

## 5 Interfaces

### 5.1 Signal and Power Interfaces

The Combined Climate Unit has the following external interfaces:

- DC power
- AC mains power
- EPC bus (on CCU)
- Test and general signals (25-pole D-sub on CCU)

### 5.2 Operator Interfaces

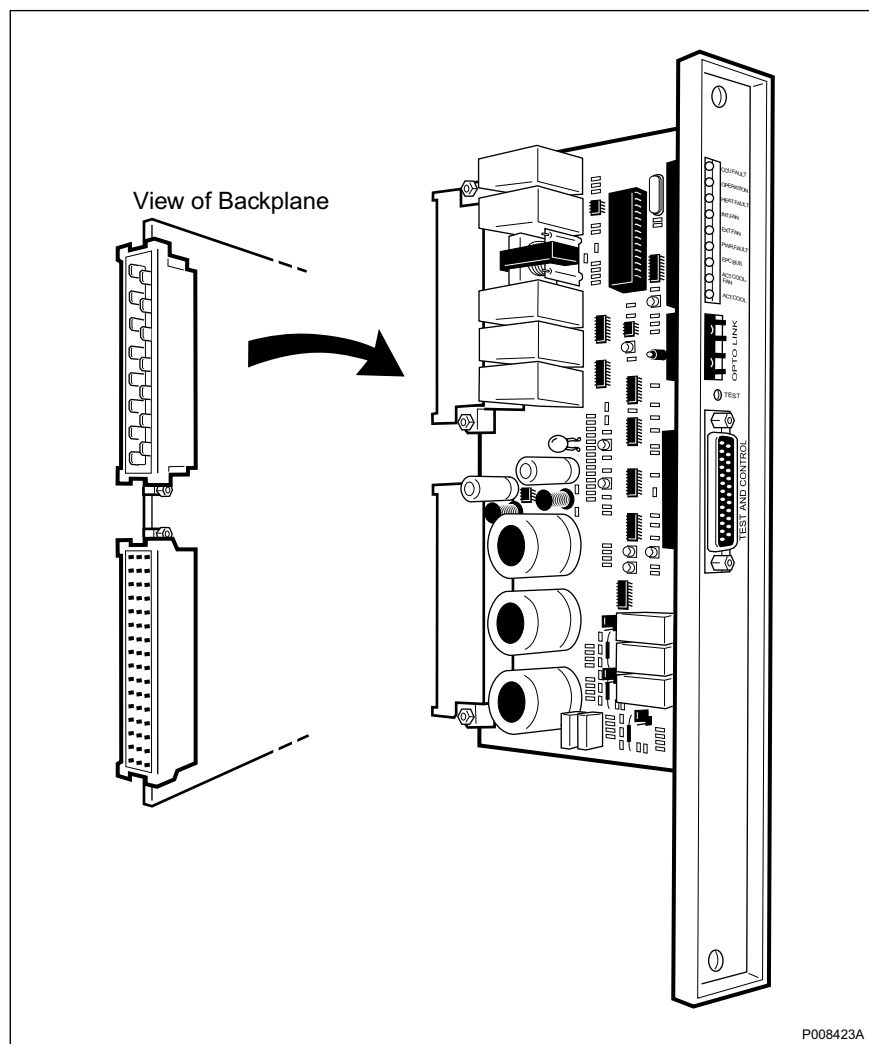


Figure 2 CCU

The CCU front panel has the following MMI interfaces:

- Indicators
- Test button
- Test and control connector

## Indicators

*Table 3 Indicators*

| Indicator                         | Colour |
|-----------------------------------|--------|
| CCU Fault                         | Red    |
| Operation                         | Green  |
| Heater fault                      | Yellow |
| Heat exchanger internal fan fault | Yellow |
| Heat exchanger external fan fault | Yellow |
| Power fault                       | Yellow |
| EPC bus fault                     | Yellow |
| Active cooler fan fault           | Yellow |
| Active cooler fault               | Yellow |



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# 1 Product Overview

The CXU cross-connects the CDU and the dTRU in the RX path. The CXU makes it possible to expand or reconfigure a cabinet with a minimum of moving or replacing of RX cables.

The CXU is a multi-band product for GSM 800, GSM 900, GSM 1800 and GSM 1900.

## 1.1 Main Functions

The CXU has the following main functions:

- Supports both GMSK and 8-PSK
- One CXU can support up to three CDUs
- To configure the CXU, six switches can be set to connect different CDUs with different dTRUs

# 2 Dimensions

The CXU-10 has the following dimensions:

*Table 1 Size and weight*

| Height | Width                   | Depth  | Weight |
|--------|-------------------------|--------|--------|
| 22 mm  | 482.6 mm (19" standard) | 120 mm | 2 kg   |

# 3 Power Consumption

The maximum power consumption is 10 W.

## 4 Function Description

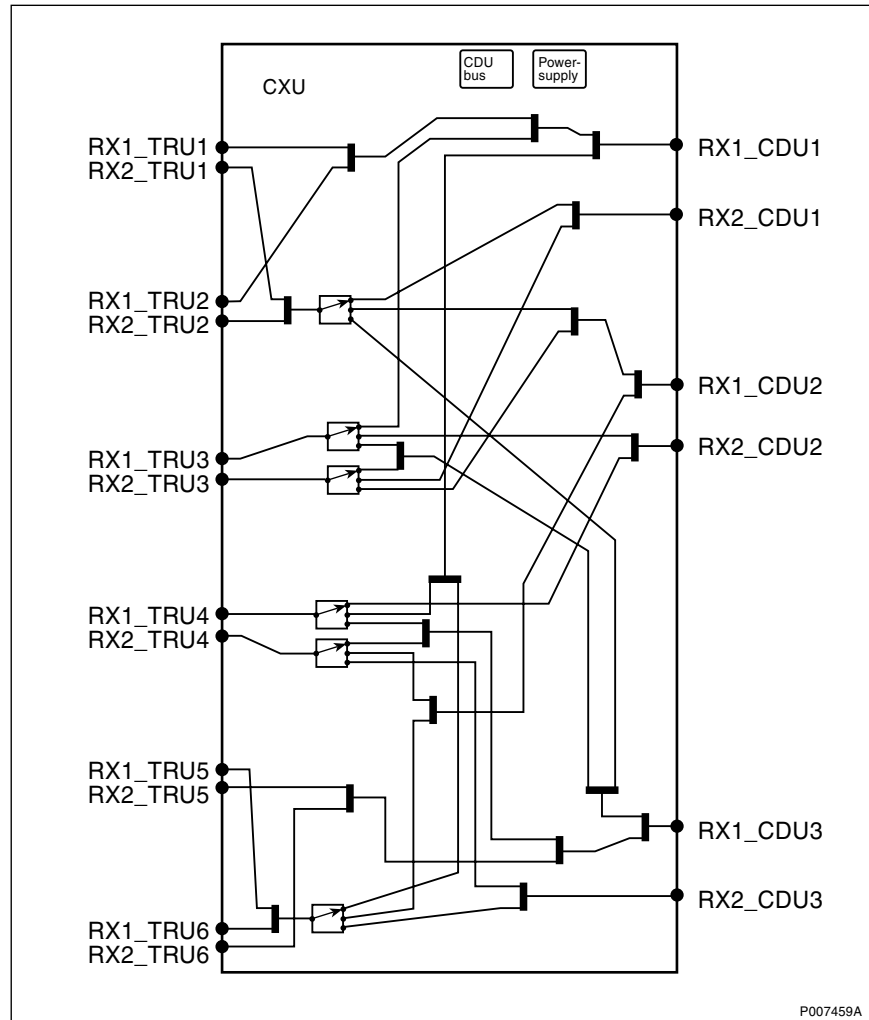


Figure 1 Block diagram of the CXU

### 4.1 Functions

The CXU has six different switches. By setting the switches in different positions, the CXU can be configured to connect radio signals from a specific CDU to a specific RX input on a dTRU.

The CXU is also connected to a CDU bus. By sending data through the CDU bus, the switches can be set to fulfil one of six supported configurations.

The unit contains splitters for distribution of incoming RX signals to the switches and in some cases directly to an output.

The RF cables between the CDU and CXU and the CXU and dTRU are supervised by the CXU.

## 5 Interfaces

### 5.1 Signal and Power Interfaces

*Table 2 Connectors*

| Function                                              | Qty |
|-------------------------------------------------------|-----|
| Input for RX signal from CDU                          | 6   |
| Output for RX signal to dTRU                          | 12  |
| CDU Bus connector for alarm and configuration setting | 1   |
| Power supply connector                                | 1   |

### 5.2 Operator Interface

*Table 3 Indicators*

| Indicator   | Colour |
|-------------|--------|
| Operational | Green  |
| Fault       | Red    |



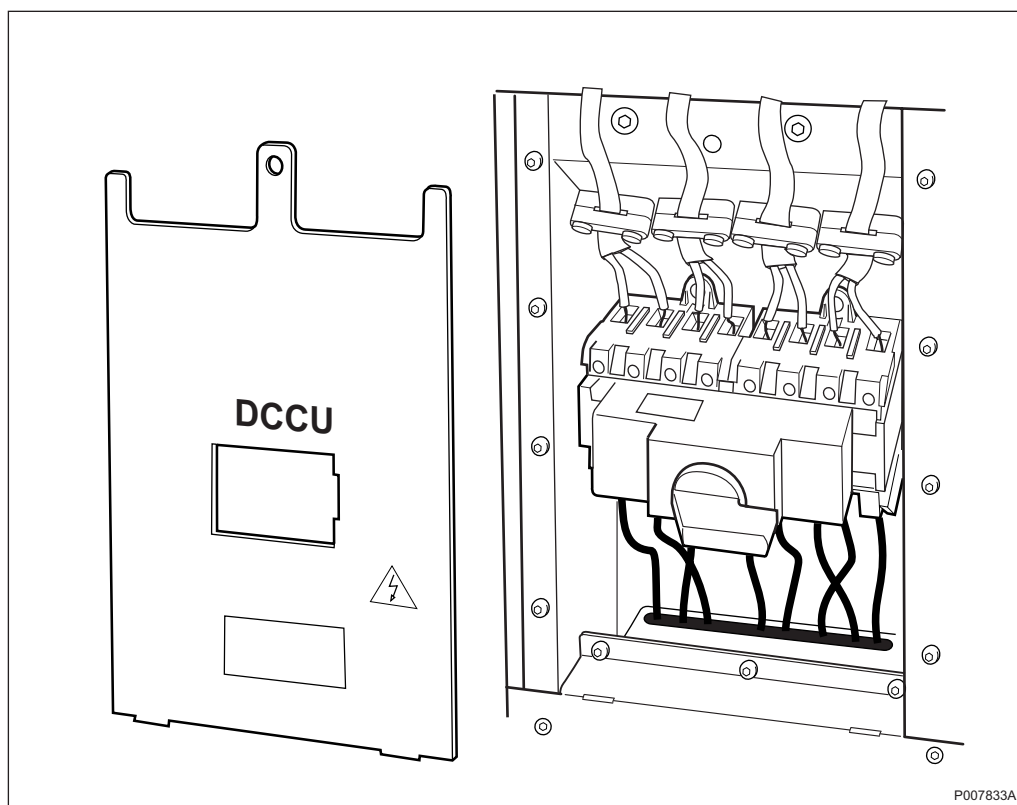
# DCCU

DC Connection Unit

## Unit Description

EN/LZT 720 0224 R1A

The DC Connection Unit (DCCU) distributes primary power to the Power Supply Units.



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# 1 Product Overview

## 1.1 Main Functions

The DCCU distributes primary power to the PSUs and it has the following functions:

- Terminates incoming DC supply cables
- Disconnects incoming DC supply
- Filters EMC

# 2 Dimensions

The DCCU has the following physical characteristics:

*Table 1 Size and weight*

| Height   | Width  | Depth | Weight              |
|----------|--------|-------|---------------------|
| 293.5 mm | 141 mm | 60 mm | 5 kg <sup>(1)</sup> |

*(1) Including cables*

# 3 Function Description

The DCCU consists of a box containing:

- Terminal block with incoming DC cables
- Eight-pole main switch (disconnecting device)
- A feed-through capacitor filter
- Four cables to the PSUs

# 4 Interfaces

The DCCU has the following interfaces:

- Terminal block for four incoming DC supply cables
- Four outgoing cables to the PSUs

## 4.1 Signal and Power Interfaces

The tables below show input and output data.

*Table 2 Input Data*

|                             |                        |
|-----------------------------|------------------------|
| <b>Voltage</b>              | -40 – -72 V DC         |
| <b>External fuses</b>       | 4 pcs, max. 40 A       |
| <b>Cable diameter</b>       | 4.5 – 7 mm             |
| <b>Conductor area</b>       | 6 – 10 mm <sup>2</sup> |
| <b>Number of conductors</b> | 2                      |

*Table 3 Output Data*

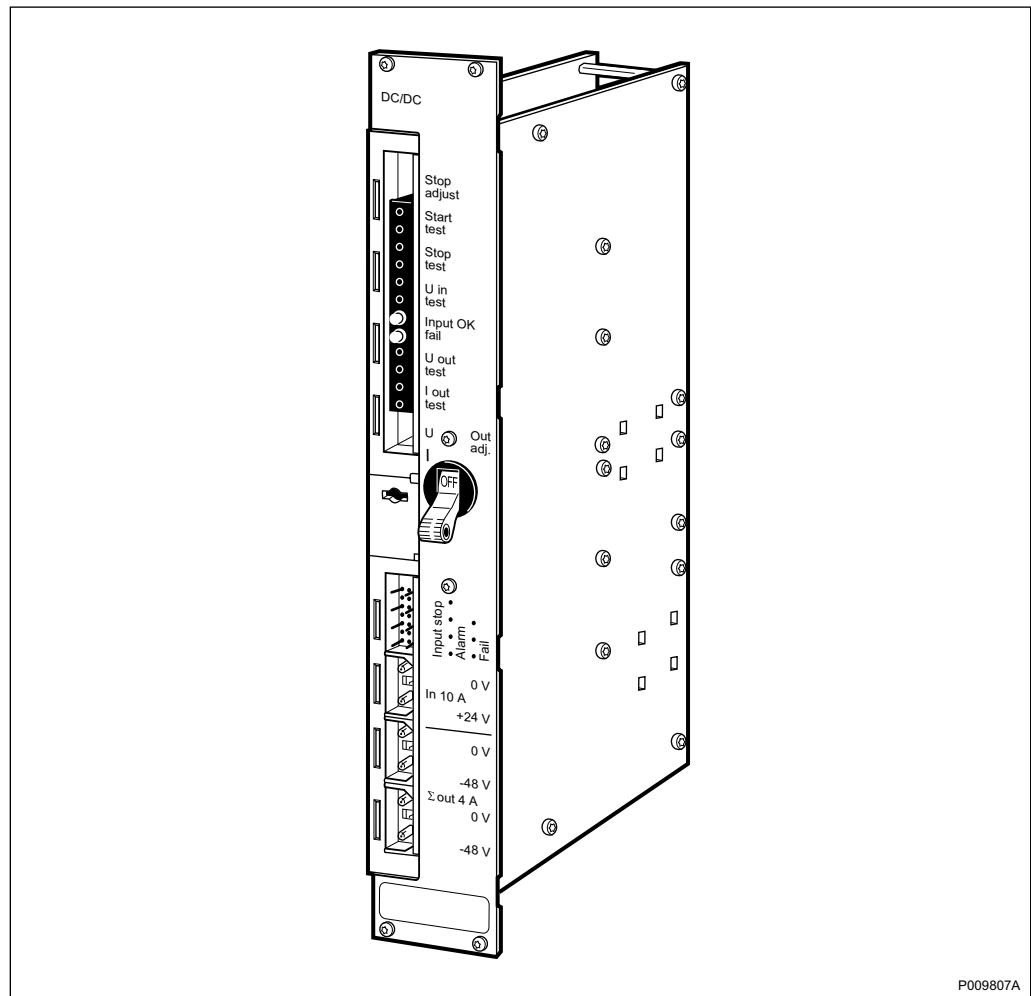
|                             |                   |
|-----------------------------|-------------------|
| <b>Conductor area</b>       | 6 mm <sup>2</sup> |
| <b>Number of conductors</b> | 2                 |

# DC/DC Converter

## +24 V DC to -48 V DC/DC Converter for RBS 2106

### Description

The DC/DC Converter converts +24 V DC into regulated -48 V DC with an output power of 200 W.



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# 1 Product Overview

The DC/DC converter converts +24 V DC battery voltage to regulated –48 V DC. The output power capacity is 200 W.

## 1.1 Main Functions

The DC/DC Converter has the following main functions:

- Voltage converter
- Current limitation
- Voltage regulation
- Overvoltage and undervoltage protection
- Switch on the front for switching on and off. The switch also serves as a circuit breaker for input voltage.
- Input and output connectors on the front panel.
- Remote-controlled start and stop

# 2 Dimensions

This section describes the physical characteristics of the DC/DC Converter.

*Table 1 Size and weight*

| Height                      | Width                     | Depth  | Weight |
|-----------------------------|---------------------------|--------|--------|
| 267 mm<br>(6 HE x 44.45 mm) | 41 mm<br>(8 TE x 5.08 mm) | 160 mm | 1.2 kg |

# 3 Power Consumption and Heat Generation

The maximum power consumed and heat generated during use are shown in the table below.

