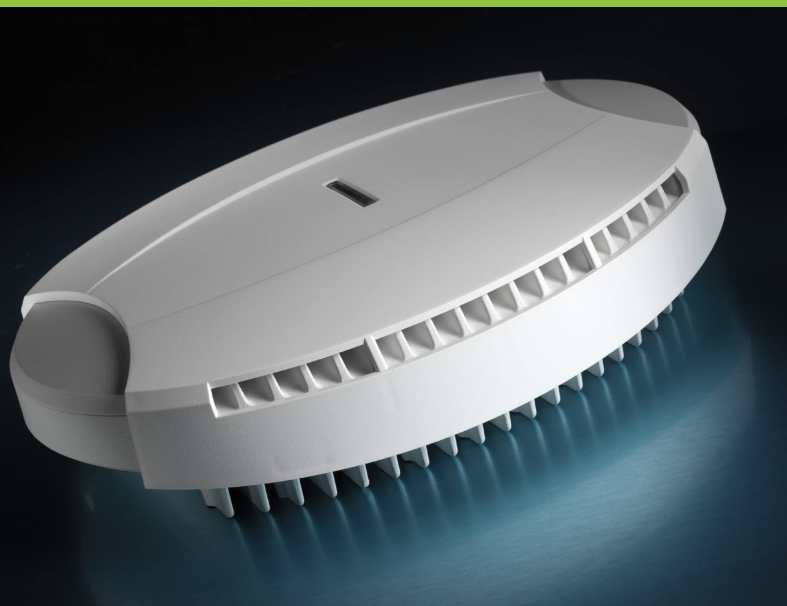


nanoGSM™

GSM-over-IP picocells for in-building coverage and capacity



nanoBTS™ GPRS/GSM

The nanoBTS is a complete picocellular basestation for deployment in buildings to provide GSM and GPRS coverage and capacity.

With the smallest and most cost-effective package available today, its use of IP for backhaul ensure it can be installed wherever and whenever capacity and coverage are required. ip.access has developed the nanoBTS in accordance with ETSI standards which guarantee compatibility with existing handsets as well as both today's circuit-switched and tomorrow's IP-based networks.

revolutionary deployment

Picocells offer a lower cost alternative to the traditional antenna based approach to providing GSM coverage and capacity within buildings. Due to the small size and deployment flexibility, the nanoBTS can easily achieve coverage where needed. The quick and simple installation using existing Ethernet wiring for both data and power avoids the need for the expensive site surveys, cabling installations and access to roof and floor spaces typical of distributed antenna systems (DAS).

The nanoBTS is so flexible that single BTS installations can make use of DSL to provide the connection back to the basestation controller. This makes it possible to offer dedicated coverage solutions for premises with as few as 10 staff cost effectively.

The nanoBTS also simplifies cell and frequency planning; with it's ability to monitor other GSM basestations in the area by using the revolutionary Network Listen™ capability it gives the frequency planners a unique view of actual signal strengths on the ground.

system architecture

The nanoBTS is a complete GSM basestation that conforms to the picocell standard. It combines a standard Um air interface, which supports the more than 1 billion GSM handsets in use globally, with an IP based backhaul, which can take advantage of the existing IP broadband infrastructure. The nanoBTS uses a variation of the standard Abis interface, but carried over IP so that it can be connected back over a wide variety of IP networks. This brings the advantage of the cost structures of IP based networks to the existing population of deployed handsets, maximising the potential return for the operator.

Several varieties of nanoBTS are available, permitting operation in the 900, 1800 and 1900MHz GSM frequency bands. For applications requiring greater capacity up to 4 nanoBTS can be combined into a multiple TRX cell, increasing the number of supported users per TRX by up to 200%.

The nanoGSM range incorporates nanoBTSs with a basestation controller (nanoGSM BSC) and a management system (nanoGSM OMC-R) that supports the configuration, performance and fault reporting of the radio network.

key features

- Rapid installation using existing IP infrastructure
- Standard radio interface compatible with all GSM handsets
- Multi-TRX capability to support large numbers of users
- Typical indoor coverage up to 125,000m²
- Excellent data rates with GPRS support
- Single 10/100 Ethernet connection incorporating power, traffic and signaling
- Smallest footprint in the industry

applications

- Dedicated coverage for SME premises with DSL based link
- In-building capacity and coverage for large corporate offices
- Stand-alone in-fill for shopping malls, airports or undergrounds
- Delivering GSM access on ships, aeroplanes and rural areas



technical specification

U_m radio interface

Model	GSM 900	GSM 1800	GSM 1900
Transmit frequencies	925-960MHz	1805-1880MHz	1930-1990MHz
Channel spacing	200kHz	200kHz	200kHz
Max. output power	+20dBm	+23dBm	+23dBm
Output power control	12 steps	12 steps	12 steps
Receive frequencies	880-915MHz	1710-1785MHz	1850-1910MHz
Channel spacing	200kHz	200kHz	200kHz
Performance	GSM 05:05	GSM 05:05	GSM 05:05
Receive gain control	26 steps	26 steps	26 steps

internal antennas

- On-board 0dBi omni-directional (nominal)
- Optional external antenna connections

channel support

- Each nanoBTS supports a single TRX and can act as a standalone BTS
- Up to 4 nanoBTS can also be connected to act as a Multi-TRX BTS
- Single TRX or C0 of MultiTRX
 - TS0 = full BCCH, Combined BCCH or Combined BCCH with CBCH
 - TS1-7 = TCH/F, PDCH or Dynamic PDCH/TCH
 - Additionally TS1 may be SDCCH/8 + SACCH/C8 (with optional CBCH)
- Multi TRX (non C0)
 - TS0-7 = TCH/F
 - Additionally TS1 may be SDCCH/8 + SACCH/C8
- Internal clock frequency
 - Better than 100ppb as per GSM 05.10 pico

system services

signalling & traffic

- A-bisAbis/IP
- Signalling, O&MTCP/IP
- Traffic
 - voice/CSD RTP/UDP/IP
 - GPRS UDP/IP

system features

- Channel assignment and classmark
- Directed retry based on load, power and cell priority
- Handover
- BTS software update via BSC

user services

teleservices

- Telephony
- Short Message Service MT/PP
- Short Message Service MO/PP
- Short Message Service CB single message for user cell description

speech format support

- GSM FR and EFR

encryption support

- A5/1
- A5/2

circuit switched data

- Single slot BS20 at up to 14.4kb/s
- BS21-26, plus BS61, BS81

GPRS support

- Coding schemes 1-4
- Multi-slot class 10
- Dynamic PDCH for optimising mix of service for voice/data

physical

electrical interface

- Single RJ45 auto-select 10/100 Ethernet supporting PoE
- Timing Interface Bus (TIB) providing nanoBTS interconnect for multi-TRX functionality

dimensions & weight

- Height 210mm
- Width 280mm
- Depth 77mm
- Weight 2.7kg

power

- Power consumption 13W
- Input supply. 38 – 50 volt DC

operational

- Temperature -5°C to +45°C ambient
- Humidity 5 – 90% non-condensing

standards

- CE marked - ETSI EN301 489-8
- UL and FCC listed

mounting

- The nanoBTS is provided with a mounting bracket for wall or ceiling mounting
- Power can be provided locally through a PSU kit or remotely using Power-over-Ethernet

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