL_{1880 \text{ MHz}}}{4}$$

$$** \text{ Noise figure } \overline{NF} = \frac{NF_{1710 \text{ MHz}} + 2 \times NF_{1747.5 \text{ MHz}} + NF_{1785 \text{ MHz}}}{4}$$

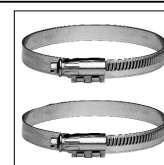
(Additional variation at -40 ... +65 °C:  $\Delta \overline{NF} < 0.5 \text{ dB}$ )

\*\*\* The protocol of the software interface can be switched between AISG 2.0/3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start up. Please contact Kathrein for further information.



### Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>



# DTMA-1900-850 BYP-12-AISG

## Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

**KATHREIN**

Antennen · Electronic

- Double unit for easy use with XPol antennas
- RF-Bypass feature for 850 MHz
- DC-stop integrated to 850 MHz ports
- Kathrein redundancy amplifier design for improved system reliability
- Bypass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- Suitable for antenna RET control according to AISG standard
- **DTMA DC supply and AISG feed via BTS 0 port for both TMAs**



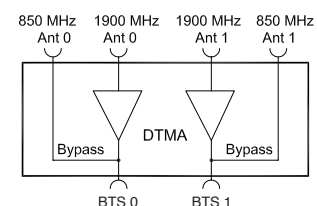
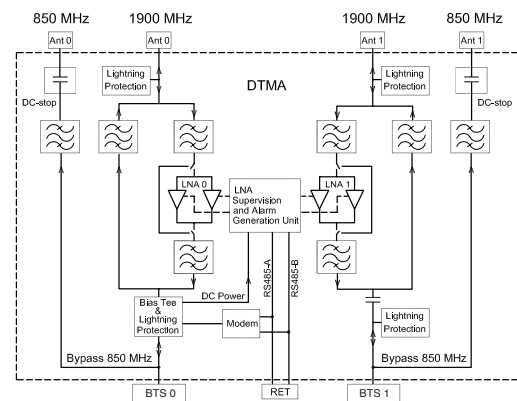
RET = Remote Electrical Tilt

AISG = Antenna Interface Standards Group

BYP = RF-BYPass

### Technical Data

Type No.	<b>782 10406</b> DTMA-1900-850 BYP-12-AISG (12 dB gain)
<b>850 MHz Bypass</b>	
Frequency range	806 – 896 MHz
Insertion loss	< 0.15 dB
Isolation to 1900 MHz	> 80 dB
Input power	500 W CW / per input
Return loss	> 18 dB
<b>1900 MHz DTMA</b>	
<b>Tx Characteristics</b>	
Frequency range	1930 – 1990 MHz
Bandwidth	60 MHz
Insertion loss	< 0.5 dB at 80% of BW, a further 0.25 dB at 100% BW.
Input power	< 160 W (+52 dBm) CW / per input < 1.6 kW (+62 dBm) Peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB
<b>Rx Characteristics</b>	
Frequency range	1850 – 1910 MHz
Bandwidth	60 MHz
Loss in by-pass mode	2.8 dB typically
Return loss	> 18 dB (DC ON) > 15 dB (DC OFF)
Gain	<b>+22 ... +28 °C</b> 12 ±0.7 dB <b>-40 ... +65 °C</b> 12 ±1.3 dB
Noise figure	<b>+22 ... +28 °C</b> < 1.7 dB at 80% of BW, a further 0.3 dB at 100% BW. <b>-40 ... +65 °C</b> < 2.2 dB at 80% of BW, a further 0.3 dB at 100% BW.
Noise figure	-40 ... +65 °C
Output 1-dB compression point	> 15 dBm
3 <sup>rd</sup> order intercept point (OIP3)	> 25 dBm
<b>Environmental Characteristics</b>	
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	ETS 300 342-3
Lightning protection	5 kA, 8/20 µs RF connections and AISG port
<b>DC and Alarm Characteristics</b>	
<b>Through BTS 0 Port only</b>	
DC supply without RET	+12 V nominal (9 – 15 V, minus grounded) Typically 150 mA per TMA
Alarm management	According to AISG standard 1.1
Modem Characteristics	According to AISG standard 1.1 (Data rate: 9.6 kB)
<b>Mechanical Characteristics</b>	
Material	Aluminium housing
Connectors	RF 7-16 female AISG Connector 8-pin female, IEC 60130-9 (Compliance AISG 1.1) (Pin 1: +12 V DC nominal, pin 3: RS485B, pin 5: RS485A, pin 7: DC return; other pins: Not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	Approx. 8.7 kg
Dimensions (w x h x d)	271 x 278 x 77.5 mm (without connectors, without mounting brackets)



# DTMA-1900-12-AISG-CWA

## Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

**KATHREIN**

Antennen · Electronic



- Double unit for easy use with XPol antennas
- Supports CWA, AISG 1.1 and AISG 2.0 (default)
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