*Table 2 Maximum power and heat*

| Max power consumption | Max heat generation |
|-----------------------|---------------------|
| 225 W                 | 25 W                |

## 4

## Function Description

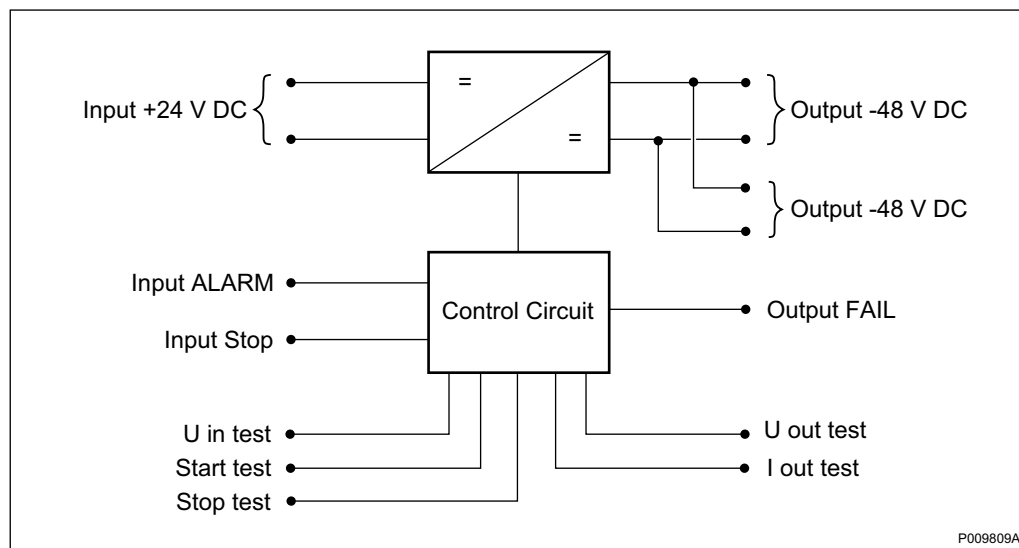


Figure 1 Block diagram

The unit is a switched converter, that converts +24 V DC battery voltage to regulated -48 V DC. The converter can be connected in parallel with other converters to operate continuously in current limitation mode.

The exact value of the output voltage can be adjusted using the potentiometer ("U out adj") on the front panel. For adjustment range, see *Section 5.1 Signal and Power Interfaces*.

The current limitation is set to 100 – 115% of the rated current (4.0 A), above which the output voltage drops. The output current increases when the voltage drops, enabling the converter to be loaded with other DC/DC converters with an input power limited to approximately 150 W.

The overvoltage protector shuts down the switching when the output voltage reaches -58 V. The output is restored by switching the converter ON/OFF switch to OFF and then after 15 seconds to ON again.

The ON/OFF switch is also a resettable automatic fuse for the input current.

The undervoltage protector monitors the input voltage and blocks the converter at an input voltage of 18 – 21 V. The exact level is set by a potentiometer ("Stop adjust") on the front of the unit. The converter is restored automatically when the input voltage rises 5 V above the stop level.

The converter can be stopped remotely by connecting a +5 V signal to the pin "Stop". Normally this pin is left unconnected.

A green indicator on the front indicates that an input voltage, which has reached starting level, is present in the conversion stage.

A red indicator on the front is active when the output voltage is out of limits due to either overload, overvoltage, or failure.

## 5 Interfaces

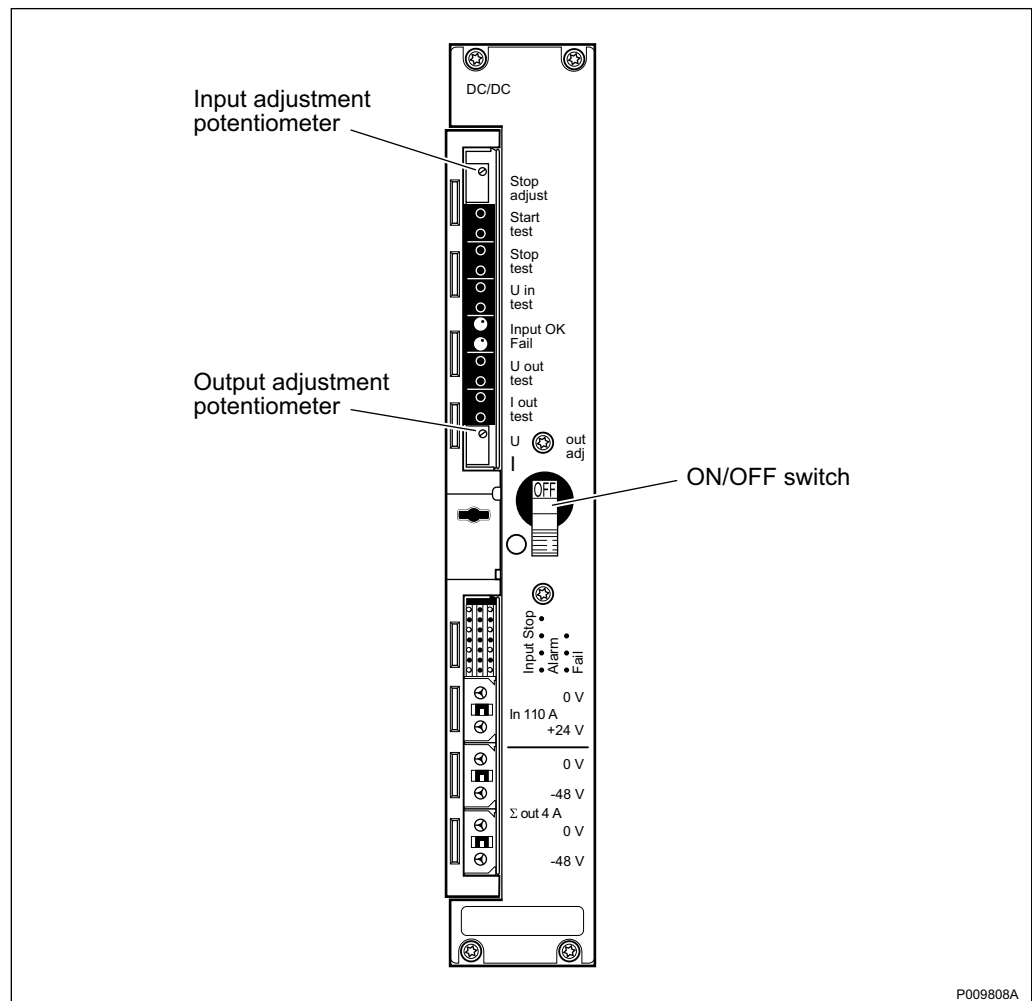


Figure 2 DC/DC Converter interfaces

## 5.1 Signal and Power Interfaces

### Input data

Table 3 Input power data

|                         |                      |
|-------------------------|----------------------|
| Nominal voltage         | +24 V DC             |
| Permitted variations    | +18.0 to 31.0 V DC   |
| Undervoltage protection | +18.0 to 21.0 V DC   |
| Default start level     | +23.5 $\pm$ 0.2 V DC |
| Default stop level      | +18.5 $\pm$ 0.2 V DC |
| Rated power             | 200 W                |

### Output data

Table 4 Output power data

|                                                   |                    |                     |
|---------------------------------------------------|--------------------|---------------------|
| Rated voltage                                     |                    | -48 V DC            |
| Setting range                                     |                    | -46.0 to −57.0 V DC |
| Default output                                    |                    | 54 V DC             |
| Overvoltage protection                            |                    | -57.5 to 59.5 V DC  |
| Output current                                    |                    | 4.0 A at −48 V      |
| Efficiency at 200 W output                        |                    | 88%                 |
| Current or power limitation at U <sub>out</sub> : | -54 V              | 225 W               |
|                                                   | -48 V, 4.6 – 5.2 A | 225 W               |
|                                                   | -40 V, 5.0 – 6.0 A | 225 W               |
| Noise voltage, psophometric value                 |                    | ≤ 1 mV              |

## 5.2 Operator Interface

The DC/DC Converter has the following interfaces, all located on the front panel:

- ON/OFF switch
- Input stop potentiometer
- Output stop adjustment potentiometer
- Start and Stop Test ports

- $U_{in}$  test port
- $U_{out}$  test port
- $I_{out}$  test port

## Indicators

*Table 5 Indicators*

| Indication  | Colour |
|-------------|--------|
| Input OK    | Green  |
| Output fail | Red    |

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Due to continued progress in methodology, design and manufacturing,  
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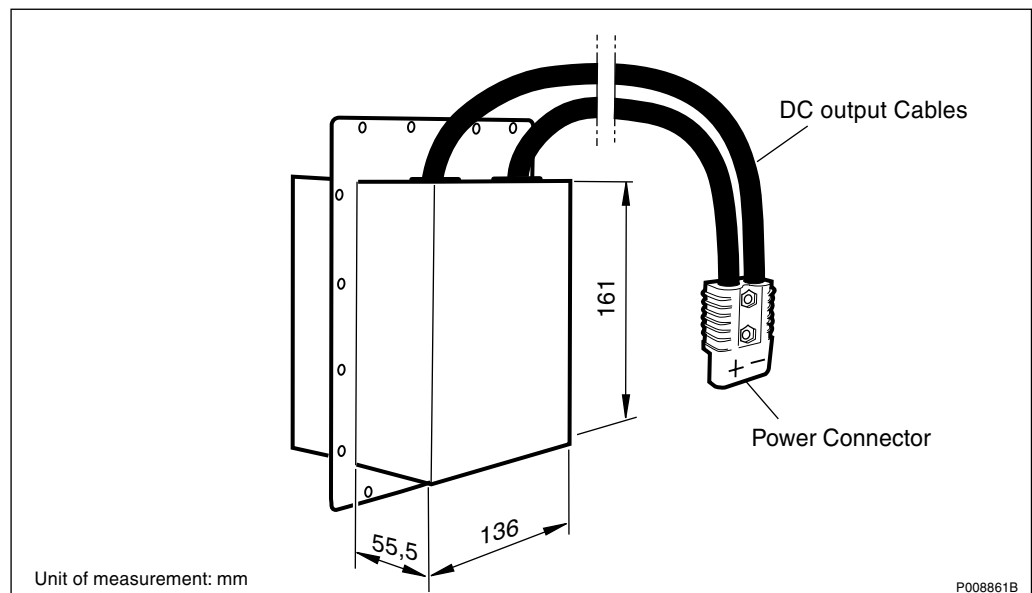
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# DC Filter for RBS 2106

## Filter for External Batteries

### Description

The DC Filter Unit is the RBS 2106's interface for external +24 V DC power supply.



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# 1 Product Overview

The DC Filter is the interface between a +24 V DC external power source, such as a battery, and the IDM inside the RBS 2106.

## 1.1 Main Functions

The DC Filter has the following main functions:

- EMC filtering
- Connection of +24 V DC to the cabinet
- Distribution of +24 V DC power to the IDM

# 2 Dimensions

The DC Filter has the following dimensions:

*Table 1 Size and weight*

| Height | Width  | Depth  | Weight |
|--------|--------|--------|--------|
| 121 mm | 222 mm | 171 mm | 5 kg   |

# 3 Function Description

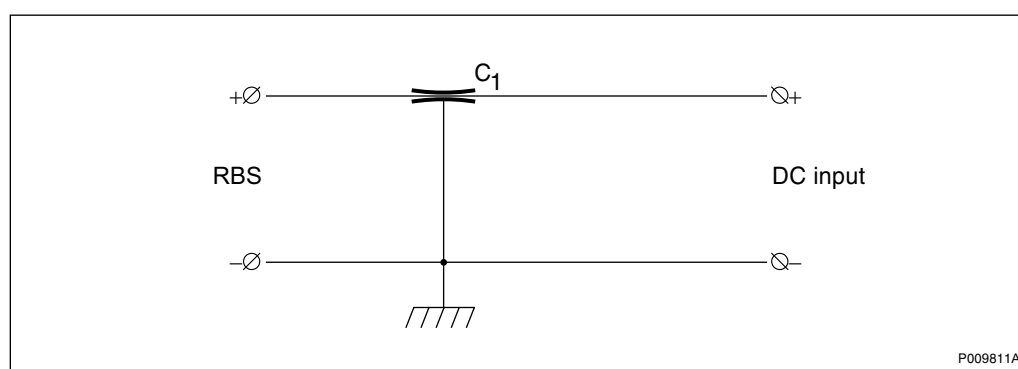


*Figure 1 Circuit diagram*

This unit filters the incoming +24 V DC to conform with the internal requirements of the RBS 2106.

The filter is formed by a coaxial feed-through capacitor. The capacitor provides full 360° earthing around the cable.

The DC Filter serves as an EMC barrier against the outside electrical environment and a mechanical barrier against the outside climatic environment.

## 4 Interface

### 4.1 Signal and Power Interface

The DC Filter has the following external interfaces:

- Two input terminals for 70 – 185 mm<sup>2</sup> cables. The input terminals are of semi-enclosed clamp type.
- Strain-relief clamps for cables with diameter 14 – 26 mm.
- Output cable negative (-) is a 70 mm<sup>2</sup> cable, about 420 mm long, with an Anderson power plug.
- Output cable positive (+) is a 70 mm<sup>2</sup> cable, about 420 mm long, with an Anderson power plug.
- A hole for an optional temperature sensor connector is provided.

### Voltage and current

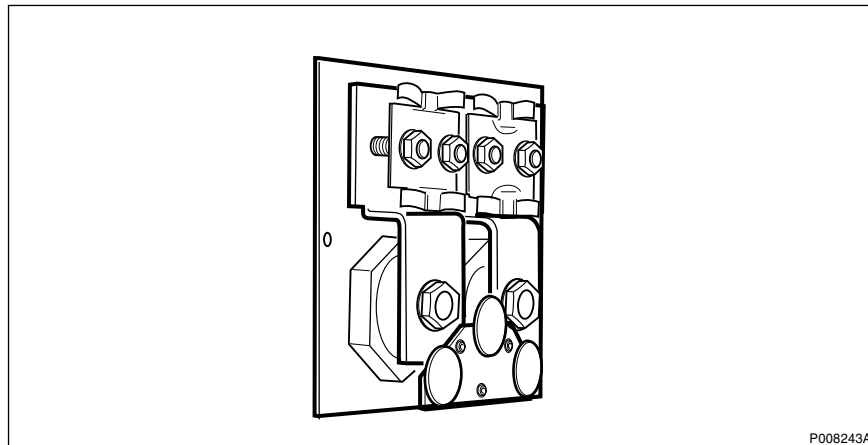
Table 2 Limiting values

|                      |          |
|----------------------|----------|
| Rated voltage        | 100 V DC |
| Feed-through current | 175 A    |

# DC Filter 01 for RBS 2206

## Description

The DC filter is the interface for +24 V DC supply to the cabinet.



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## Product Overview

### 1.1 Main Functions

The DC filter has the following main functions:

- Provides the interface for +24 V DC supply to the cabinet
- Distributes +24 V DC to the Internal Distribution Module (IDM).

## 2 Dimensions

The DC filter has the following dimensions:

*Table 1 Dimensions*

| Height   | Width  | Depth | Weight              |
|----------|--------|-------|---------------------|
| 293.5 mm | 164 mm | 70 mm | 6 kg (incl. Cables) |

## 3 Function Description

The DC-filter has the following functions:

- Filters EMC
- Connects incoming 70 – 185 mm<sup>2</sup> power cables
- Protects incoming cables from pulling forces
- Power connection for internal distribution

## 4 Interface

### 4.1 Signal and Power Interface

The DC-filter has the following external interfaces:

- Two input terminals for 70 – 185 mm<sup>2</sup>
- Pull-relief clamps for incoming power cables with diameter 14 – 26 mm
- Two 70 mm<sup>2</sup> output cables

*Table 2     Input data*

|                       |                                            |
|-----------------------|--------------------------------------------|
| Input voltage         | Nominal +24 V DC<br>Range 20.0 – 29.0 V DC |
| Non-destructive range | 0.0 - +32.0 V DC                           |
| Max input current     | 200 A                                      |

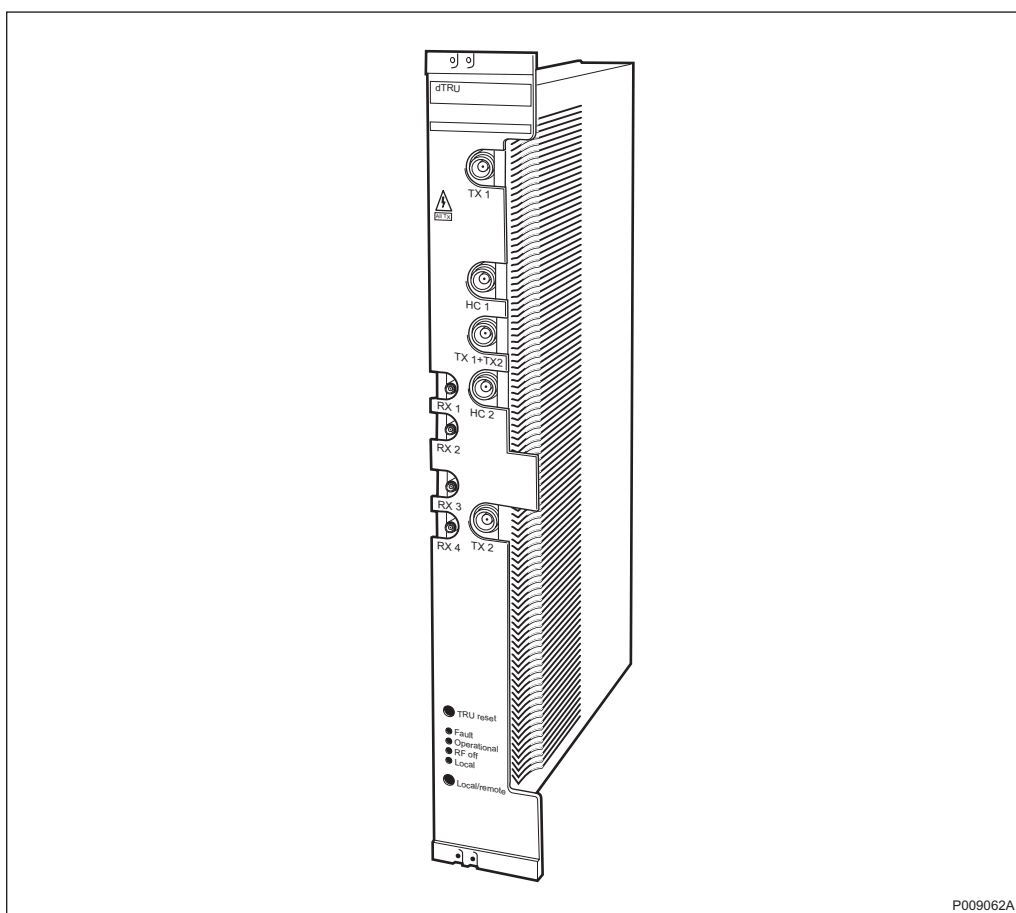
# dTRU

Double Transceiver Unit

## Unit Description

EN/LZT 720 0242 R1A

The double Transceiver Unit (dTRU) is a 2-TRX replaceable unit. A TRX is a transmitter/receiver and signal-processing unit, which transmits and receives one carrier.



