

# nanoGSM™

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



## nanoGSM™ BSC

The ip.access nanoGSM™ BSC (basestation controller) is a key component in handling and routing traffic between picocellular basestations (nanoBTS™) and an existing Mobile Switching Centre (MSC) as part of an overall GSM network. The BSC is a modular unit that uses IP connectivity between the nanoBTSs and the BSC and a standard circuit-based A-interface to the MSC. There is also an option to connect into architectures with softswitch MSCs.

The BSC provides channel allocation functions, GPRS support and also controls the power level algorithms and handover procedures for the nanoBTSs. The unit is engineered to have a high level of availability by combining selective redundancy with fast restart capabilities.

### flexible integration

The nanoGSM BSC is extremely versatile and allows a wide range of different architectural configurations dependent on traffic densities and the ease of deployment. The nanoGSM BSC is usually co-located with the MSC at the central office. However in cases with heavy traffic usage and multiple basestations in one building, there is the option of placing the nanoGSM BSC at the customer site.

The nanoGSM BSC connects to the nanoBTS over IP using a version of the Abis interface. This gives a wide range of possible IP network configurations for the deployment of the basestations. For integration into existing mobile network infrastructure the nanoGSM BSC connects to MSC and SGSNs over standard circuit switched E1 or T1 links.

For an all IP-based network, the nanoGSM BSC can be integrated with a softswitch. This gives the opportunity to reduce backhaul costs by routing traffic locally at the BTS, and also reduces the costs associated with the circuit interfaces.

### architecture

The BSC comprises a processor module, signalling gateway, media gateway and a frame relay gateway. The standard product is housed in an 8-slot compact PCI chassis. This configuration allows for easy installation and expansion in a low cost package. A 1U BSC is available for special applications.

The system uses selective redundancy on vulnerable components including the RAID disks, PSUs and cooling fans with hot-plug capability for all modules.

Operational management of the whole system is provided by the nanoGSM OMC-R, which supports the configuration of the system together with performance and alarm monitoring.

#### key features

- Compact PCI platform
- Flexible architecture support
- Compliant with GSM specs
- Integration into legacy MSCs
- Optional integration with softswitch MSCs

#### benefits

- Ease of installation within a LAN/WAN
- Cost-effective deployment utilising IP connectivity
- Flexible BSC location



# technical specification

## GSM feature support

### generic support

All frequency variants of nanoBTS  
SMS, GSM FR/ EFR speech, single slot CSD, GPRS  
Mobile station phase 1,2 and 2+

### Other supported features

Channel assignment and classmark  
Directed retry based on load, power and cell priority  
Handover  
Dynamic GPRS timeslot allocation (Dynamic PDCH)  
Paging and location areas  
BTS software download via BSC  
Redundancy on SS7 links  
Optional US regulation pack (E911)  
Multiple TRX  
Subscriber trace

### O&M

Installation and maintenance  
Configuration management  
Fault management  
Performance management

## interfaces and protocols

### Abis interface to the nanoBTS

TCP/IP signalling, control and management  
UDP/IP packet and bearer streams  
10/100baseT(x) via RJ45 connector

### A interface to MSC

BSSMAP and DTAP carried by SCCP (signalling)  
64kb/s PCM speech / CSD  
Structured E1/T1  
4 or 8 E1/T1 with capacity for future 16 E1/T1  
RJ45 connectors

### O&M to OMC-R

CORBA-based to allow distributed OMC-R functionality  
10/100baseT(x) via RJ45 connector  
(may be shared with Abis or separate)

### Gb to SGSN

Frame Relay interface for direct connectivity to a SGSN  
Structured E1/T1  
4 x E1/T1

### RJ45 connectors BSC to config manager

TCP/IP (private protocol)

## physical

### platform

Compact PCI chassis with rear access to all traffic ports

### redundancy

Selective use of redundancy on vulnerable components (3PSUs,  
7 fans, RAID disks) and hot-plug capability for all modules

### dimensions and weight

Height ..... 178mm (4U)  
Width ..... 448mm (19")  
Depth ..... 441mm  
Weight ..... 13kg

### temperature

Operating ..... 0°C to +50°C  
Storage ..... -20°C to +70°C

### humidity

Operating ..... 10 to 90% non-condensing  
Storage ..... 10 to 90% non-condensing

### power

Power consumption ..... 400W  
Input supply option ... 90-250 volts AC or 36-75 volts DC

### standards

CE and FCC approved

### mounting

The compact PCI chassis can be mounted within a standard 19"  
rack (IEC 60297)

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