**RET** = Remote Electrical Tilt

**AISG** = Antenna Interface Standards Group

**CWA** = Current Window Alarm



### Technical Data

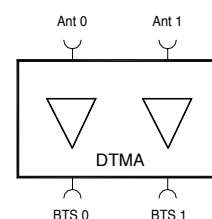
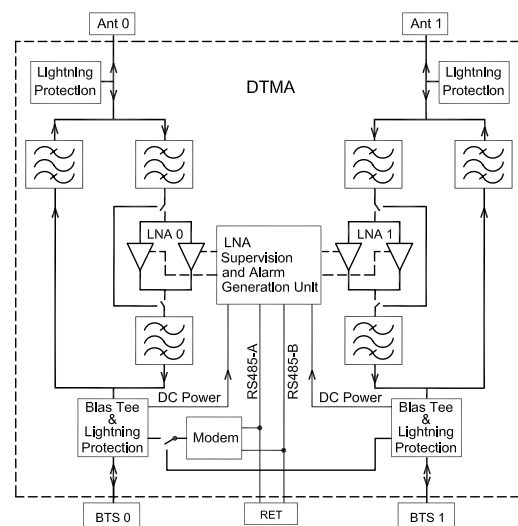
<b>Type No.</b>	<b>782 10811</b> DTMA-1900-12-AISG-CWA (12 dB gain)	
<b>Tx Characteristics</b>		
Frequency range	1930 – 1990 MHz	
Insertion loss*	< 0.5 dB	
Input power (per input)	< 160 W (+52 dBm) CW / < 1.6 kW (+62 dBm) peak	
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)	
Return loss	> 18 dB	
<b>Rx Characteristics</b>		
Frequency range	1850 – 1910 MHz	
Loss in by-pass mode	Typically 2.8 dB (DC OFF)	
Return loss	> 18 dB (DC ON) / > 15 dB (DC OFF)	
Gain	12 ±0.7 dB (+22 ... +28 °C) / 12 ±1.3 dB (-40 ... +65 °C)	
Noise figure**	< 1.4 dB (+22 ... +28 °C)	
Output 1-dB compression point	> 10 dBm	
3 <sup>rd</sup> order intercept point (OIP3)	> 25 dBm	
<b>Environmental Characteristics</b>		
Operating temperature range	-40 ... +65 °C	
IP rating	IP67	
MTBF	> 1 000 000 hours (per TMA)	
EMC	According to ETS 300 342-3	
<b>DC and Alarm Characteristics</b>		
	<b>CWA-Mode</b>	<b>AISG-Mode</b>
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA (without RET)	80 – 130 mA	Nom. 95 mA at 9 V Nom. 35 mA at 30 V
Alarm management	170 – 200 mA	AISG***
<b>Mechanical Characteristics</b>		
Material	Aluminium housing	
Connectors	RF AISG 7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)	
Weight	5 kg	
Packing size	262 x 502 x 214 mm	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Dimensions (w x h x d)	166 x 278 x 77.5 mm (without connectors, without mounting brackets)	

$$* \text{ Insertion loss } \bar{IL} = \frac{IL_{1930 \text{ MHz}} + 2 \times IL_{1960 \text{ MHz}} + IL_{1990 \text{ MHz}}}{4}$$

$$** \text{ Noise figure } \bar{NF} = \frac{NF_{1850 \text{ MHz}} + 2 \times NF_{1880 \text{ MHz}} + NF_{1910 \text{ MHz}}}{4}$$

(Additional variation at -40 ... +65 °C:  $\Delta \bar{NF} < 0.5 \text{ dB}$ )

\*\*\* The protocol of the software interface can be switched between AISG 2.0/3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start up. Please contact Kathrein for further information.





# DTMA-UMTS-12-AISG-CWA

## Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

**KATHREIN**

Antennen · Electronic



- Double units for easy use with XPol antennas
- Both versions support CWA, AISG 1.1 and AISG 2.0  
**782 10153 default setting: AISG 1.1**  
**782 10154 default setting: AISG 2.0**
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

**RET** = Remote Electrical Tilt  
**AISG** = Antenna Interface Standards Group  
**CWA** = Current Window Alarm



### Technical Data

Type No.	Default setting AISG 1.1	<b>782 10153</b> DTMA-UMTS-12-AISG-CWA (12 dB gain)
	Default setting AISG 2.0	<b>782 10154</b> DTMA-UMTS-12-AISG-CWA (12 dB gain)

#### Tx Characteristics

Frequency range	2110 – 2170 MHz
Insertion loss	Typ. 0.3 dB
Ripple	< 0.1 dB
Input power (per input)	< 100 W (+50 dBm) CW / < 1.6 kW (+62 dBm) peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB

#### Rx Characteristics

Frequency range	1920 – 1980 MHz
Loss in by-pass mode	< 2.5 dB (DC OFF)
Return loss	> 18 dB (DC ON) / > 12 dB (DC OFF)
Gain	12 ±0.5 dB (+22 ... +28 °C) / 12 ±1.0 dB (-40 ... +65 °C)
Gain ripple	< ±0.3 dB
Noise figure	< 1.6 dB (25 °C) / < 2.0 dB (60 °C)
Output 1-dB compression point	> 15 dBm
3 <sup>rd</sup> order intercept point (OIP3)	> 25 dBm