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# 1 Product Overview

The dTRU is a 2-TRX replaceable unit. A TRX is a transmitter/receiver and signal-processing unit, which transmits and receives one carrier. There are different versions of dTRU depending on the frequency band and modulation capability, that is, both GMSK and 8PSK (EDGE) or GMSK only.

The dTRU has two TX antenna terminals and four RX antenna terminals. The dTRU features a built-in hybrid combiner. The hybrid combiner can be used to combine the two TX antenna terminals to one common terminal.

Two of the RX antenna terminals are used for 2-branch diversity reception. The dTRU is hardware prepared for 4-branch diversity reception through the remaining two antenna terminals.

## 1.1 Main Functions

The dTRU is a distributed main CPU DMCN and its main functions are:

- Transmits and receives radio frequency signals – GMSK or 8PSK modulation
- Processes signals

# 2 Dimensions

The dTRU has the following dimensions:

*Table 1 Size and weight*

| Height                      | Width                      | Depth  | Weight |
|-----------------------------|----------------------------|--------|--------|
| 400 mm<br>(9 HE x 44.45 mm) | 71 mm<br>(14 TE x 5.08 mm) | 270 mm | 7.6 kg |

# 3 Power Consumption and Heat Generation

*Table 2 Power consumption and heat generation*

| Max. power consumption | Max. heat generation |
|------------------------|----------------------|
| 485 W                  | 380 W                |

## 4 Function Description

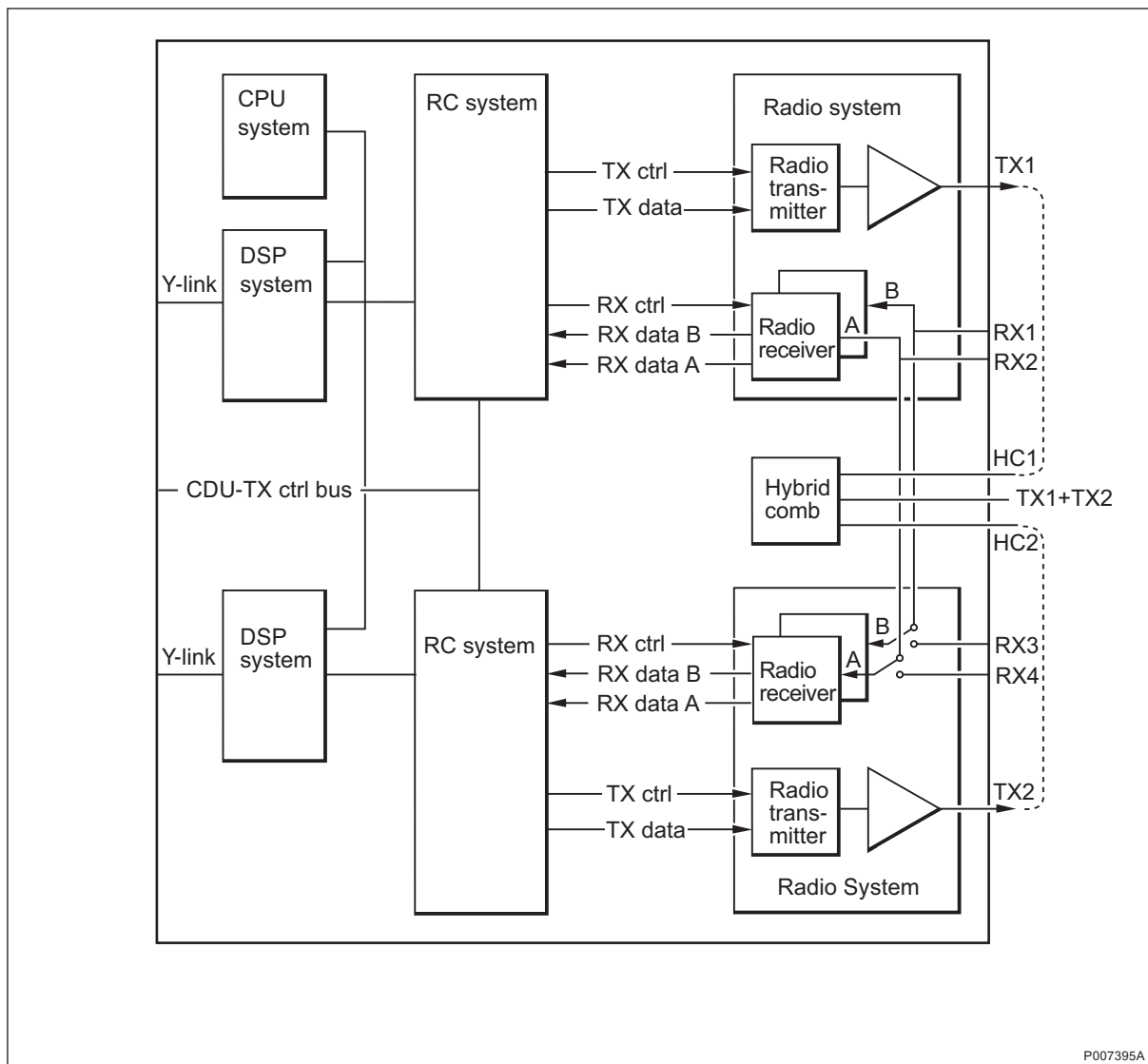


Figure 1 Block diagram of the dTRU

The TRU consists of the following main blocks:

- CPU system
- DSP system
- RC system
- Radio system

#### **4.1 CPU System**

The CPU system is a control unit in the RBS. It consists of a CPU, support logic, memory and logic for handling the interfaces.

#### **4.2 DSP System**

The DSP system performs all baseband signal processing necessary for one TRX. For downlink, this includes Terrestrial Protocol Handling (TPH), encoding, ciphering and burst generation. For uplink it includes equalization, combining, decoding and TPH.

#### **4.3 Radio Control System**

The RC system is responsible for synchronizing and controlling the different parts of the radio, for modulation and D/A conversion of the data to transmit, for filtering the received radio signal with a channel selective filter and for compensating the RX and TX delay and gain variations.

The RC system is seen by the rest of the RBS as the front end to the radio, which can be asked to transmit a burst of data using a selected modulation, or asked to receive a burst using a selected digital filter.

All time critical radio control functions are performed by the RC system and no computing support is required from the CPU system on a real-time basis.

#### **4.4 Radio System**

Each radio system contains two radio receivers and one radio transmitter including power amplifiers.

The radio receiver receives RF modulated uplink data from one or two diversity branches and sends it to the RC system.

The radio transmitter generates the RF downlink signal from the modulated baseband signal. It then sends the RF signal to the power amplifier, which amplifies the downlink RF signals.

### **5 Interfaces**

The dTRU has the following external interfaces:

- CDU-TX control bus, IOM bus
- IOM bus, LEDs and buttons

- RX (front)
- TX (front)
- Y link

## 5.1 Signal and Power Interfaces

The Y link, CDU TX control bus, system voltage and connectors are located on the backplane.

## 5.2 Operator Interface

*Table 3 Indicators*

| Indicator   | Colour |
|-------------|--------|
| Fault       | Red    |
| Operational | Green  |
| RF off      | Yellow |
| Local mode  | Yellow |

*Table 4 Switches*

| Switch       | Function          |
|--------------|-------------------|
| TRU reset    | Resets the TRU    |
| Local/remote | Local/remote mode |

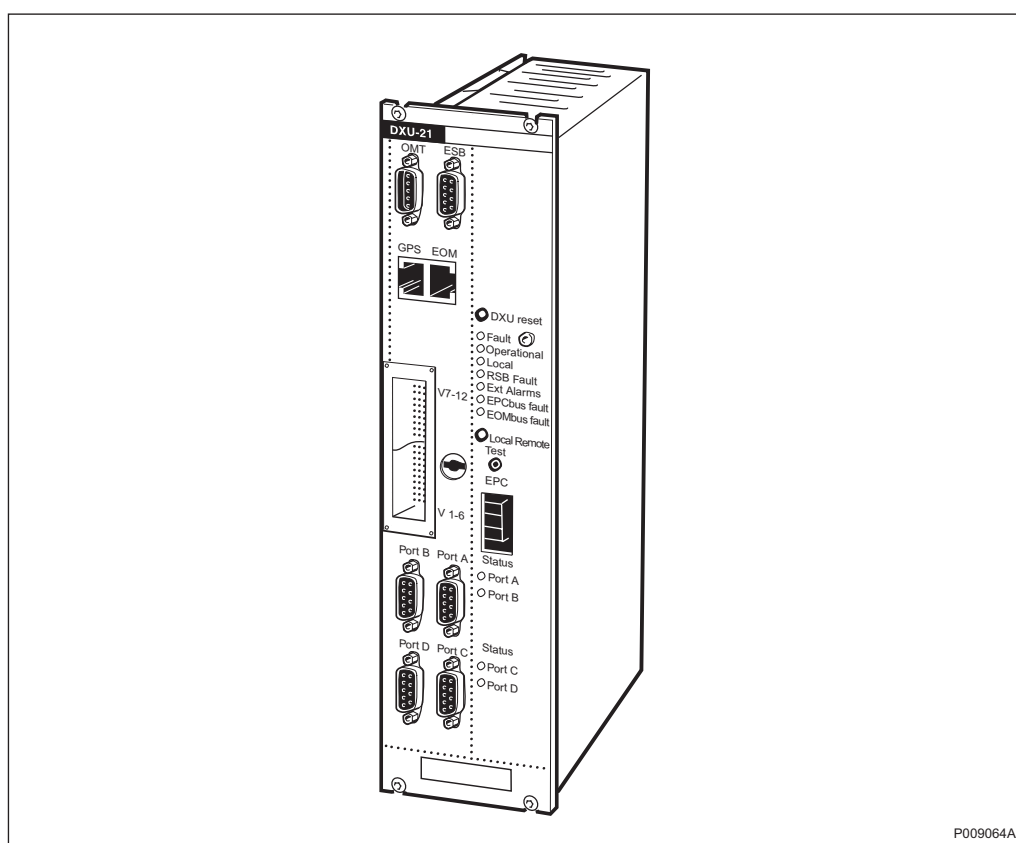
# DXU-21

Distribution Switch Unit

## Unit Description

EN/LZT 720 0244 R1A

The Distribution Switch Unit (DXU) is a CPU, which acts as an interface between the transmission network and the transceivers. It also extracts timing information from the PCM link and generates a timing reference for the RBS.



P009064A

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# 1 Product Overview

The DXU-21 is a CPU, which acts as an interface between the transmission network and the transceivers. It also extracts timing information from the PCM link and generates a timing reference for the RBS. The DXU also performs supervisory tasks.

The DXU-21 transmission interface has long-haul capability and can be run on both 1.544 Mbit/s (T1) and 2.048 Mbit/s (E1) PCM links.

## 1.1 Main Functions

The DXU serves as the Central Main CPU node and its main functions are:

- Provides the RBS with an interface to the transport network through four fixed E1/T1 transmission ports
- Handles incoming traffic, controls and supervises information and sends it to its destination within the RBS
- Provides frequency reference signals and timing signals for circuits within the RBS
- Stores and executes RBS SW stored on a removable flash card
- Controls the climate and power system

# 2 Dimensions

The DXU-21 has the following dimensions:

*Table 1 Size and weight*

| Height                      | Width                      | Depth  | Weight |
|-----------------------------|----------------------------|--------|--------|
| 227 mm<br>(6 HE x 44.45 mm) | 71 mm<br>(14 TE x 5.08 mm) | 240 mm | 2.4 kg |

# 3 Power Consumption and Heat Generation

*Table 2 Power consumption and heat generation*

| Max. Power Consumption | Max. Heat Generation |
|------------------------|----------------------|
| 40 W (typical 30 W)    | 40 W                 |

## 4 Function Description

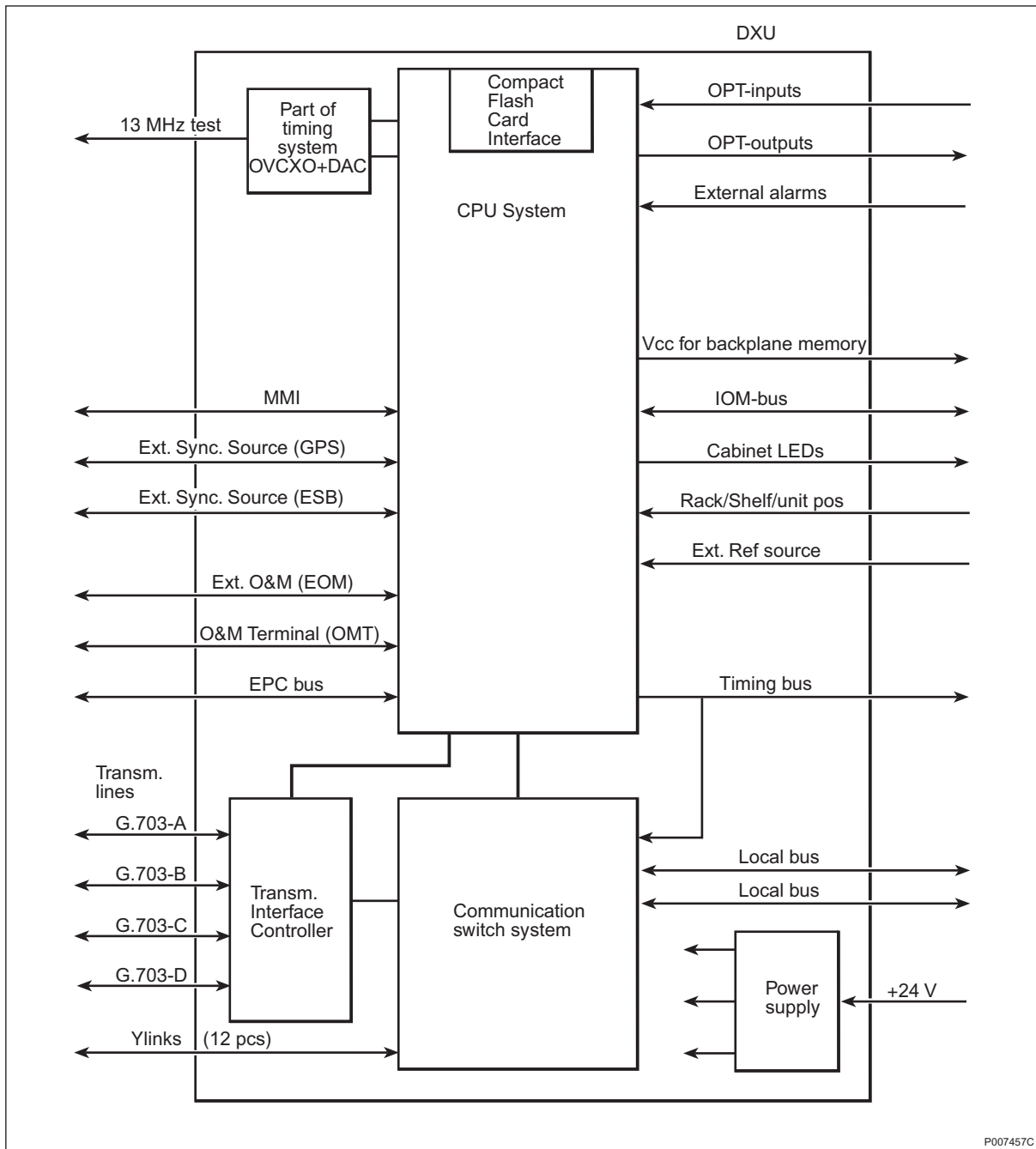


Figure 1 DXU-21, block diagram

Electrically, the DXU-21 consists of the following main blocks:

- CPU system
- Communication switch system
- Transmission interface controller
- Power supply
- Timing system
- Miscellaneous logic
- Compact Flash Card

#### **4.1 CPU System**

The heart of the DXU-21 is a 32-bit embedded controller with a PPC 405 processor core with interfaces to a wide range of peripherals.

