

The nanoGSM™ product range integrates with IP networks, and interfaces to public land mobile networks (PLMNs).

## the nanoGSM™ product range



### key features

- Rapid installation
- Multi-TRX capability
- Coverage up to 200m cell radius
- Low power consumption
- GPRS supported (CS1..CS4)
- Single 10/100 Ethernet connection incorporating power, traffic and signalling
- Smallest footprint in the industry
- Network planning minimised through 'Network Listen™'

### applications

- Stand-alone PLMN in-fill for airports, hotels, railway stations
- Extending public campus capacity and coverage
- Wireless Office solutions enabling fixed-mobile convergence

## nanoBTS™

The ip.access nanoBTS is a GSM picocellular basestation intended for deployment in public and enterprise GSM networks.

The nanoBTS provides a single GSM transceiver (TRX) in the smallest and most cost-effective package available today. Its low power and unobtrusive design 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 both today's and tomorrow's PLMN infrastructure.

### revolutionary deployment

The traditional approach to providing GSM coverage within buildings involves complex cell and frequency planning and often requires the installation of distributed antennas (DAS) using expensive co-axial cable or optical fibre. The alternative, pioneered by ip.access, is to deploy miniature distributed basestations (DBS). Connected by existing Ethernet wiring, the nanoBTS achieves a price point that makes DBS the preferred alternative to DAS with all the associated savings in cabling, installation and ongoing maintenance.

Moreover the system offers quasi-autonomous cell and frequency planning and is able to monitor other GSM basestations by using ip.access' revolutionary Network Listen feature.

### simple installation

The nanoBTS consumes very little electrical power enabling the unit to be powered over spare conductors in the Ethernet cable (power-over-Ethernet). The power-over-Ethernet can be delivered to the nanoBTS over the same LAN cable as the GSM traffic and signalling. Existing spare Ethernet cabling can be used for distances less than 100m with no need for a separate external power supply.

Due to the size and flexibility of deployment, the nanoBTS can achieve coverage where needed, leading to fewer installations and lower transmit power in comparison to other conventional and more costly alternatives.

For applications requiring greater capacity, multiple TRX nanoBTSs can be configured with ease. Several varieties of nanoBTS are available, permitting operation in the most commonly-used GSM frequency bands.

### system architecture

The system architecture incorporates nanoBTSs, as well as variants of the nanoBTS for different environments, with a basestation controller (nanoGSM BSC). Also included is a management system (nanoGSM OMC-R) that supports the configuration, performance and fault reporting of the radio network. Additional ancillary products assist in the deployment and installation of the nanoGSM solution.



# technical specification

## radio interface

### transmit frequencies

|                      |                  |
|----------------------|------------------|
| GSM 1800             | 1805 to 1880 MHz |
| GSM 1900             | 1930 to 1990 MHz |
| Channel spacing      | 200kHz           |
| Max. output power    | +23dBm           |
| Static power control | 12 steps         |

### receive frequencies

|                    |                  |
|--------------------|------------------|
| GSM 1800           | 1710 to 1785 MHz |
| GSM 1900           | 1850 to 1910 MHz |
| Channel spacing    | 200kHz           |
| Performance        | GSM 05:05        |
| Gain control steps | 26               |

### internal aerials

- 0dBi omni-directional (nominal)
- External aerial connections (optional)

### channel support

- Single TRX
- 8 timeslots (TS0-7), single static RF channel for C0
- Up to 4 nanoBTSs can be connected for multi-TRX support

### TS0

- FCCH + SCH + BCCH + CCCH + SDCCH/4 + SACCH/C4 [for C0 TRX only]
- FCCH + SCH + BCCH + CCCH [for C0 TRX only]
- TCH/F + FACCH/F + SACCH/TF [for non-C0 TRX only]
- SDCCH/8 + SACCH/C8 [for non-C0 TRX only]

### TS1-7

- TCH/F + FACCH/F + SACCH/TF
- SDCCH/8 + SACCH/C8
- PDCH [for C0 TRX only]

### internal clock frequency

- Accuracy  $\pm 20$ ppb
- Ageing  $\pm 30$ ppb/yr

## system services

### signalling & traffic

- A-bis Abis/IP
- Signalling, O&M TCP/IP
- Traffic
  - voice/CSD RTP/UDP/IP
  - GPRS UDP/IP

### network management

- Dedicated management package (OMC-R)
- Open interfaces for integration with partner-specific O&M
- 12.21 procedure for software upgrades
- DHCP

## user services

### circuit switched data

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

### teleservices

- Telephony
- Emergency calls - lawful intercept (LBS)
- Short Message Service MT/PP
- Short Message Service MO/PP
- Short Message Service CB

### speech format support

- GSM FR and EFR
- AMR HR and FR

### encryption support

- A5/1
- A5/2

### GPRS support

- Coding schemes 1-4
- Multi-slot class 12
- Dynamic PDCH for optimising mix of service for voice/data

## physical

### electrical interface

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

### dimensions & weight

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

### power

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

### operational

- Temperature  $-5^{\circ}\text{C}$  to  $+45^{\circ}\text{C}$  ambient
- Humidity 5 – 90% non-condensing

### standards

- ETS 300-019-1-1 Storage Class 1.1
- ETS 300-019-1-2 Transport Class 2.3
- ETS 300-019-1-3 Operation Class 3.1

### redundancy

- nanoBTS connects to a fallback BSC and FRIP

### mounting

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