#### Environmental Characteristics

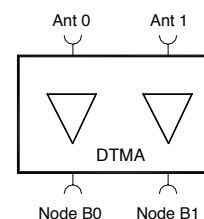
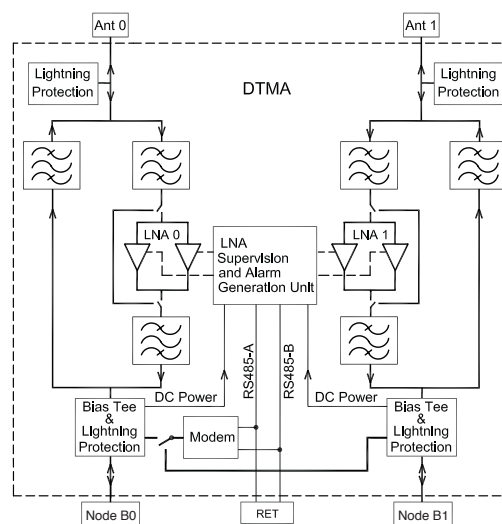
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3

#### DC and Alarm Characteristics

	CWA Mode	AISG Mode
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA (without RET)	80 – 145 mA	Nom. 115 mA at 9 V Nom. 40 mA at 30 V
Alarm management	170 – 200 mA	AISG*

#### Mechanical Characteristics

Material	Aluminium housing
Connectors	RF AISG 7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	5 kg
Packing size	262 x 502 x 214 mm
Dimensions (w x h x d)	166 x 262 x 77.5 mm (without connectors, without mounting brackets)



\* The protocol of the software interface can be switched between AISG 2.0/3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start up. Please contact Kathrein for further information.

# DTMA-UMTS-12-AISG-CWA-FB-BS

Tx-Fullband / Rx-Band Selective Double Dual Duplex

Tower Mounted Amplifier (Masthead Amplifier)

**KATHREIN**

Antennen · Electronic

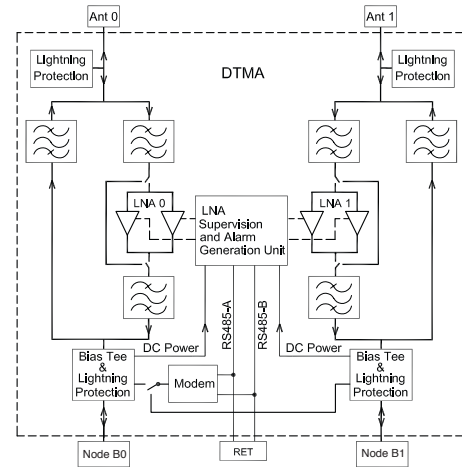
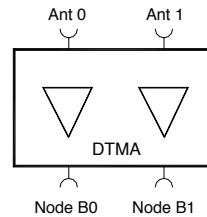
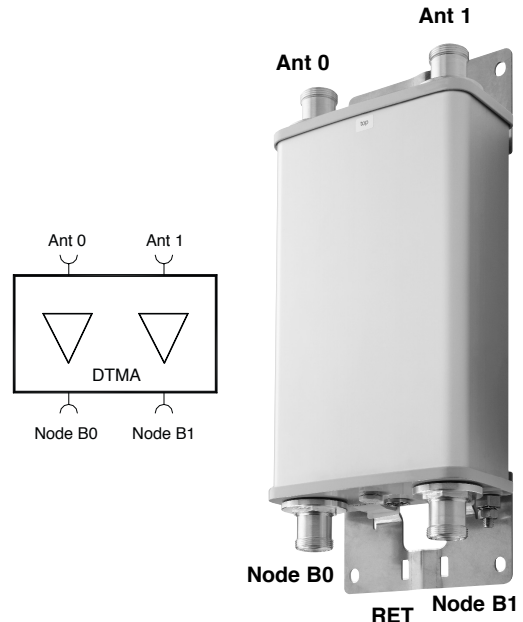
- Double unit for easy use with XPol antennas
- Supports AISG 1.1 and 2.0 (default version see table)\*
- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- DC supply  
CWA: Via Node B0 and B1  
AISG: Via Node B0, Node B1 or both
- Signalling  
CWA: Via Node B0 and B1 for each LNA  
AISG: Via Node B0, Node B1 for both LNAs
- Suitable for antenna RET control according to AISG/3GPP standard
- **DTMA DC supply and AISG feed via Node B0 or Node B1 port for both TMAs**



**RET** = Remote Electrical Tilt  
**AISG** = Antenna Interface Standards Group  
**FB** = Full Band in Tx-Band  
**BS** = Band Selective in Rx-Band  
**CWA** = Current Window Alarm

## Technical Data

Type	DTMA-UMTS-12-AISG-CWA-FB-BS (12 dB gain)
<b>Tx Characteristics</b>	
Frequency range	2110 – 2170 MHz
Bandwidth	60 MHz
Insertion loss	< 0.4 dB
Ripple	< 0.1 dB
Max. Group Delay	50 ns
Max. Delta Group Delay in 5 MHz Bandwidth	5 ns
Input power	< 100 W (+50 dBm) CW < 1.6 kW (+62 dBm) Peak
Intermodulation products in Rx band	< -122 dBm (2 x 43 dBm carriers)
Return loss	> 18 dB
<b>Rx Characteristics</b>	
Frequency range	factory tunable within 1920 – 1985 MHz
Bandwidth	15 MHz
Loss in by-pass mode	< 3.0 dB (DC OFF)
Gain ripple	< 0.4 dB
Return loss	> 18 dB (DC ON) > 16 dB (DC OFF)
Gain	+22 ... +28 °C: 12 ±0.5 dB -40 ... +60 °C: 12 ±1.0 dB
Max. Group Delay	100 ns
Max. Delta Group Delay in 5 MHz Bandwidth	10 ns
Noise figure	< 1.5 dB / 25 °C
Noise figure	< 1.8 dB / 60 °C
Output 1-dB compression point	> 7 dBm
3 <sup>rd</sup> order intercept point (OIP3)	> 17 dBm
<b>Environmental Characteristics</b>	
Operating temperature range	-40 ... +60 °C
IP rating	IP67
MTBF	> 1 000 000 hours
EMC	ETS 300 342-3
<b>DC and Alarm Characteristics</b>	
DC supply	9 – 30 V, minus grounded
Alarm management	CWA or according to AISG standard*
Modem Characteristics	According to AISG standard*
<b>Mechanical Characteristics</b>	
Material	Aluminium housing
Connectors	RF: 7-16 female long neck AISG Connector: 8-pin female, IEC 60130-9 (Compliance AISG) (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return; other pins: NC)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	5 kg
Packing size	262 x 502 x 214 mm
Dimensions (w x h x d)	166 x 262 x 77.5 mm (without connectors, without mounting brackets)