The CPU system consists of:

- I<sup>2</sup>C controller
- Ethernet 10/100 Mbit/s (full-duplex) controller, MAC
- SDRAM memory
- FLASH memory
- ASIC GARP
- Compact Flash Card

#### **4.2 Communication Switch System**

This system block contains circuits that handle traffic between the BSC and the dTRUs.

#### **4.3 Transmission Interface Controller**

This part contains circuits for four transmission links and the transmission interface controller, which controls the traffic for all four transmission links.

The bit rate is SW controlled. Two speeds are available: E1 (2.048 Mbit/s) or T1 (1.544 Mbit/s).

#### **4.4 Power Supply**

The power supply delivers all the voltages necessary for the DXU-21. The input voltage, +24 V DC, is supplied through backplane connectors.

#### **4.5 Timing System**

The timing system is used for generating a 13 MHz clock signal.

#### **4.6 Miscellaneous Logic**

This function contains the following:

- System voltage measurement
- Temperature measurement
- Power on reset

#### **4.7 Compact Flash Card**

The removable Compact Flash Card permits quick and easy change of the SW and IDB in the DXU.

### **5 Interfaces**

#### **5.1 Signal and Power Interfaces**

##### **G.703 Interface**

The four G.703 interfaces are connected to the BSC (Protocol GSM-Abis) or to cascaded base stations. In cascade mode, this interface can control an external bypass relay. Unused time slots can be through-connected to a successive base station. The communication speed in E1 interfaces is 2 Mbit/s and in T1, 1.5 Mbit/s.

##### **External Alarm Inputs**

Through this interface it is possible to connect up to 15 binary alarms (16 including one dedicated alarm). This interface is found on the upper backplane connector.

The equipment connected to the terminals should be insulated relay contacts. A closed contact (logic zero) is required to be below 2 k $\Omega$ , and an open contact (logic one) is required to be above 100 k $\Omega$ .

The current through a closed 0 contact is 1.2 mA.

The alarm contacts connected to the external alarm inputs should be insulated and have a current range above 1.2 mA. The voltage between terminals with an open contact is +24 V DC.

### **Local Bus**

The local bus is a time slot and multidrop bus, where the DXU-21 is the master of the bus. Two identical local buses are implemented, with common frame synchronization and clock signals. The interface is accessed through the lower backplane connector. The local bus is used for TRUs and sTRUs.

### **Timing Bus**

This interface is used for distribution of timing information to the TRUs through the backplane. The interface is accessed through the lower backplane connector. The timing bus is only used for TRUs.

### **External Sync. (Freq. Ref.)**

This interface is used for connecting an external frequency reference. It uses a generic synchronization port for the synchronization information.

### **Optional Output**

This interface enables control of up to eight devices, which can be of various types. These outputs are accessed through the upper backplane connector.

### **Optional Input**

This interface enables connection of up to eight internal cabinet signals, such as alarms. These inputs are accessed through the upper backplane connector.

### **IOM Bus**

This interface consists of three individual I<sup>2</sup>C ports. It is used to communicate with the CDU, CXU and cabinet ID.

An I<sup>2</sup>C bus is reserved for reading a memory device which identifies the source for the system.

The interface is accessed through the lower backplane connector.

### **Y Links**

This interface is used for communication with the dTRUs and sTRUs. The Y interface consists of 12 separate Y links.

The Y links are accessed through connectors located on the front of the DXU.

### **EPC Bus (Optical Cable)**

This interface is used for communication with the power supply equipment in the RBS, such as PSUs and BFU.

The optical communication interface is accessible through connectors located on the front of the DXU. The connectors are marked "EPC".

### **External Sync. (GPS/LMU)**

This interface is used for interfacing an external sync./frequency source, such as GPS. It is accessed through a connector of type 8-pin RJ-45, located on the front of the DXU. The connector is marked "GPS".

### **GPS/LMU**

This interface is identical to the serial line used in the interface "External sync. 1".

It is possible to use this interface from the backplane together with the interface "External sync. 0", as an alternative to the GPS interface.

This interface is accessed through the lower backplane connector.

### **External O&M (EOM)**

The EOM bus is designed as a standard Ethernet port and is intended for a site-LAN to communicate with other units on the site. Both half-duplex and full-duplex operation at 10 Mbps and 100 Mbps operation are supported.

The EOM bus is accessed through a connector located on the front of the DXU marked "EOM". The connector is of type 8-pin RJ-45.

## ESB

This interface is used to synchronize several transceiver groups in the same cell, for example when one cell is built up by more than one RBS, or one cell is split between two RBSs.

**Note:** A master-slave configuration, as in RBS 2202, is regarded as one transceiver group.

The interface is accessed on the front of the DXU through a D-sub 9-pin male connector marked "ESB".

## 5.2 Operator Interface

### OMT

The OMT port is used to communicate with the Operation and Maintenance Terminal.

The OMT is connected through a 9-pin D-sub female connector.

The OMT connection is galvanically separated. All signals use RS 232 levels.

*Table 3 The OMT connector pins and their functions*

| Pin | Function                                   |
|-----|--------------------------------------------|
| 1   | DCD, looped from DTR (pin 4)               |
| 2   | RXD, data out of DXU                       |
| 3   | TXD, data into DXU                         |
| 4   | DTR, looped to DCD (pin 1) and DSR (pin 6) |
| 5   | Signal ground                              |
| 6   | DSR, looped from DTR (pin 4)               |
| 7   | RTS, looped to CTS (pin 8)                 |
| 8   | CTS, looped from RTS (pin 7)               |
| 9   | RI not connected                           |

**Note:** The connector is configured as a DCE, and thus should be connected to an IBM PC style DTE (such as a computer) with a straight cable.

### Test Interface

This interface is used for test purposes only. It consists of a buffered version of the 13 MHz signal from the OVCXO. The signal is sinusoidal shaped and is suited for a coaxial cable load of 50  $\Omega$ .

The test interface has an SMB connector.

## Indicators and Buttons

There are 11 indicators located on the front panel (as shown in the table below) and two buttons for DXU Reset and Local/remote.

*Table 4 Indicators*

| Indicator                         | Colour        |
|-----------------------------------|---------------|
| Fault                             | Red           |
| Operational                       | Green         |
| Transmission OK (port A, B, C, D) | Green (4 pcs) |
| Local                             | Yellow        |
| RBS fault                         | Yellow        |
| External alarm                    | Yellow        |
| EPC bus fault                     | Yellow        |
| EOM bus fault                     | Yellow        |

*Table 5 Switches*

| Switch       | Function               |
|--------------|------------------------|
| DXU reset    | Resets the DXU         |
| Local remote | Sets local/remote mode |

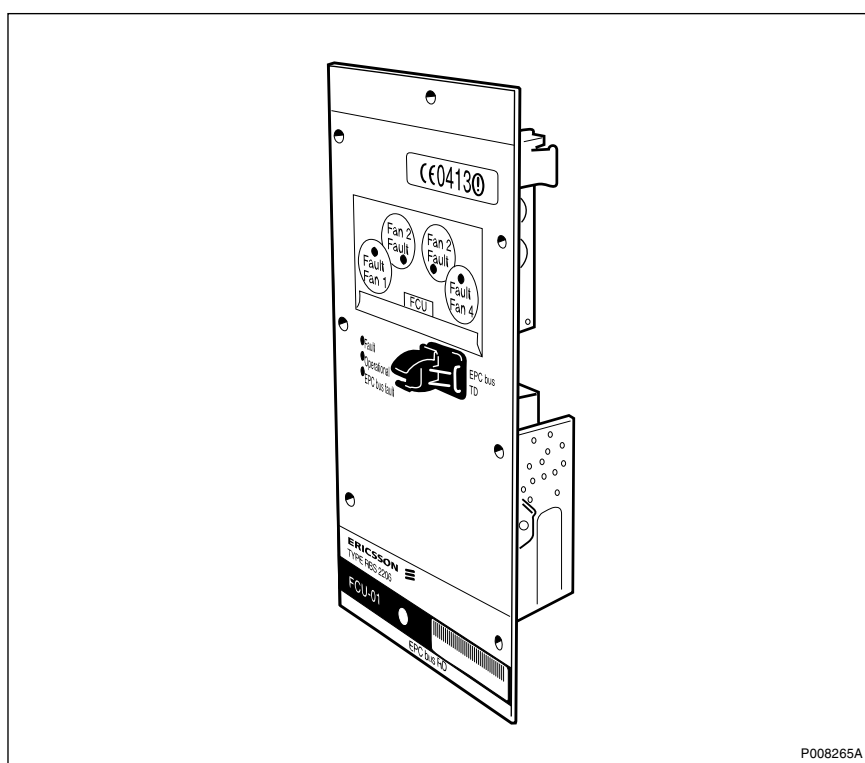
# FCU-01

Fan Control Unit

## Unit Description

EN/LZT 720 0246 R1A

The Fan Control Unit (FCU) controls and supervises the fans in the RBS 2206. It has indicators that show fan status information.



## Contents

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# 1 Product Overview

The Fan Control Unit (FCU) controls and supervises the fans in an RBS cabinet.

## 1.1 Main Functions

The FCU-01 has the following main functions:

- Controls and supervises fans
- Generates alarm
- MMI for the fans

# 2 Dimensions

The FCU-01 has the following physical characteristics:

*Table 1 Size and weight*

| Height | Width | Depth | Weight |
|--------|-------|-------|--------|
| 195 mm | 98 mm | 45 mm | 0.5 kg |

# 3 Function Description

The FCU receives information on the EPC bus about the required DC voltage level for each fan. It feeds each fan with the required DC voltage level. If no DC level is received, the DC level for the fans will be equal to the FCU input voltage, minus a maximum voltage drop of 0.7 V.

If the normally closed circuit in the fan is opened, the indicator "Fan fault" for that fan is illuminated, and an alarm is sent through the EPC bus.

The FCU compares the DC level for each fan with the required DC level. If these do not match, the indicator "FCU fault" is illuminated, and an alarm is sent through the EPC-bus.

If the communication on the bus no longer is defined, the indicator "EPC bus fault" is illuminated, and an alarm is sent through the EPC bus to the DXU.

## 4 Interface

The FCU has the following interfaces:

- Power in
- EPC bus in
- EPC bus out
- Fan power and alarm (1 – 4)

### 4.1 Signal and Power Interface

The tables below show input and output data.

*Table 2 Input data*

|                                |                    |
|--------------------------------|--------------------|
| <b>Nominal input voltage</b>   | +24.0 V DC         |
| <b>Input voltage Range</b>     | +19.0 – +29.0 V DC |
| <b>Non destructive voltage</b> | 0.9 – +32.0 V DC   |
| <b>Input power</b>             | 4 x 45 W           |

*Table 3 Output data*

|                       |                            |
|-----------------------|----------------------------|
| <b>Output voltage</b> | 9 – 28.3 V DC              |
| <b>Output Current</b> | Min 1.8 A at 9 – 28.3 V DC |

### 4.2 Operator Interface

There is one alarm signal for each fan. The alarm circuit is normally closed.

An open circuit indicates that the fan speed is too low. The fan has an open collector interface.

*Table 4 No alarm*

|                                           |                       |
|-------------------------------------------|-----------------------|
| <b>Alarm pos. <math>U_{pos}</math></b>    | 5 – 30 V DC           |
| <b>Alarm neg. <math>U_{neg}</math></b>    | $<U_{pos} - 2.4$ V DC |
| <b>Current <math>I_{no\_alarm}</math></b> | 5 – 20 mA             |

*Table 5 Alarm*

|                                               |             |
|-----------------------------------------------|-------------|
| <b>Alarm pos. <math>U_{\text{pos}}</math></b> | 5 – 30 V DC |
| <b>Alarm neg. <math>U_{\text{neg}}</math></b> | < 2 V DC    |
| <b>Current <math>I_{\text{alarm}}</math></b>  | < 5 mA      |

## Indicators

*Table 6 Indicators*

| <b>Indicator</b> | <b>Colour</b> |
|------------------|---------------|
| Fault            | Red           |
| Operational      | Green         |
| EPC bus fault    | Yellow        |
| Fan 1 fault      | Red           |
| Fan 2 fault      | Red           |
| Fan 3 fault      | Red           |
| Fan 4 fault      | Red           |

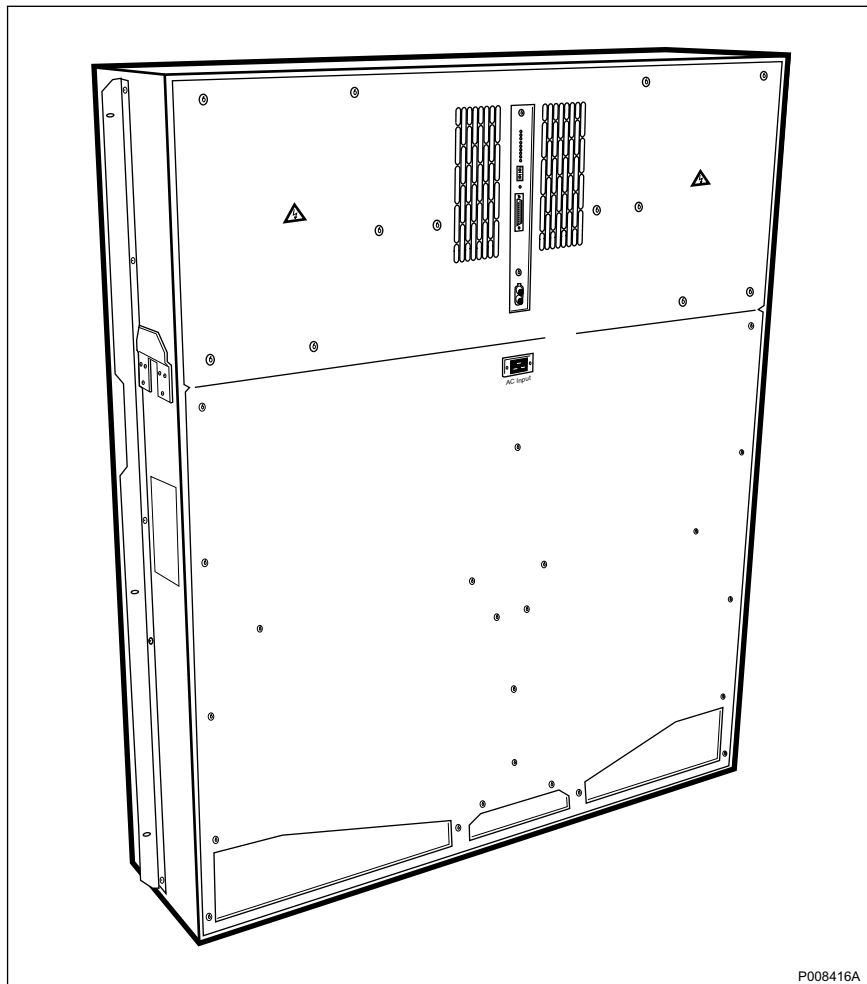


# Heat Exchanger Climate Unit

## Climate Unit for RBS 2106

### Description

The Heat Exchanger Climate Unit provides the RBS 2106 with cooling or heating to keep the operating temperature within specified limits. The unit contains a heat exchanger, a heater, air-ducts and fans.



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# 1 Product Overview

The Heat Exchanger Climate Unit provides the RBS 2106 with cooling or heating to keep the operating temperature within specified limits. The unit contains a heat exchanger, a heater, air-ducts and fans.

## 1.1 Main Functions

The Heat Exchanger Climate Unit maintains the cabinet operating temperature within specified limits by heating or cooling.

# 2 Dimensions

The Heat Exchanger Climate Unit has the following dimensions:

*Table 1 Size and weight*

| Height  | Width   | Depth  | Weight |
|---------|---------|--------|--------|
| 1250 mm | 1050 mm | 250 mm | 97 kg  |

# 3 Power Consumption

Power consumption information for the Heat Exchanger Climate Unit is shown in the table below.

*Table 2 Power consumption*

| Max AC power consumption | Max DC power consumption |
|--------------------------|--------------------------|
| 2100 W (at 230 V 50 Hz)  | 650 W                    |

## 4 Function Description

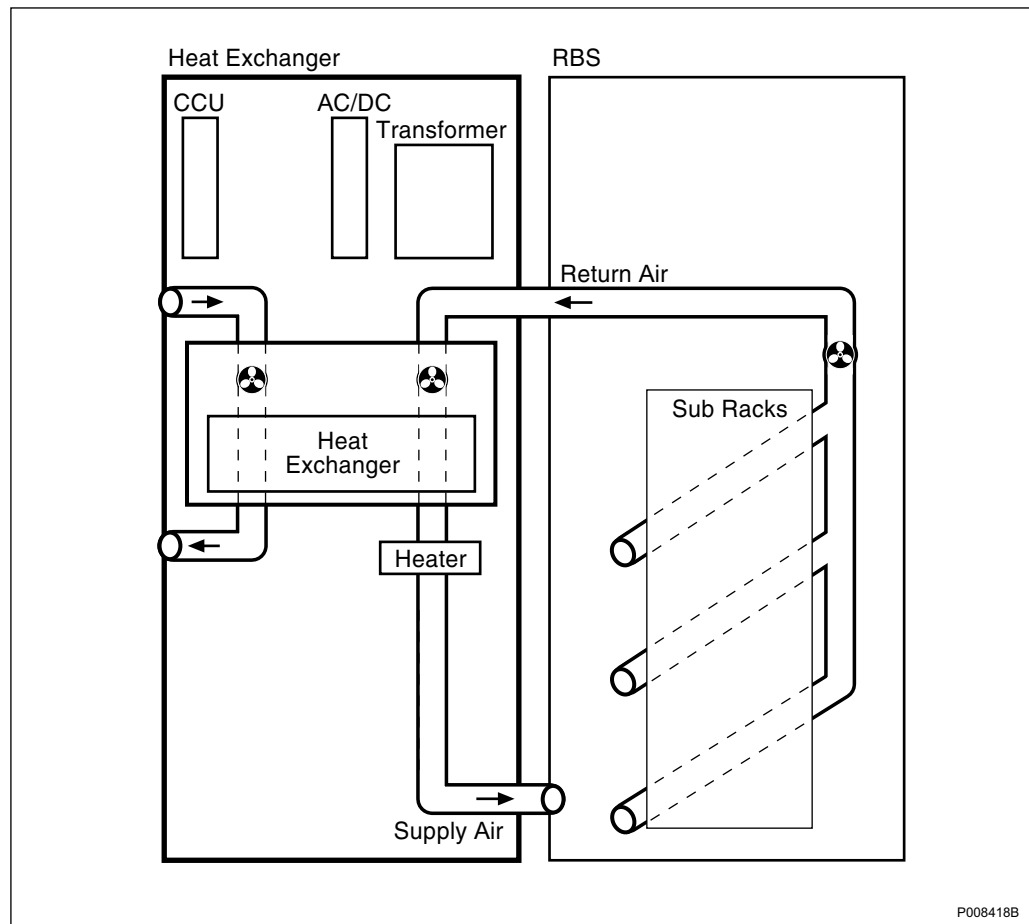


Figure 1 Block diagram

The Heat Exchanger Climate Unit consists of the following units:

- Heat Exchanger
- Heater
- Climate Control Unit (CCU)
- AC/DC Converter
- Transformer

### 4.1 Heat Exchanger

The heat exchanger consists of a cross-flow heat exchanger and internal and external air circuit fans.

Outside (ambient) air is forced through one side of the heat exchanger by DC-powered fans. There it cools the inside air which circulates through the other side of the heat exchanger.

Because ambient air is used on the 'cool' side of the heat exchanger, cooling capacity is limited to the temperature outside the cabinet. If the ambient temperature is higher than the cabinet return air temperature, the external air circulation fan will stop to prevent the outside air warming the cabinet.

## **4.2 Heater**

The heater is placed in the internal air circuit. It operates at cold start-up, heating the inside air when the temperature inside the cabinet is below +5°C. The heater is not normally at any point other than cold start-up.

The heater is powered by AC mains voltage and is controlled by the Climate Control Unit. Its two heating coils have a total capacity of 2 kW.

## **4.3 Climate Control Unit**

The Climate Control Unit (CCU) is a processor-based plug-in unit, controlling and supervising the climate unit. The CCU provides the following main functions:

- Monitors internal and external temperatures
- Monitors and controls the internal and external fans
- Monitors and controls the compressor
- Monitors and controls the condensor fan
- Monitors and controls the heater
- Handles alarms
- Supervises Mains Voltage
- Tests the Heat Exchanger Climate Unit

### **Parameters**

The CCU has a set of default operating parameters, which can be overridden by loaded parameters. These are sent to the CCU through the EPC-bus. Parameters which can be changed are the following:

- Temperature range for linear speed control of internal fan
- Temperature range for linear speed control of external fan
- Temperature range for heater on and off

## **Backplane and Front Panel**

The backplane connectors contain the climate unit internal interfaces to DC power, AC power, fans, temperature sensors, and so on.

The front panel contains indicators, connectors for the EPC bus and for test and control.

### **4.4 AC/DC Converter**

The AC/DC converter is used when +24 V DC supply is shut off. It changes the mains voltage to +24 V DC, to supply the internal air circuit fan, the external circuit fan in the heat exchanger, and the CCU.

### **4.5 Autotransformer**

The transformer converts different AC mains input voltages to 230 V AC for feeding the heater, the AC/DC converter and fans.

The transformer has windings for mains input voltages of 200, 208, 230, 240 and 250 V AC. The mains voltage is selected with the Voltage Selector Switch.

Connection to 120 V AC is made between phases with 208 V AC selected. Other voltages are connected between phase and neutral.

## **5 Interfaces**

### **5.1 Signal and Power**

The Heat Exchanger Climate Unit has the following external interfaces:

- DC power
- AC mains power
- EPC bus (on the CCU)
- Test and general signals (25-pole D-sub on the CCU)

## 5.2 Operator Interface

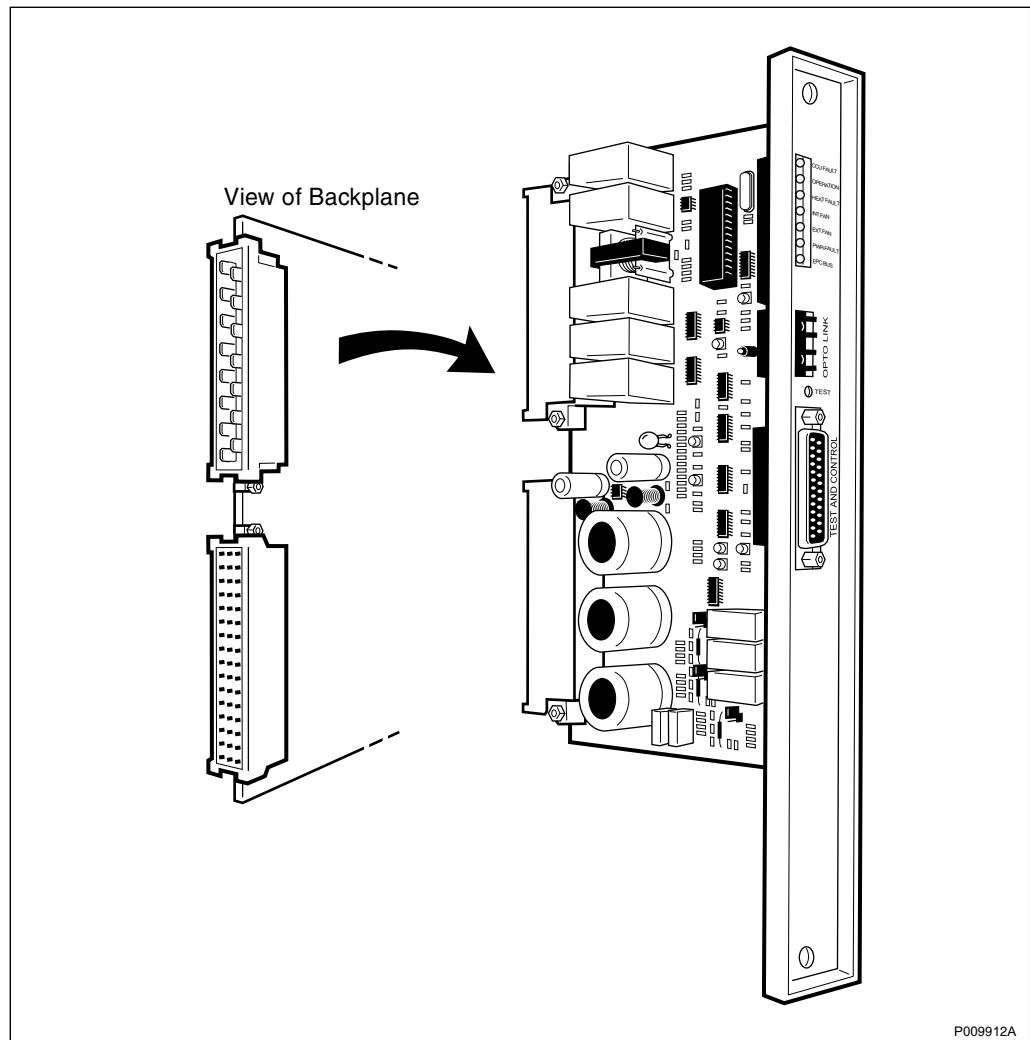


Figure 2 CCU

The CCU front panel has the following MMI interfaces:

- Test and general signals connector
- EPC bus connectors
- Test button
- Indicators

### Test and Control Connector

The test and general signals connector is a 25-pole D-sub connector.

## Indicators

*Table 3 CCU front panel indicators*

| Indicator  | Description                       | Colour |
|------------|-----------------------------------|--------|
| CCU FAULT  | Fault                             | Red    |
| OPERATION  | Operational                       | Green  |
| EPC BUS    | EPC-bus fault                     | Yellow |
| HEAT FAULT | Heater fault                      | Yellow |
| HE.INT.FAN | Heat exchanger internal fan fault | Yellow |
| HE.EXT.FAN | Heat exchanger external fan fault | Yellow |
| PWR. FAULT | Power fault                       | Yellow |

## EPC-bus Connectors

The EPC-bus is an optical communication bus used for RBS communication.

*Table 4 EPC-bus connectors*

| Connector | Function |
|-----------|----------|
| TD        | Transmit |
| RD        | Receive  |

## Test button

The test button on the front panel of the CCU activates the test function. After the test has been completed, the indicators will present the status for two minutes. No alarm is sent if there is a malfunction.

The total test time is approximately 6.5 minutes. During that time, the following are checked:

- External fan
- Internal fan
- Heater active
- Normal operation/failure information from the indicators

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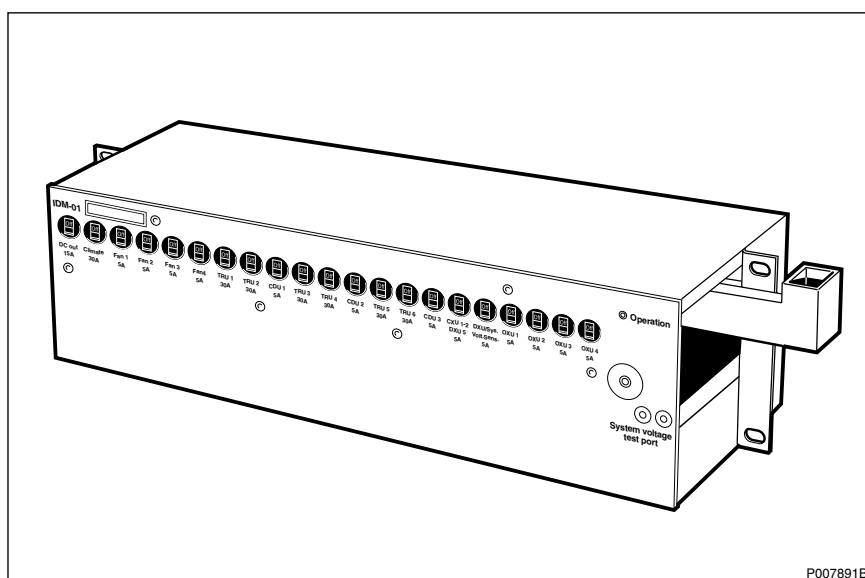
# IDM

Internal Distribution Module

## Unit Description

EN/LZT 720 0247 R1A

The Distribution Module (IDM) distributes +24 V DC to all DC powered units in the RBS.



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# 1 Product Overview

The Internal Distribution Module distributes +24 V DC to all DC powered units in the RBS. Distribution circuits are protected by circuit breakers.

## 1.1 Main Functions

The IDM consists of a unit with 21 circuit breakers, four PSU cables and connectors to the different DC powered units.

# 2 Dimensions

The IDM has the following dimensions:

*Table 1 Dimensions*

| Height | Width  | Depth | Weight |
|--------|--------|-------|--------|
| 133 mm | 483 mm | 80 mm | 5 kg   |

# 3 Function Description

The IDM has the following external interfaces:

- Four PSU cables
- Battery connection (positive)
- Battery connection (negative) and earth connection
- System voltage test port
- ESD wrist-strap connector
- Power distribution connectors (*see table below*)

## 4 Interface

### 4.1 Signal and Power Interface

#### Input Data

*Table 2 Input data*

|                                    |                    |
|------------------------------------|--------------------|
| <b>Nominal input voltage range</b> | 24 V DC            |
| <b>Input voltage</b>               | +20.0 – +29.0 V DC |
| <b>Non-destructive range</b>       | 0.0 – +32.0 V DC   |
| <b>Input power</b>                 | 4800 W             |

#### Output Data

Maximum voltage drop from the input to the output of the IDM is 0.3 V DC.

*Table 3 Circuit breaker capacity*

| <b>Circuit breaker</b> | <b>Capacity</b> | <b>Quantity</b> |
|------------------------|-----------------|-----------------|
| CXU 1 – 2, OXU 5       | 5A              | 1               |
| Fan 1 – 4              | 5A              | 4               |
| OXU 1 – 4              | 5A              | 4               |
| DXU                    | 5A              | 1               |
| CDU 1 – 3              | 5A              | 3               |
| DC out                 | 15A             | 1               |
| TRU 1 – 6              | 30A             | 6               |
| Climate unit           | 30A             | 1               |

## Power Distribution Connectors

*Table 6 Connectors*

| Connector | Function                            |
|-----------|-------------------------------------|
| P3        | DC out                              |
| P4        | Climate unit                        |
| P5        | Fan 1 – 4                           |
| P6        | TRU 1                               |
| P7        | TRU 2                               |
| P8        | CDU 1                               |
| P9        | TRU 3                               |
| P10       | TRU 4                               |
| P11       | CDU 2                               |
| P12       | TRU 5                               |
| P13       | TRU 6                               |
| P14       | CDU 3                               |
| P15       | CXU 1                               |
| P16       | CXU 2                               |
| P17       | OXU 5                               |
| P18       | DXU/System voltage sensor/OXU 1 – 4 |
| P19       | Test connector                      |
| P20       | Indicator                           |

## 4.2 Operator Interface

### Indicator

*Table 7 Indicator*

| Indicator   | Colour |
|-------------|--------|
| Operational | Green  |



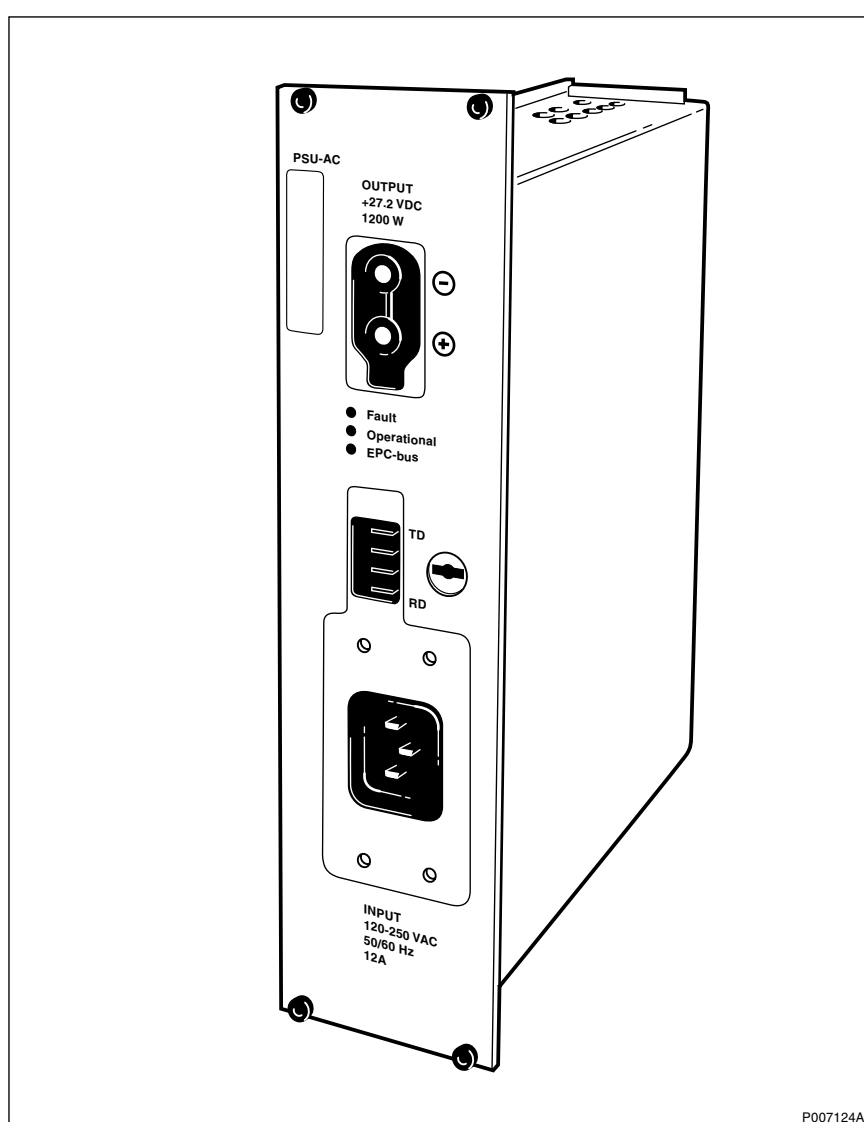
# PSU AC

Power Supply Unit

## Unit Description

EN/LZT 123 0249 R1A

The Power Supply Unit (PSUs) constantly regulate and deliver 1200 W power over the whole output range from 22 to 29 V DC.