Type no.	Rx-Frequency (MHz)	Current in CWA mode (mA) nominal	Current in CWA mode (mA) alarm
<b>AISG 1.1 (default version)</b>			
782 10561	1970 – 1985	50 – 190	230 – 295
782 10562	1970 – 1985	80 – 120	170 – 200
782 10563	1965 – 1980	50 – 190	230 – 295
782 10564	1965 – 1980	80 – 120	170 – 200
782 10565	1950 – 1965	80 – 120	170 – 200
782 10566	1920 – 1935	50 – 190	230 – 295
782 10567	1920 – 1935	80 – 120	170 – 200
782 10568	1950 – 1965	50 – 190	230 – 295

Type no.	Rx-Frequency (MHz)	Current in CWA mode (mA) nominal	Current in CWA mode (mA) alarm
<b>AISG 2.0 (default version)</b>			
782 10569	1970 – 1985	50 – 190	230 – 295
782 10570	1920 – 1935	50 – 190	230 – 295
782 10571	1965 – 1980	50 – 190	230 – 295
782 10579	1965 – 1980	80 – 120	170 – 200

\* The protocol of the software interface can be switched between AISG 2.0/3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start up. Please contact Kathrein for further information.

# DTMA-UMTS-24-AISG

## Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

**KATHREIN**

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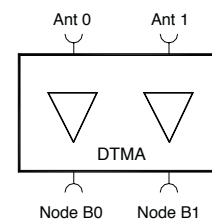
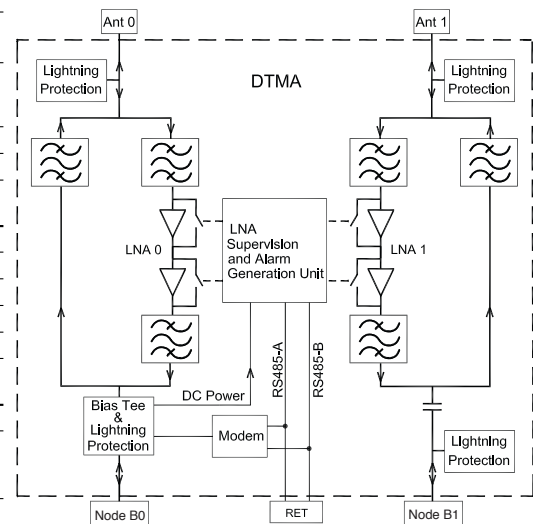
- Double unit for easy use with XPol antennas
- Supports AISG 1.1 or 2.0 (Default version AISG 1.1)\*
- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- Suitable for antenna RET control according to AISG/3GPP standard
- **DTMA DC supply and AISG feed via Node B0 port for both TMAs**

RET = Remote Electrical Tilt

AISG = Antenna Interface Standards Group

### Technical Data

Type No.	<b>782 10448</b> DTMA-UMTS-24-AISG (24 dB gain)
<b>Tx Characteristics</b>	
Frequency range	2110 – 2170 MHz
Bandwidth	60 MHz
Insertion loss	Typically 0.3 dB
Ripple	< ±0.2 dB
Input power	< 100 W (+50 dBm) CW < 1.6 kW (+62 dBm) Peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB
<b>Rx Characteristics</b>	
Frequency range	1920 – 1980 MHz
Bandwidth	60 MHz
Loss in by-pass mode	Typically 2.4 dB (DC OFF)
Gain ripple	< ±0.3 dB
Return loss	> 18 dB (DC ON) > 12 dB (DC OFF)
Gain	-40 ... +65 °C: 24 ±1.0 dB +22 ... +28 °C: 24 ±0.5 dB
Noise figure	Typically 1.4 dB
Output 1-dB compression point	> 20 dBm
3 <sup>rd</sup> order intercept point (OIP3)	> 29 dBm
<b>Environmental Characteristics</b>	
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	ETS 300 342-3
Lightning protection	5 kA, 8/20 µs RF connections and AISG port
<b>DC and Alarm Characteristics</b>	
<b>Through Node B0 Port only</b>	
DC supply without RET	9 – 30 V, minus grounded Typically 300 mA at 9 V Typically 100 mA at 30 V
Alarm management	According to AISG standard*
<b>Mechanical Characteristics</b>	
Material	Aluminium housing
Connectors	
RF	7-16 female
AISG Connector (Compliance AISG)	8-pin female, IEC 60130-9 (Pin 6: 9 – 30 V DC, pin1: 9-15 V DC, pin 3: RS485B, pin 5: RS485A, pin 7: DC return; other pins: Not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	5 kg
Packing size	262 x 502 x 214 mm
Dimensions (w x h x d)	166 x 262 x 77.5 mm (without connectors, without mounting brackets)



\* The protocol of the software interface can be switched between AISG 2.0/3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start up. Please contact Kathrein for further information.