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# 1 Product Overview

The PSU rectifies the incoming AC power to the regulated DC voltage required.

## 1.1 Main Functions

The PSU AC does the following:

- Communicates with the DXU
- Handles alarms
- Adjusts voltage
- Provides power limitation

## 1.2 Variants

PSU 1200 W is available in two versions: PSU 230 AC and PSU -48 DC.

# 2 Dimensions

The PSU AC has the following physical characteristics.

*Table 1 PSU AC dimensions*

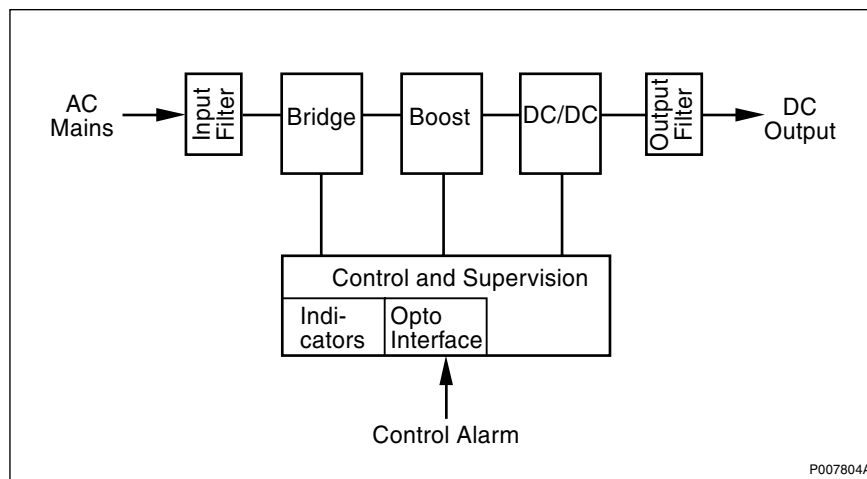
| Height | Width | Depth  | Weight |
|--------|-------|--------|--------|
| 262 mm | 61 mm | 225 mm | 3.3 kg |

# 3 Power Consumption and Heat Generation

*Table 2 Power consumption and heat generation*

| Max power consumption | Max heat generation |
|-----------------------|---------------------|
| 1446 V A              | 246 W               |

## 4 Function Description



The PSU AC consists of the following main units:

- Input filter (EMC filter)
- Bridge
- Boost converter
- DC/DC converter
- Output filter (EMC filter)
- Control and supervision circuits

### 4.1 Input filter (EMC filter)

The incoming sine voltage first passes through an internal fuse and then the input filter, where it is filtered to prevent unwanted signals from being radiated from the PSU.

### 4.2 Bridge

The bridge rectifies the incoming AC.

### 4.3 Boost converter

The boost converter draws a sinusoidal input current in phase with the input voltage, enabling the power supply to have a high power factor and low distribution on input current. The output from the boost converter is 400 V DC.

#### **4.4 DC/DC converter**

The DC/DC Converter is a phase-shifted, soft-switched, full-bridge converter that converts the incoming 400 V DC to 24 V DC output voltage.

The output provides constant power regulation, rather than the more common current limited, and delivers 1200 W over the whole output range from 22 to 29 V DC.

#### **4.5 Output filter (EMC filter)**

The output voltage is filtered to prevent unwanted signals from being radiated from the PSU.

#### **4.6 Control and supervision circuits**

The control and supervision circuits support:

- Load sharing between parallel units
- Remote on/off
- Alarms

The output voltage can be adjusted between 22 to 29 V DC. The control and supervision is achieved through an optical signal interface connector on the front of the PSU.

## 5 Interfaces

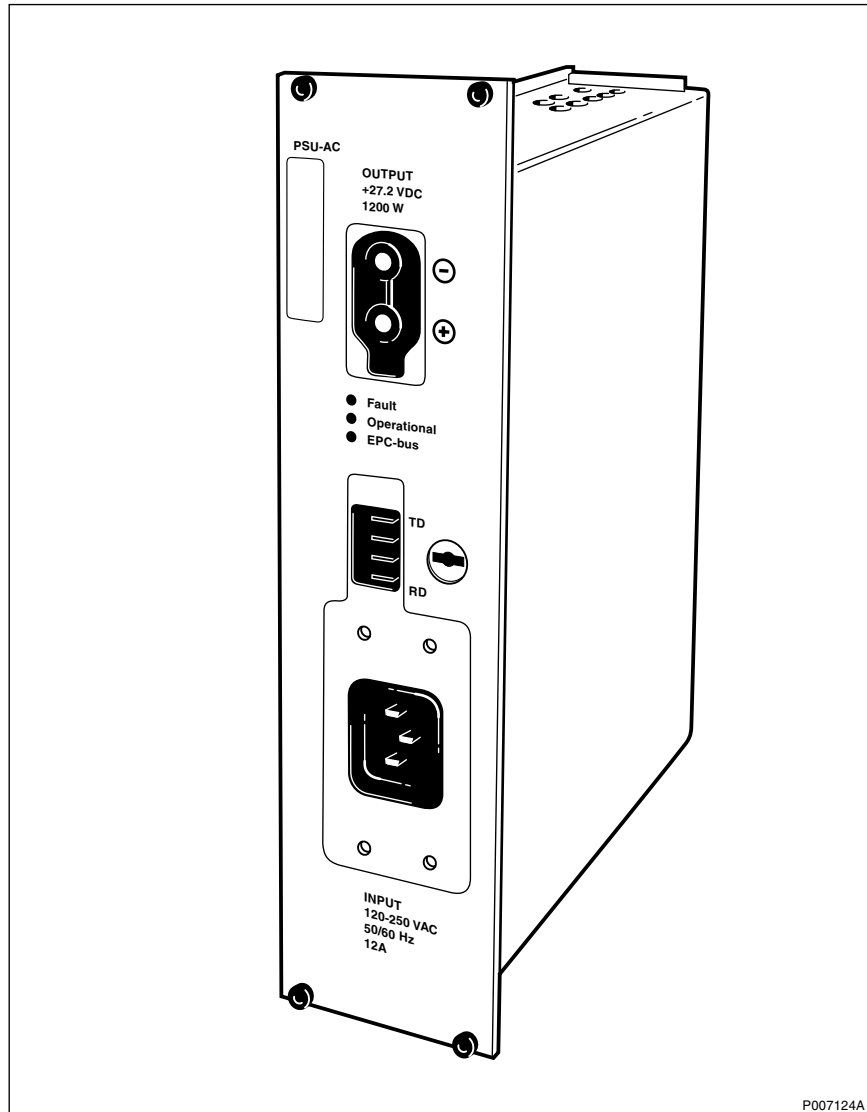


Figure 1 Interfaces

## 5.1 Signal and Power Interfaces

### Input Data

Table 3 Input data

|                                |                                                       |
|--------------------------------|-------------------------------------------------------|
| <b>Nominal input voltage</b>   | 120 to 250 V AC <sup>(1)</sup>                        |
| <b>Variation input voltage</b> | 108 <sup>(1)</sup> to 275 V AC                        |
| <b>Frequency</b>               | 45 – 65 Hz                                            |
| <b>Current</b>                 | < 8A at 180 – 275 V AC)<br>< 12 A (at 108 – 140 V AC) |
| <b>Inrush current</b>          | < 30 A peak                                           |
| <b>Internal fuse</b>           | 15 A (slow)                                           |
| <b>Efficiency</b>              | >83%                                                  |
| <b>Power factor</b>            | cos $\phi$ > 0.95                                     |
| <b>Non-destructive voltage</b> | 0 – 300 V AC                                          |
| <b>Pulses &lt; 20 ms</b>       | 300 V AC                                              |

(1) Not all base stations are prepared for 250 V AC

### Output Data

Table 4 Output data

|                                    |                                                     |
|------------------------------------|-----------------------------------------------------|
| <b>Nominal output data</b>         | +24 V DC                                            |
| <b>Present output voltage</b>      | +27.2 $\pm$ 0.1 V DC                                |
| <b>Voltage range</b>               | +22.0 to +29.0 V DC                                 |
| <b>Output power (108 – 275 V)</b>  | 1200 W                                              |
| <b>Output power (90 – 108 V)</b>   | 1000 W                                              |
| <b>Output current at 27.2 V DC</b> | 36.8 A at 90 – 108 V AC<br>44.1 A at 108 – 275 V AC |

**Note:** The PSU AC does not have any backplane connections.

## Indicators

*Table 5 Indicators*

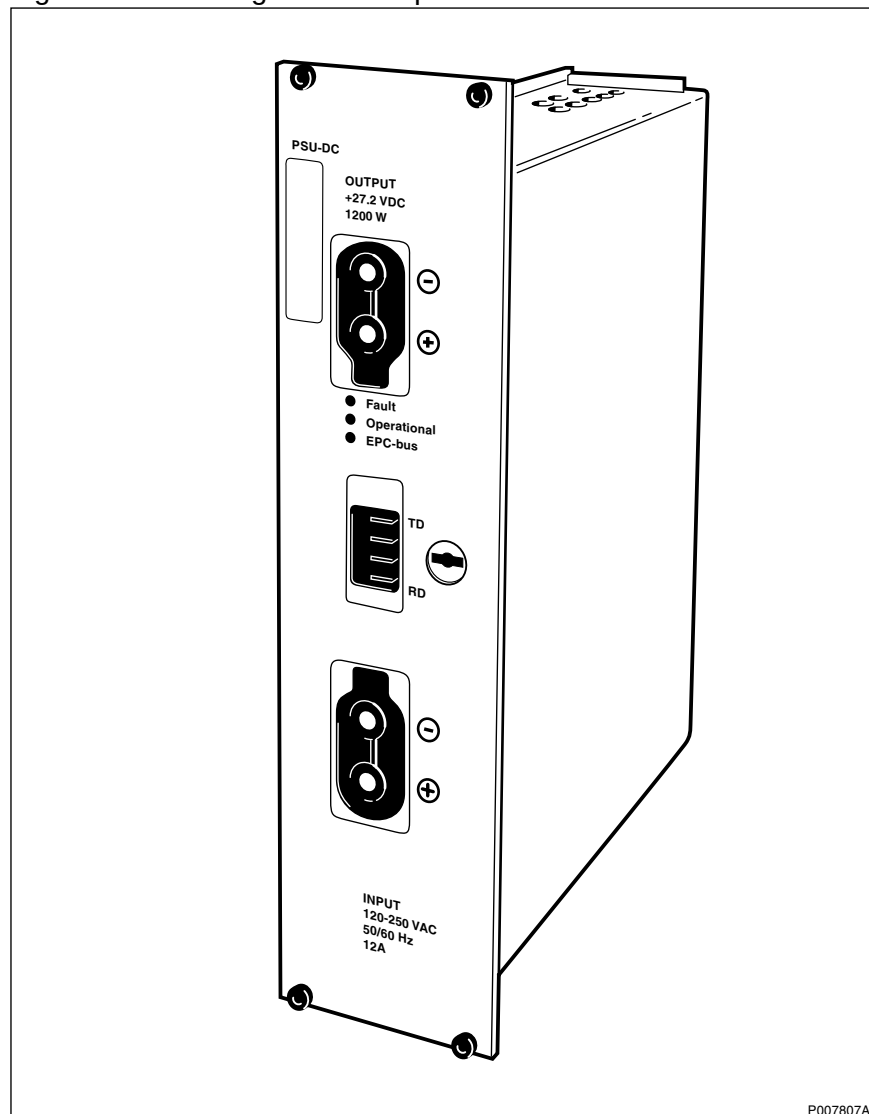
| <b>Indication</b> | <b>Colour</b> |
|-------------------|---------------|
| Fault             | Red           |
| Operational       | Green         |
| EPC Bus Fault     | Yellow        |

# PSU DC

## Power Supply Unit

### Description

The PSU DC converts incoming voltage ranging from -39 V to -72 V DC to the regulated DC voltage that is required.



## Contents

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# 1 Product Overview

The PSU DC converts incoming voltage ranging from -39 V to -72 V DC to the regulated DC voltage that is required.

## 1.1 Main functions

The PSU DC has the following functions:

- Communication
- Handles alarms
- Adjusts voltage
- Provides power limitation

# 2 Dimensions

*Table 1 PSU DC Dimensions*

| Height | Width | Depth  | Weight |
|--------|-------|--------|--------|
| 262 mm | 61 mm | 225 mm | 3.1 kg |

# 3 Power Consumption and Heat Generation

*Table 2 Power consumption and heat generation*

| Max power consumption | Max heat generation |
|-----------------------|---------------------|
| 1411 W                | 211 W               |

## 4 FunctionDescription

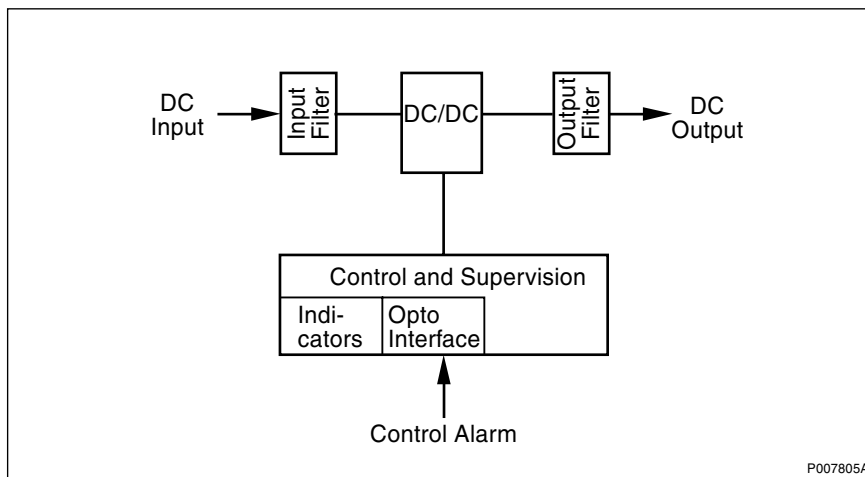


*Figure 1 PSU –DC block diagram*

The PSU DC consists of the following main units:

- Input filter (EMC filter)
- DC/DC Converter
- Output filter (EMC filter)
- Control and supervision circuits

### 4.1 Input filter

The incoming voltage passes through the input filter first, where it is filtered to prevent unwanted signals from being radiated from the PSU.

### 4.2 DC/DC Converter

The DC/DC converter is a phase-shifted, full-bridge converter that converts the DC into a square wave. This is then fed into the primary side of the transformer. The converter limits the current in case of overload.

In the transformer, the voltage is converted to a 24 V AC square wave, and this wave is rectified to DC through a diode rectifier.

The output provides constant power regulation, rather than the more common current limited, and delivers 1200 W over the whole output voltage range from 22 to 29 V DC.

### 4.3 Output filter (EMC filter)

The output filter filters the output voltage to prevent unwanted signals from being radiated from the PSU.

### 4.4 Control and supervision circuits

The control and supervision circuits support:

- Load sharing between parallel units
- Remote on/off
- Alarms

The output voltage can be adjusted between 22 V to 29 V DC. The control and supervision is achieved through an optical signal interface connector on the front of the PSU.

## 5 Interface

### 5.1 Signal and Power Interface

#### Input Data

Table 3 Input data

|                                          |                    |
|------------------------------------------|--------------------|
| <b>Nominal input voltage</b>             | (-48) – (-60) V DC |
| <b>Permitted Variation input voltage</b> | (-39) – (-72) V DC |
| <b>Input current</b>                     | < 36 A             |
| <b>Inrush current</b>                    | < 200 A            |
| <b>Efficiency</b>                        | > 85%              |
| <b>Non-destructive voltage</b>           | 0 – (-75) V DC     |

## Output Data

*Table 4 Output data*

|                                        |                  |
|----------------------------------------|------------------|
| <b>Nominal output voltage</b>          | +24 V DC         |
| <b>Factory set value</b>               | +27.2 ± 0.1 V DC |
| <b>Voltage range</b>                   | 22.0 – 29.0 V DC |
| <b>Output power</b>                    | 1200 W           |
| <b>Output current at 27.2</b>          | 44.1 A           |
| <b>Output current at short circuit</b> | < 60 A           |

## 5.2

### Operator Interface

The PSU has the following interfaces, all located on the front panel:

- Power supply AC
- Power control bus (opto)

### Indicators

*Table 5 PSU DC Indicators*

| <b>Indication</b> | <b>Colour</b> |
|-------------------|---------------|
| Fault             | Red           |
| Operational       | Green         |
| EPC Bus           | Yellow        |

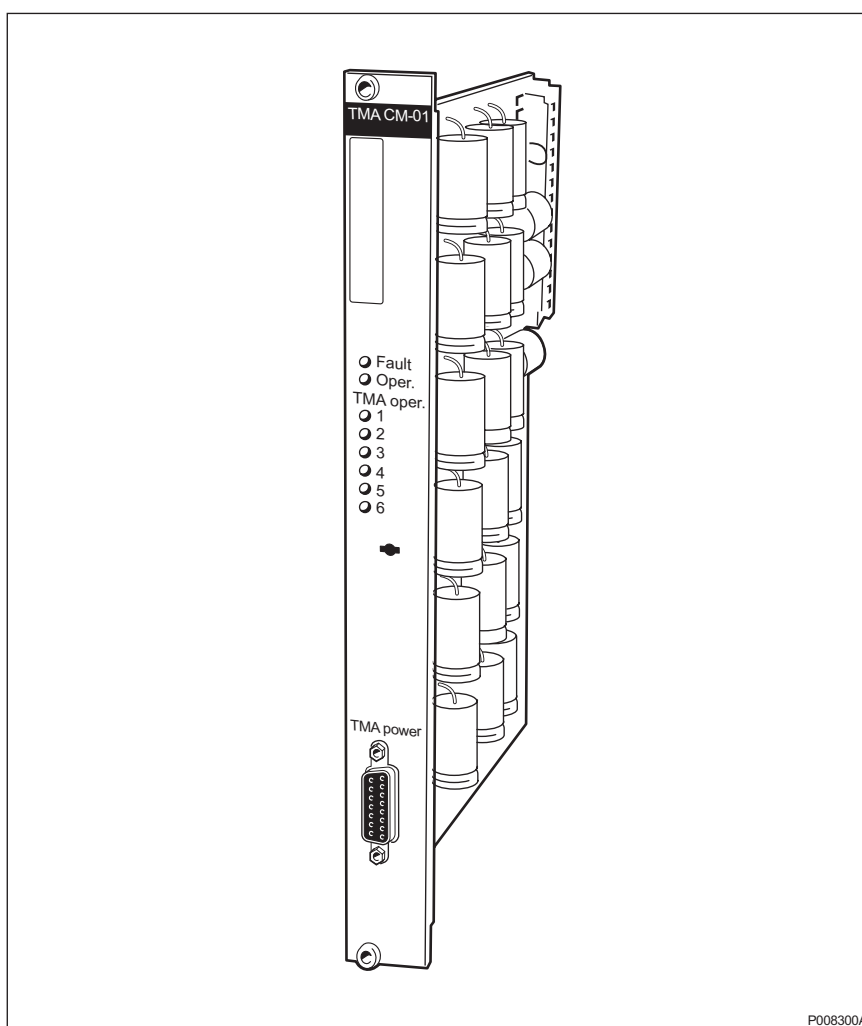
# TMA-CM

Tower Mounted Amplifier - Control Module

## Unit Description

EN/LZT 720 0250 R1A

The Tower Mounted Amplifier Control Module (TMA-CM), together with the bias injectors, supply power to the TMA. It also monitors and controls the TMAs.



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| 3.1      | Signal and Power Interface  | 5        |
| 3.2      | Operator Interface          | 5        |

# 1 Product Overview

## 1.1 Main Functions

The TMA-CM has the following functions:

- Supplies power to the TMAs through bias injectors
- Monitors the TMAs
- Controls the TMAs
- Supplies power for up to six TMAs
- Controls TMA (on/off)
- Measures DC and voltage
- Supervises indicators
- Provides short circuit protection
- Supervises cables

## 2 Function Description

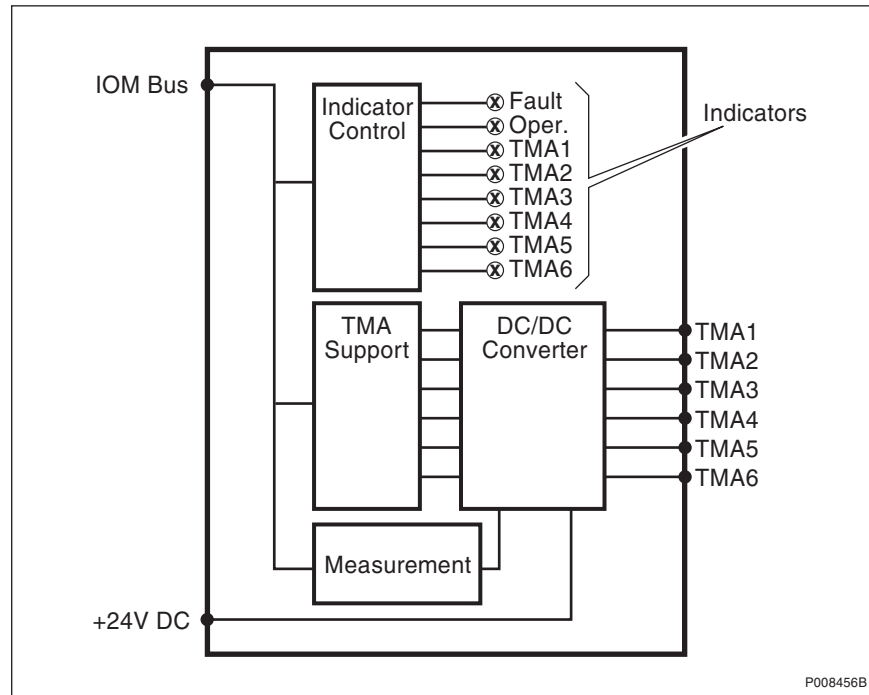


*Figure 1 Block diagram*

The TMA-CM supplies up to six TMAs with 15 V DC and maximum 500 mA to each TMA. The power output is a 15-pole d-sub connector on the front of the TMA-CM. A TMA consumes in general 70 – 200 mA.

The TMAs can be individually switched on and off by commands from the DXU.

The current and voltage to each TMA is measured, and an alarm is generated if the values are outside specified values, indicating that a TMA is not working properly. The alarm is transmitted to the DXU on the IOM bus.

The TMA is always used together with its connection cable and connection plate for bias injectors. The connection plate contains filtering equipment.

An indicator on the front panel is illuminated for each TMA in operational mode. Whether an indicator is illuminated depends also on the actual configuration, see Chapter Radio Configurations, RBS 2106 and RBS 2206.

If the TMA or the feeder cable short-circuits, the TMA-CM limits the current to 500 mA.

The power cable to the bias injector is supervised and an alarm is generated if the cable is not connected. The alarm is transmitted on the IOM bus.

## 3 Interface

### 3.1 Signal and Power Interface

*Table 1 Input data*

|                                |                   |
|--------------------------------|-------------------|
| <b>Nominal input voltage</b>   | +24 V DC          |
| <b>Input voltage range</b>     | +20.0 – 29.5 V DC |
| <b>Non-destructive voltage</b> | 0 – +32 V DC      |
| <b>Maximum input power</b>     | 60 W              |

*Table 2 Output data*

|                                   |                         |
|-----------------------------------|-------------------------|
| <b>Voltage per output (1 – 6)</b> | +15 V DC <sup>(1)</sup> |
| <b>Current per output</b>         | Maximum 500 mA          |

(1) Tolerance  $\pm 1.0$  V at TMA current 0 – 300 mA.  
Tolerance  $\pm 1.5$  V at TMA current 300 – 500 mA.

### 3.2 Operator Interface

The TMA-CM has the following external interfaces:

- Power in (+24 V DC)
- IOM bus
- TMA power connector

#### Indicators

The TMA-CM has eight indicators on the front panel that shows the status of each TMA and the status of the TMA-CM.

The indicators Fault and Operational indicate the status of the TMA-CM only, not the status of the TMAs.

*Table 3 Indicators*

| <b>Indicator</b> | <b>Colour</b> |
|------------------|---------------|
| Fault            | Red           |
| Operational      | Green         |
| TMA1 operating   | Green         |
| TMA2 operating   | Green         |
| TMA3 operating   | Green         |
| TMA4 operating   | Green         |
| TMA5 operating   | Green         |
| TMA6 operating   | Green         |

# RBS 2000

## Glossary

This document provides a glossary of terms and abbreviations used in RBS 2000 Customer Product Information (CPI).

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# 1 Terms and Abbreviations

This glossary lists abbreviations and acronyms used in texts dealing with RBS 2000 cabinets. Some basic terms and acronyms needed for cross-reference are included in the list.

An arrow  $\Rightarrow$  is used to indicate a reference to another entry in the list.

|                        |                                                                                              |
|------------------------|----------------------------------------------------------------------------------------------|
| <b>1-P</b>             | One-Pair connection with echo cancellation (= two wires)                                     |
| <b>2-P</b>             | Two-Pair connection with echo cancellation (= four wires)                                    |
| <b>AAU</b>             | Active Antenna Unit                                                                          |
| <b>Abis</b>            | GSM interface standard defining attributes of the communication between the BSC and the BTS. |
| <b>AC</b>              | Alternating Current                                                                          |
| <b>ACB</b>             | Alarm Collection Board                                                                       |
| <b>ACCU</b>            | Alternating Current Connection Unit                                                          |
| <b>ACCU-CU</b>         | ACCU Connection Unit                                                                         |
| <b>ACCU-DU</b>         | ACCU Distribution Unit                                                                       |
| <b>A/D converter</b>   | Analog to Digital converter                                                                  |
| <b>AFS</b>             | AMR Full-rate speech                                                                         |
| <b>AGW</b>             | Abis Gateway                                                                                 |
| <b>AHR</b>             | AMR Half-rate speech                                                                         |
| <b>Air conditioner</b> | One version of the climate unit (Active cooler)                                              |
| <b>AIS</b>             | Alarm Indication Signal                                                                      |
| <b>ALBO</b>            | Automatic Line Build Out                                                                     |
| <b>ALNA</b>            | Antenna Low Noise Amplifier                                                                  |
| <b>ALPU</b>            | Antenna Lightning Protection Unit                                                            |
| <b>AMR</b>             | Adaptive Multi-Rate                                                                          |
| <b>AO</b>              | Application Object                                                                           |

|              |                                                                                                                  |
|--------------|------------------------------------------------------------------------------------------------------------------|
| <b>ARAE</b>  | Antenna Related Auxiliary Equipment                                                                              |
| <b>ARFCN</b> | Absolute Radio Frequency Channel Number                                                                          |
| <b>ARP</b>   | Antenna Reference Point                                                                                          |
| <b>ARU</b>   | Active Replaceable Unit                                                                                          |
| <b>ASIC</b>  | Application Specific Integrated Circuit                                                                          |
| <b>Astra</b> | ASIC in the TRU                                                                                                  |
| <b>ASU</b>   | Antenna Sharing Unit                                                                                             |
| <b>AT</b>    | Alphanumeric Terminal                                                                                            |
| <b>ATRU</b>  | Adaptive Transceiver Unit                                                                                        |
| <b>ATSR</b>  | Air Time Slot Resource                                                                                           |
| <b>AU</b>    | Antenna Unit                                                                                                     |
|              | GSM 900 = CEU + Passive Antenna                                                                                  |
|              | GSM 1800/1900 = AAU                                                                                              |
| <b>BALUN</b> | BALance and UNbalance transformer                                                                                |
| <b>Batt</b>  | Battery                                                                                                          |
| <b>BB</b>    | Battery Box                                                                                                      |
| <b>BBS</b>   | Battery Back-up System                                                                                           |
| <b>BCCH</b>  | Broadcast Control CHannel                                                                                        |
|              | Downlink only broadcast channel for broadcast of general information at a base station, on a base station basis. |
| <b>BCS</b>   | Block Check Sequence                                                                                             |
| <b>BDM</b>   | Battery Distribution Module                                                                                      |
|              | The BDM is an IDM with a battery and a local processor.                                                          |
| <b>BER</b>   | Bit Error Rate                                                                                                   |
| <b>BFF</b>   | Bit Fault Frequency                                                                                              |
| <b>BFI</b>   | Bad Frame Indication                                                                                             |

|                            |                                                                                                                                                          |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BFU</b>                 | Battery Fuse Unit                                                                                                                                        |
| <b>Bias injector</b>       | A unit which injects DC power into the coaxial cable to feed the TMA. Isolates the DC power from the RF signal fed to the CDU.                           |
| <b>Bm</b>                  | Denotes a full-rate traffic channel                                                                                                                      |
| <b>BPC</b>                 | Basic Physical Channel<br><br>Denotes the air interface transport vehicle formed by repetition of one time slot on one or more radio frequency channels. |
| <b>BS</b>                  | Base Station                                                                                                                                             |
| <b>BSC</b>                 | Base Station Controller<br><br>GSM network node for control of one or more BTSs.                                                                         |
| <b>BSCSim</b>              | Base Station Controller Simulator                                                                                                                        |
| <b>BSS</b>                 | Base Station System<br><br>GSM network logical unit comprising one BSC and one or more BTSs.                                                             |
| <b>BTS</b>                 | Base Transceiver Station<br><br>GSM network unit operating on a set of radio frequency channels in one cell.                                             |
| <b>burst</b>               | A portion of digital information, the physical content, that is transferred within the time interval of one time slot.                                   |
| <b>cabinet</b>             | The physical housing of a base station                                                                                                                   |
| <b>Cascade connections</b> | Connection of several cabinets by the PCM cable. Similar to serial connection.<br><br>⇒ Cascading                                                        |
| <b>Cascading</b>           | Connection of several cabinets by the PCM cable. Similar to serial connection.<br><br>⇒ Cascade connections                                              |

|                            |                                                                                                                                                                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CBCH</b>                | Cell Broadcast CHannel<br><br>This is a downlink only channel used by the GSM defined SMSCB function.                                                                                                                                |
| <b>CCCH</b>                | Common Control CHannel<br><br>Channel combining the following common control channels: <ul style="list-style-type: none"><li>• PCH Paging CHannel</li><li>• RACH Random Access CHannel</li><li>• AGCH Access Grant CHannel</li></ul> |
| <b>CCU</b>                 | Climate Control Unit                                                                                                                                                                                                                 |
| <b>CDU</b>                 | Combining and Distribution Unit                                                                                                                                                                                                      |
| <b>CE</b>                  | Conformité Européenne                                                                                                                                                                                                                |
| <b>cell</b>                | An area of radio coverage identified by the GSM network by means of the cell identity.                                                                                                                                               |
| <b>CEU</b>                 | Coverage Extension Unit                                                                                                                                                                                                              |
| <b>CF</b>                  | Central Functions                                                                                                                                                                                                                    |
| <b>channel</b>             | The common term channel denotes the virtual connection, consisting of physical and logical channels, between BSS and MS, during a call in progress.<br><br>⇒ Logical Channel ⇒ Physical Channel                                      |
| <b>Channel Combination</b> | A physical channel on an air interface carrying a defined set of logical channels.                                                                                                                                                   |
| <b>Channel group</b>       | A channel group is a group of dedicated logical channels to a specific MS.                                                                                                                                                           |
| <b>CM</b>                  | Control Module (for TMA)                                                                                                                                                                                                             |
| <b>CMD</b>                 | Digital Radio Communication Tester                                                                                                                                                                                                   |

|                  |                                                                                                                                                                                                                                  |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CMRU</b>      | Central Main Replaceable Unit.<br><br>The RBS is physically connected to the Base Station Controller (BSC) via the CMRU. There is only one CMRU in each RBS.<br><br><b>Macro</b> CMRU = DXU<br><b>Micro</b> CMRU = The whole RBS |
| <b>CNU</b>       | Combining Network Unit                                                                                                                                                                                                           |
| <b>Compr</b>     | Compressor                                                                                                                                                                                                                       |
| <b>CON</b>       | LAPD concentrator<br><br>LAPD concentration is used to reduce the number of required physical links between the BSC and BTS.                                                                                                     |
| <b>Config</b>    | Configuration                                                                                                                                                                                                                    |
| <b>Co-siting</b> | Co-siting is the operation of radio equipment from more than one mobile telephone system and/or frequency on the same site sharing common equipment.                                                                             |
| <b>CPI</b>       | Communication and Power Interface                                                                                                                                                                                                |
| <b>CPI</b>       | Customer Product Information                                                                                                                                                                                                     |
| <b>CPU</b>       | Central Processing Unit                                                                                                                                                                                                          |
| <b>CRC</b>       | Cyclic Redundancy Check                                                                                                                                                                                                          |
| <b>CS</b>        | Coding Scheme                                                                                                                                                                                                                    |
| <b>CSA</b>       | Canadian Standards Association                                                                                                                                                                                                   |
| <b>CSES</b>      | Consecutive Severely Errored Second                                                                                                                                                                                              |
| <b>CSU</b>       | Channel Service Unit                                                                                                                                                                                                             |
| <b>CU</b>        | Combining Unit (RU in CDU_D)                                                                                                                                                                                                     |
| <b>CXU</b>       | Configuration Switch Unit                                                                                                                                                                                                        |
| <b>Dannie</b>    | ASIC in the TRU                                                                                                                                                                                                                  |
| <b>DB</b>        | DataBase                                                                                                                                                                                                                         |
| <b>DC</b>        | Direct Current                                                                                                                                                                                                                   |