# DTMA-UMTS-12-AISG-CWA

## Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

**KATHREIN**

Antennen · Electronic

- **Slimline design**
- Double units for easy use with XPol antennas
- Both versions support CWA, AISG 1.1 and AISG 2.0  
**782 10610 default setting: AISG 1.1**  
**782 10612 default setting: AISG 2.0**
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

**RET** = Remote Electrical Tilt

**AISG** = Antenna Interface Standards Group

**CWA** = Current Window Alarm



### Technical Data

Type No.	Default setting AISG 1.1	<b>782 10610</b> DTMA-UMTS-12-AISG-CWA (12 dB gain)
	Default setting AISG 2.0	<b>782 10612</b> DTMA-UMTS-12-AISG-CWA (12 dB gain)

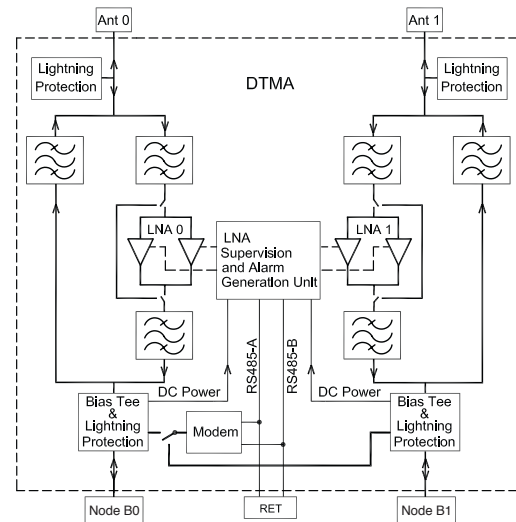
Tx Characteristics	
Frequency range	2110 – 2170 MHz
Insertion loss	< 0.3 dB (typically 0.15 dB)
Ripple	< 0.1 dB
Input power (per input)	< 100 W (+50 dBm) CW / < 1.6 kW (+62 dBm) peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB

Rx Characteristics	
Frequency range	1920 – 1980 MHz
Loss in by-pass mode	< 2.5 dB (DC OFF)
Return loss	> 18 dB (DC ON) / > 12 dB (DC OFF)
Gain	12 ±1.0 dB (+22 ... +28 °C) / 12 ±1.2 dB (-40 ... +65 °C)
Gain ripple	< ±0.3 dB
Noise figure*	< 1.3 dB (+22 ... +28 °C)
Output 1-dB compression point	> 11 dBm
3 <sup>rd</sup> order intercept point (OIP3)	> 25 dBm (typically 30 dBm)

Environmental Characteristics	
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3

DC and Alarm Characteristics	CWA Mode	AISG Mode
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA (without RET)	80 – 140 mA	Nom. 95 mA at 9 V Nom. 35 mA at 30 V
Alarm management	170 – 200 mA	AISG

Mechanical Characteristics	
Material	Aluminium housing
Connectors	RF AISG
	7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	3.8 kg
Packing size	262 x 502 x 214 mm
Dimensions (w x h x d)	160 x 205 x 63 mm (without connectors, without mounting brackets)



### Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>



\* Noise figure  $\overline{NF} = \frac{NF_{1920\text{ MHz}} + 2 \times NF_{1950\text{ MHz}} + NF_{1980\text{ MHz}}}{4}$

(Additional variation at -40 ... +65 °C:  $\Delta \overline{NF} < 0.3\text{ dB}$ )

# DTMA-UMTS-24-AISG-CWA

## Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

**KATHREIN**

Antennen · Electronic

- Slimline design
- Double unit for easy use with XPol antennas
- Supports CWA, AISG 1.1 and AISG 2.0 (default)
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

**RET** = Remote Electrical Tilt

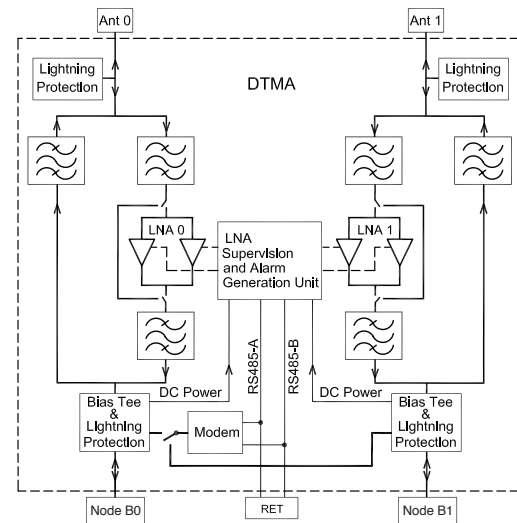
**AISG** = Antenna Interface Standards Group

**CWA** = Current Window Alarm



### Technical Data

<b>Type No.</b>	<b>782 10613</b> <b>DTMA-UMTS-24-AISG-CWA (24 dB gain)</b>	
<b>Tx Characteristics</b>		
Frequency range	2110 – 2170 MHz	
Insertion loss	< 0.3 dB (typically 0.15 dB)	
Ripple	< 0.1 dB	
Input power (per input)	< 100 W (+50 dBm) CW / < 1.6 kW (+62 dBm) peak	
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)	
Return loss	> 18 dB	
<b>Rx Characteristics</b>		
Frequency range	1920 – 1980 MHz	
Loss in by-pass mode	< 2.5 dB (DC OFF)	
Return loss	> 18 dB (DC ON) / > 12 dB (DC OFF)	
Gain	24 ±1.0 dB (+22 ... +28 °C) / 24 ±1.2 dB (-40 ... +65 °C)	
Gain ripple	< ±0.3 dB	
Noise figure*	< 1.4 dB (+22 ... +28 °C)	
Output 1-dB compression point	> 18 dBm	
3 <sup>rd</sup> order intercept point (OIP3)	> 25 dBm (typically 30 dBm)	
<b>Environmental Characteristics</b>		
Operating temperature range	-40 ... +65 °C	
IP rating	IP67	
MTBF	> 1 000 000 hours (per TMA)	
EMC	According to ETS 300 342-3	
<b>DC and Alarm Characteristics</b>		
	<b>CWA Mode</b>	<b>AISG Mode</b>
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA (without RET)	130 – 340 mA	Nom. 210 mA at 9 V Nom. 70 mA at 30 V
Alarm management	380 – 420 mA	AISG
<b>Mechanical Characteristics</b>		
Material	Aluminium housing	
Connectors	RF	7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	3.8 kg	
Packing size	262 x 502 x 214 mm	
Dimensions (w x h x d)	160 x 205 x 63 mm (without connectors, without mounting brackets)	



### Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>



$$* \text{ Noise figure } \overline{NF} = \frac{NF_{1920 \text{ MHz}} + 2 \times NF_{1950 \text{ MHz}} + NF_{1980 \text{ MHz}}}{4}$$

(Additional variation at -40 ... +60 °C:  $\Delta \overline{NF} < 0.4 \text{ dB}$ )

# DTMA-UMTS-BYP900/1800-12-AISG-CWA

## Fullband Double Dual Duplex Tower Mounted Amplifier with 900 MHz and 1800 MHz By-pass

**KATHREIN**

Antennen · Electronic

- Double units for easy use with XPol antennas
- Both versions support CWA, AISG 1.1 and AISG 2.0 (default)  
**782 10652: CWA alarm 170 – 200 mA**  
**782 10653: CWA alarm 230 – 295 mA**
- RF Bypass for 900 MHz and 1800 MHz
- Integrated DC stops
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

**RET** = Remote Electrical Tilt  
**AISG** = Antenna Interface Standards Group  
**CWA** = Current Window Alarm  
**BYP** = RF BYPass



### Technical Data

Type No.	<b>CWA alarm</b> 170 – 200 mA	<b>782 10652</b> DTMA-UMTS-BYP900/1800-12-AISG-CWA (12 dB gain)
	<b>CWA alarm</b> 230 – 295 mA	<b>782 10653</b> DTMA-UMTS-BYP900/1800-12-AISG-CWA (12 dB gain)

#### UMTS Tx Characteristics

Frequency range	2110 – 2170 MHz
Insertion loss	< 0.4 dB
Return loss	> 18 dB
Input power (per input)	< 100 W (+50 dBm) CW / < 1.6 kW (+62 dBm) peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)

#### UMTS Rx Characteristics

Frequency range	1920 – 1980 MHz
Loss in by-pass mode	< 3.0 dB (DC OFF)
Return loss	> 16 dB (DC ON) / > 14 dB (DC OFF)
Gain	12 ±0.7 dB (+22 ... +28 °C) / 12 ±1.3 dB (-40 ... +60 °C)
Gain ripple in 5 MHz bandwidth	< ±0.2 dB
Noise figure*	< 1.3 dB (+22 ... +28 °C)
Output 1-dB compression point	> 10 dBm
3 <sup>rd</sup> order intercept point (OIP3)	> 23 dBm

#### 1800 MHz Bypass Characteristics

Frequency range	1710 – 1880 MHz
Insertion loss	< 0.3 dB
Return loss	> 18 dB
Isolation	> 80 dB (2400 – 2900 MHz) / > 60 dB (2110 – 2170 MHz) / > 50 dB (2010 – 2025 MHz) / > 50 dB (1920 – 1980 MHz) / > 80 dB (880 – 960 MHz)
Input power (per input)	100 W CW / 300 W peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)

#### 900 MHz Bypass Characteristics

Frequency range	870 – 970 MHz
Insertion loss	< 0.3 dB
Return loss	> 18 dB
Isolation	> 70 dB (2400 – 2900 MHz) / > 60 dB (2110 – 2170 MHz) / > 60 dB (2010 – 2025 MHz) / > 55 dB (1920 – 1980 MHz) / > 30 dB (1710 – 1880 MHz)
Input power (per input)	100 W CW / 300 W peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)

#### Environmental Characteristics

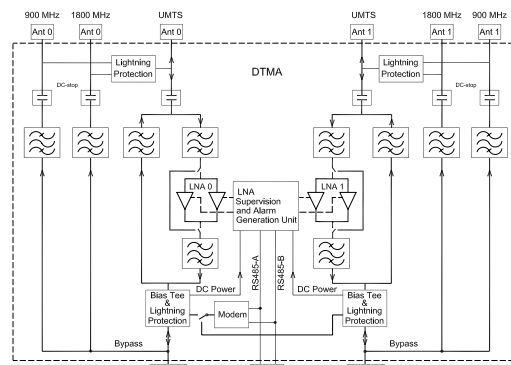
Operating temperature range	-40 ... +60 °C
IP rating	IP67 (see note on data sheet)
MTBF	> 1 000 000 hours per TMA
EMC	According to ETS 300 342-3

#### DC and Alarm Characteristics

	CWA Mode	AISG Mode
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA (without RET)	80 – 140 mA	Nom. 95 mA at 9 V Nom. 35 mA at 30 V
Alarm management	<b>782 10652:</b> 170 – 200 mA <b>782 10653:</b> 230 – 295 mA	AISG

#### Mechanical Characteristics

Material	Aluminium housing	
Connectors	RF AISG	7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Dimensions (w x h x d)	222 x 316.9 x 108.5 mm (without connectors, without mounting brackets)	



### Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>

#### Clamp Set



#### 50-Ω load



\* Noise figure  $NF = \frac{NF_{1920\text{ MHz}} + 2 \times NF_{1950\text{ MHz}} + NF_{1980\text{ MHz}}}{4}$   
 (Additional variation at -40 ... +60 °C:  $\Delta NF < 0.3\text{ dB}$ )

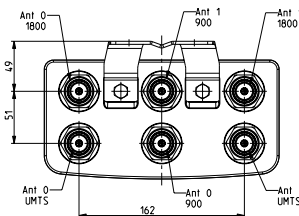
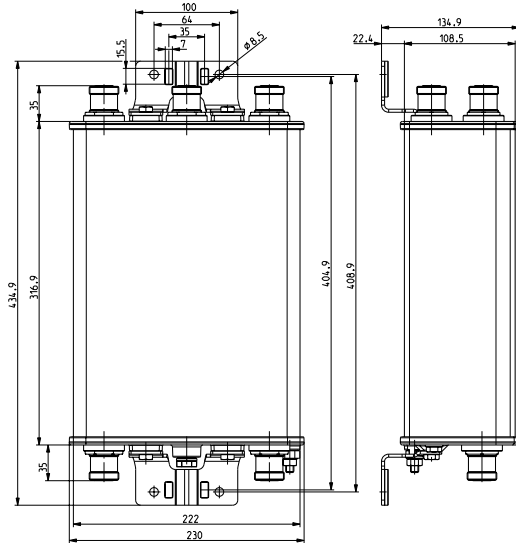
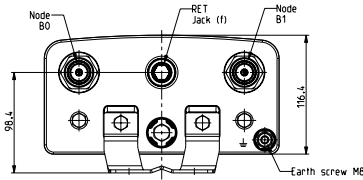
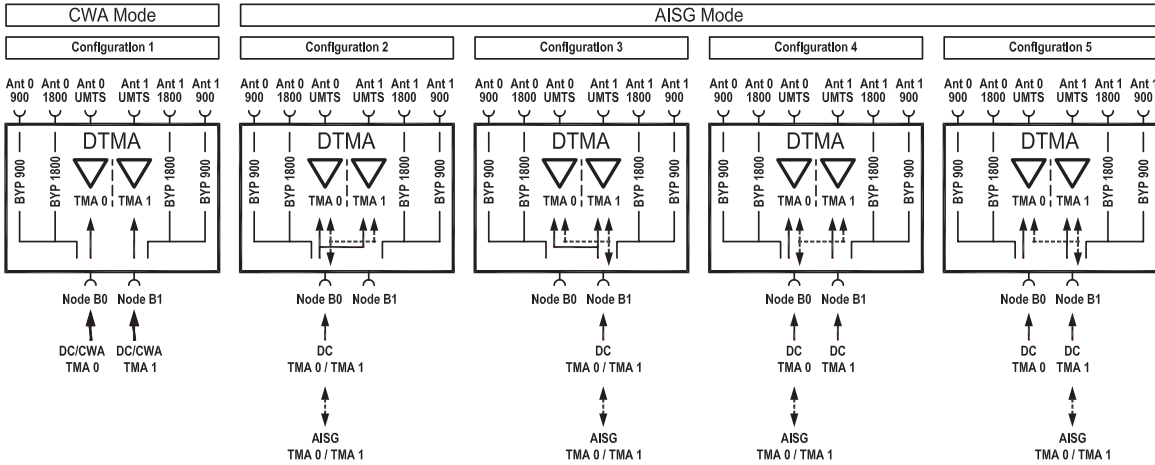
# DTMA-UMTS-BYP900/1800-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier with 900 MHz and 1800 MHz By-pass

**KATHREIN**

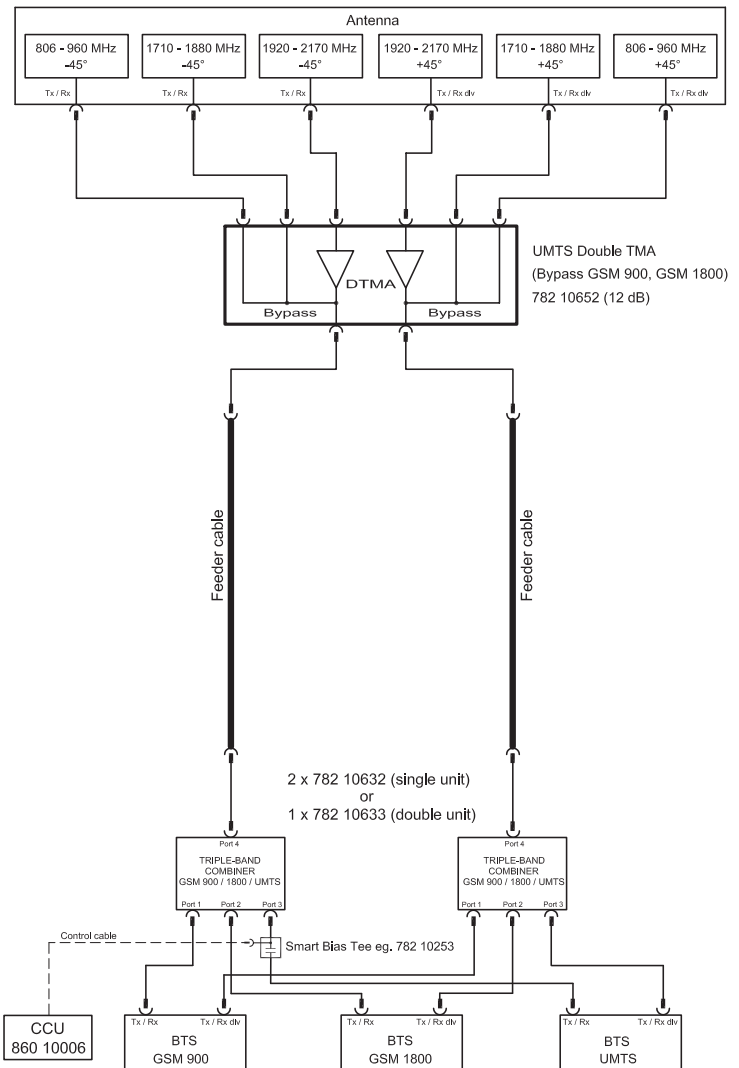
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DC Supply, Current Window Alarm and AISG Configuration (automatically chosen by the DTMA depending on incoming signals)



782 10652, 782 10653

## Application Example



## AISG Setting

The protocol of the software interface can be switched between AISG 2.0 / 3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start-up. Please contact Kathrein for further information.

# DTMA-2600-12-AISG

## Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

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- Double unit for easy use with XPol antennas
- Supports AISG 1.1 and AISG 2.0 (default)
- Suitable for antenna RET control according to AISG/3GPP standard
- DC/AISG by-pass between ports “Node B0 or Node B1” and “Ant 0” for the support of RET integrated antennas (incl. short circuit protection)
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

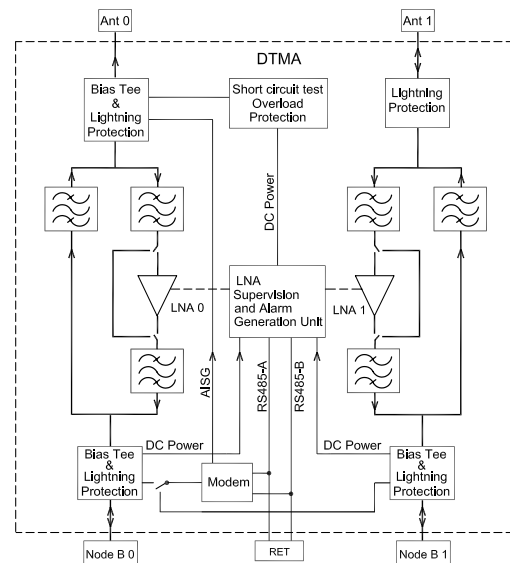
**RET** = Remote Electrical Tilt

**AISG** = Antenna Interface Standards Group



### Technical Data

Type No.	<b>782 10860</b> DTMA-2600-12-AISG (12 dB gain)
<b>Tx Characteristics</b>	
Frequency range	2620 – 2690 MHz
Insertion loss	Typically 0.3 dB
Ripple	< 0.35 dB
Input power (per input)	< 100 W (+50 dBm) CW / < 1.6 kW (+62 dBm) peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB
<b>Rx Characteristics</b>	
Frequency range	2500 – 2570 MHz
Loss in by-pass mode	Typically 2 dB
Return loss	> 18 dB (DC ON)
Gain	12 dB nominal
Noise figure	Typically 1.2 dB
Output 1-dB compression point	> 13 dBm
3 <sup>rd</sup> order intercept point (OIP3)	Typically 30 dBm
<b>Environmental Characteristics</b>	
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3
<b>DC and Alarm Characteristics</b>	
DC supply	10 – 30 V
Operating current per DTMA (without RET)	Nom. 175 mA at 10 V DC Nom. 70 mA at 30 V DC
Alarm management	AISG
<b>Mechanical Characteristics</b>	
Material	Aluminium housing
Connectors	RF AISG 7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 10 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	3.5 kg
Packing size	217 x 407 x 144 mm
Dimensions (w x h x d)	165.3 x 236.4 x 65.1 mm (without connectors, without mounting brackets)



### Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
<b>734 365</b>	<b>45 – 125 mm</b>







## Subsidiaries/Affiliates

A current list of Kathrein's International Representatives can be found on our homepage: [www.kathrein.de](http://www.kathrein.de)



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