|                 |                                                                                                                                                                                              |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DCC</b>      | Digital Cross Connector                                                                                                                                                                      |
| <b>DCCH</b>     | Dedicated Control CHannel<br><br>Dedicated control channels carry signalling data.                                                                                                           |
| <b>DCCU</b>     | DC Connection Unit                                                                                                                                                                           |
| <b>ddTMA</b>    | dual duplex Tower Mounted Amplifier<br><br>This type needs only one combined TX/RX feeder from the BTS to the TMA. $\Rightarrow$ dTMA $\Rightarrow$ rTMA $\Rightarrow$ TMA $\Rightarrow$ BTS |
| <b>DF</b>       | Distribution Frame                                                                                                                                                                           |
| <b>DF</b>       | Disturbance Frequency                                                                                                                                                                        |
| <b>DFU</b>      | Distribution and Fuse Unit                                                                                                                                                                   |
| <b>DIP</b>      | Digital Path<br><br>The name of the function used for supervision of the connected PCM lines.                                                                                                |
| <b>Dixie</b>    | ASIC in the TRU                                                                                                                                                                              |
| <b>DM</b>       | Degraded Minute                                                                                                                                                                              |
| <b>DM</b>       | Distribution Module                                                                                                                                                                          |
| <b>DMRU</b>     | Distributed Main Replaceable Unit<br><br>If a Main RU is subordinated to the CMRU, it is said to be distributed.                                                                             |
| <b>downlink</b> | Signalling direction from the system to the MS.                                                                                                                                              |
| <b>DP</b>       | Digital Path                                                                                                                                                                                 |
| <b>DP</b>       | Distribution Panel                                                                                                                                                                           |
| <b>DPX</b>      | Duplexer                                                                                                                                                                                     |
| <b>DS1</b>      | Digital Signal level 1 (1544 kbit/s)                                                                                                                                                         |
| <b>DSP</b>      | Digital Signal Processor                                                                                                                                                                     |
| <b>DT</b>       | Data Transcript                                                                                                                                                                              |
| <b>DTE</b>      | Data Terminal Equipment                                                                                                                                                                      |

|                  |                                                                                                                                                  |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTF</b>       | Distance To Fault                                                                                                                                |
| <b>dTMA</b>      | duplex TMA<br><br>dTMA is similar to the old ALNA except for different characteristics. $\Rightarrow$ ddTMA $\Rightarrow$ rTMA $\Rightarrow$ TMA |
| <b>dTRU</b>      | double TRAnsceiver Unit                                                                                                                          |
| <b>DU</b>        | Distribution Unit (RU in CDU-D)                                                                                                                  |
| <b>DUT</b>       | Device Under Test                                                                                                                                |
| <b>DX</b>        | Direct Exchange                                                                                                                                  |
| <b>DXB</b>       | Distribution Switch Board                                                                                                                        |
| <b>DXC</b>       | Digital Cross Connector                                                                                                                          |
| <b>DXU</b>       | Distribution Switch Unit                                                                                                                         |
| <b>DXX</b>       | Ericsson Cellular Transmission System including NMS                                                                                              |
| <b>E1</b>        | Transmission standard, G.703, a 2048 kbit/s PCM link                                                                                             |
| <b>E-GSM</b>     | Extended GSM                                                                                                                                     |
| <b>EACU</b>      | External Alarm Connection Unit                                                                                                                   |
| <b>EC1</b>       | External Condition Map Class 1                                                                                                                   |
| <b>EC2</b>       | External Condition Map Class 2                                                                                                                   |
| <b>ECU</b>       | Energy Control Unit                                                                                                                              |
| <b>EDGE</b>      | Enhanced Data rate for Global Evolution                                                                                                          |
| <b>EDGE dTRU</b> | EDGE double TRAnsceiver Unit<br><br>$\Rightarrow$ EDGE                                                                                           |
| <b>EDT</b>       | Electrical Down Tilt                                                                                                                             |
| <b>EEPROM</b>    | Electrically Erasable Programmable Read-Only Memory                                                                                              |
| <b>EIRP</b>      | Effective Isotropic Radiated Power                                                                                                               |
| <b>EMC</b>       | ElectroMagnetic Compatibility                                                                                                                    |
| <b>EMF</b>       | ElectroMotive Force                                                                                                                              |

|              |                                                                                       |
|--------------|---------------------------------------------------------------------------------------|
| <b>EMF</b>   | ElectroMagnetic Field                                                                 |
| <b>EMI</b>   | Electromagnetic Interference                                                          |
| <b>ENV</b>   | Environmental                                                                         |
| <b>EOC</b>   | Embedded Operations Channel                                                           |
| <b>EPC</b>   | Environmental and Power Control                                                       |
| <b>ES</b>    | Errored Second                                                                        |
| <b>ESB</b>   | External Synchronization Bus                                                          |
| <b>ESD</b>   | ElectroStatic Discharge                                                               |
| <b>ESF</b>   | Extended Superframe Format                                                            |
| <b>ESO</b>   | Ericsson Support Office                                                               |
| <b>ETS</b>   | European Telecommunication Standard                                                   |
| <b>EXT</b>   | External                                                                              |
| <b>FACCH</b> | Fast Associated Control CHannel<br>Main signalling channel in association with a TCH. |
| <b>FCC</b>   | Federal Communications Commission                                                     |
| <b>FCCH</b>  | Frequency Correction CHannel                                                          |
| <b>FCOMB</b> | Filter COMBiner                                                                       |
| <b>FCU</b>   | Fan Control Unit                                                                      |
| <b>FDL</b>   | Facility Data Link                                                                    |
| <b>FDU</b>   | Feeder Duplexer Unit                                                                  |
| <b>FER</b>   | Frame Erasure Ratio                                                                   |
| <b>FIU</b>   | Fan Interface Unit                                                                    |
| <b>FS</b>    | Function Specification                                                                |
| <b>FSC</b>   | Field Support Centre                                                                  |
| <b>FU</b>    | Filter Unit (RU in CDU-D)                                                             |
| <b>FUd</b>   | Filter Unit with duplexer (RU in CDU-D)                                               |

|                       |                                                                                                                                                                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FXU</b>            | Future Expansion Unit                                                                                                                                                                                                                                                 |
| <b>G01</b>            | MO model for RBS 200                                                                                                                                                                                                                                                  |
| <b>G12</b>            | MO model for RBS 2000                                                                                                                                                                                                                                                 |
| <b>G.703</b>          | Physical/electrical characteristics of hierarchical digital interfaces, as defined by the ITU.                                                                                                                                                                        |
| <b>G.704</b>          | Synchronous frame structures used at 1544, 6312, 2048, 8448 and 44 736 kbit/s, as defined by the ITU.                                                                                                                                                                 |
| <b>GPRS</b>           | General Packet Radio Services                                                                                                                                                                                                                                         |
| <b>GS</b>             | General Specification                                                                                                                                                                                                                                                 |
| <b>GSL</b>            | GPRS Signalling Link                                                                                                                                                                                                                                                  |
| <b>GSM</b>            | Global System for Mobile communications<br><br>International standard for a TDMA digital mobile communication system. Originally, GSM was an abbreviation for Group Special Mobile, which is a European mobile telecommunication interest group, established in 1982. |
| <b>GSM 800</b>        | GSM system 800 MHz (generic)                                                                                                                                                                                                                                          |
| <b>GSM 900</b>        | GSM system 900 MHz (generic)                                                                                                                                                                                                                                          |
| <b>GSM 1800</b>       | GSM system 1800 MHz (generic)                                                                                                                                                                                                                                         |
| <b>GSM 1900</b>       | GSM system 1900 MHz (generic)                                                                                                                                                                                                                                         |
| <b>HCE</b>            | HDSL Central Equipment                                                                                                                                                                                                                                                |
| <b>HCOMB</b>          | Hybrid COMBiner                                                                                                                                                                                                                                                       |
| <b>HDLC</b>           | High level Data Link Control                                                                                                                                                                                                                                          |
| <b>HDSL</b>           | High bit rate Digital Subscriber Line                                                                                                                                                                                                                                 |
| <b>Heat Exchanger</b> | A version of the climate unit                                                                                                                                                                                                                                         |
| <b>HEU</b>            | Heat Exchanger Unit                                                                                                                                                                                                                                                   |
| <b>HISC</b>           | Highway Splitter Combiner                                                                                                                                                                                                                                             |
| <b>HLIN</b>           | High Level IN                                                                                                                                                                                                                                                         |
| <b>HLOUT</b>          | High Level OUT                                                                                                                                                                                                                                                        |

|               |                                                                                                                                                                      |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HMS</b>    | Heat Management System                                                                                                                                               |
| <b>Hum</b>    | Humidity                                                                                                                                                             |
| <b>HW</b>     | HardWare                                                                                                                                                             |
| <b>HWU</b>    | HardWare Unit                                                                                                                                                        |
|               | An HWU consists of one or more SEs. An HWU is a functional unit within the RBS. The HWU is either active (equipped with a processor) or passive (without processor). |
| <b>I1A</b>    | Internal Fault Map Class 1A                                                                                                                                          |
| <b>I1B</b>    | Internal Fault Map Class 1B                                                                                                                                          |
| <b>I2A</b>    | Internal Fault Map Class 2A                                                                                                                                          |
| <b>IA</b>     | Immediate Assignment                                                                                                                                                 |
| <b>IC</b>     | Integrated Circuit                                                                                                                                                   |
| <b>ICMI</b>   | Initial Codec Mode Indicator                                                                                                                                         |
| <b>ID</b>     | IDentification                                                                                                                                                       |
| <b>IDB</b>    | Installation DataBase                                                                                                                                                |
| <b>IDM</b>    | Internal Distribution Module                                                                                                                                         |
| <b>IEC</b>    | International Electric Commission                                                                                                                                    |
| <b>IF Box</b> | Interface Box                                                                                                                                                        |
| <b>IMSI</b>   | International Mobile Subscriber Identity                                                                                                                             |
| <b>INIT</b>   | Initial                                                                                                                                                              |
| <b>INT</b>    | Internal                                                                                                                                                             |
| <b>IOG</b>    | Input/Output Group                                                                                                                                                   |
| <b>IOM</b>    | Internal Operation and Maintenance bus                                                                                                                               |
| <b>IR</b>     | InfraRed                                                                                                                                                             |
| <b>IS</b>     | Interface Switch                                                                                                                                                     |
| <b>IWD</b>    | InterWork Description                                                                                                                                                |

|                            |                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>JTC</b>                 | Joint Technical Committee                                                                                                                                                                                                                                                                                                                                                                        |
| <b>LAPD</b>                | <p>Link Access Procedures on D-channel</p> <p>LAPD is the data link layer (layer 2) protocol used for communication between the BSC and the BTS on the Abis interface.</p> <p>Abis layer 2 is sometimes used synonymously with LAPD.</p>                                                                                                                                                         |
| <b>LBO</b>                 | Line Build Out                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>LED</b>                 | Light Emitting Diode                                                                                                                                                                                                                                                                                                                                                                             |
| <b>LLB</b>                 | Line Loop Back                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>LNA</b>                 | Low Noise Amplifier                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Local bus</b>           | The local bus offers communication between a central main RU (DXU) and distributed main RUs (TRU and ECU).                                                                                                                                                                                                                                                                                       |
| <b>Local mode</b>          | When the RU is in Local mode, it is not communicating with the BSC.                                                                                                                                                                                                                                                                                                                              |
| <b>Local/Remote switch</b> | A switch used by the operator to order the RU to enter Local or Remote mode.                                                                                                                                                                                                                                                                                                                     |
| <b>LOF</b>                 | Loss Of Frame                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Logical Channel</b>     | <p>A logical channel represents a specified portion of the information carrying capacity of a physical channel.</p> <p>GSM defines two major categories of logical channels:</p> <ul style="list-style-type: none"> <li>• TCHs – Traffic CHannels, for speech or user data</li> <li>• CCHs – Control CHannels, for control signalling</li> </ul> <p>⇒ Physical Channel ⇒ Channel Combination</p> |
| <b>Logical RU</b>          | <p>A unit which can be referred to, but is not a single physical unit. There are three different kinds of logical RUs:</p> <ul style="list-style-type: none"> <li>• Antennas</li> <li>• Buses</li> <li>• Environment</li> </ul>                                                                                                                                                                  |

|                 |                                                                                                                                                                                                                 |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LOS</b>      | Loss Of Signal                                                                                                                                                                                                  |
| <b>LVD</b>      | Low Voltage Directive                                                                                                                                                                                           |
| <b>LVF</b>      | Low Voltage Filter                                                                                                                                                                                              |
| <b>MAC</b>      | Medium Access Controller                                                                                                                                                                                        |
| <b>MADT</b>     | Mean Accumulated DownTime                                                                                                                                                                                       |
| <b>magazine</b> | A magazine is a reserved space in the cabinet, which may hold one or more RUs.                                                                                                                                  |
| <b>Main RU</b>  | Contains one or more processors, to which software can be downloaded from the BSC. A Main RU is either Central (CMRU) or Distributed (DMRU). A Main RU may or may not have a direct signalling link to the BSC. |
| <b>Main RU</b>  | A main replaceable unit is a replaceable unit that contains one or more processors, to which software can be downloaded from the BSC.                                                                           |
| <b>MCB</b>      | MultiCasting Box                                                                                                                                                                                                |
| <b>MHS</b>      | Modification Handling System                                                                                                                                                                                    |
|                 | Ericsson trouble report database                                                                                                                                                                                |
| <b>MMI</b>      | Man-Machine Interface                                                                                                                                                                                           |
| <b>MO</b>       | Managed Object                                                                                                                                                                                                  |
| <b>MR</b>       | Measurement Receiver                                                                                                                                                                                            |
| <b>MRT</b>      | Mean Repair Time                                                                                                                                                                                                |
| <b>MS</b>       | Mobile Station                                                                                                                                                                                                  |
| <b>MSC</b>      | Mobile services Switching Centre                                                                                                                                                                                |
|                 | GSM network unit for switching, routing and controlling calls to and from the Public Switched Telephone Network (PSTN) and other networks.                                                                      |
| <b>MSTP</b>     | Mobile Station Test Point                                                                                                                                                                                       |
| <b>MTBF</b>     | Mean Time Between Failure                                                                                                                                                                                       |
| <b>MTBCF</b>    | Mean Time Between Catastrophe Failure                                                                                                                                                                           |

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| <b>Multidrop</b>     | Two or more RBSs connected in a chain to the same transmission system. All the relevant time slots are dropped out by each RBS. (This function is sometimes called cascading.)                                                             |
| <b>NCS</b>           | National Colour System                                                                                                                                                                                                                     |
| <b>NEBS</b>          | Network Equipment Building System                                                                                                                                                                                                          |
| <b>NMS</b>           | Ericsson Network Management System in DXX                                                                                                                                                                                                  |
| <b>Nominal Power</b> | The nominal power is the power level defined when configuring the transceiver.                                                                                                                                                             |
| <b>N terminal</b>    | Neutral terminal in an AC mains connection                                                                                                                                                                                                 |
| <b>NTU</b>           | Network Terminating Unit                                                                                                                                                                                                                   |
| <b>OL/UL</b>         | Overlaid/Underlaid                                                                                                                                                                                                                         |
| <b>O&amp;M</b>       | Operation and Maintenance<br><br>General term for activities such as configuration, utilization of channels (frequency bands), cell planning, system supervision, hardware and software maintenance, subscriber administration, and so on. |
| <b>OMC</b>           | Operation and Maintenance Centre                                                                                                                                                                                                           |
| <b>OML</b>           | Operation and Maintenance Link<br><br>Layer 2 communication link for operation and maintenance services on Abis.                                                                                                                           |
| <b>OMT</b>           | Operation and Maintenance Terminal<br><br>The OMT is a terminal that supports functions for handling the RBS on site. The terminal can be a portable PC.                                                                                   |
| <b>Operation</b>     | Operation is the normal, everyday running of the RBS with full functions.                                                                                                                                                                  |
| <b>OPI</b>           | OPerational Instructions                                                                                                                                                                                                                   |
| <b>OVP</b>           | OverVoltage Protection                                                                                                                                                                                                                     |
| <b>OXU</b>           | Space for Optional Expansion                                                                                                                                                                                                               |
| <b>P-GSM</b>         | Primary GSM                                                                                                                                                                                                                                |

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| <b>PA</b>               | Power Amplifier                                                                                                                                                                                                                                                          |
| <b>PAM</b>              | Power Amplifier Module                                                                                                                                                                                                                                                   |
| <b>Passive RU</b>       | A passive replaceable unit has a very low level of intelligence and is independent of the processor system.                                                                                                                                                              |
| <b>PBA</b>              | Printed Board Assembly                                                                                                                                                                                                                                                   |
| <b>PBC</b>              | Power and Battery Cabinet                                                                                                                                                                                                                                                |
| <b>PC</b>               | Personal Computer                                                                                                                                                                                                                                                        |
| <b>PCAT</b>             | Product CATalogue<br><br>A web-based ordering system on Ericsson's Intranet.                                                                                                                                                                                             |
| <b>PCB</b>              | Printed Circuit Board                                                                                                                                                                                                                                                    |
| <b>PCH</b>              | Paging CHannel<br><br>Downlink only subchannel of CCCH for system paging of MSs.<br><br>⇒ CCCH                                                                                                                                                                           |
| <b>PCM</b>              | Pulse Code Modulation                                                                                                                                                                                                                                                    |
| <b>PCU</b>              | Packet Control Unit                                                                                                                                                                                                                                                      |
| <b>PDCH</b>             | Packet Data Channel                                                                                                                                                                                                                                                      |
| <b>PE terminal</b>      | Protective Earth terminal in an AC mains connection                                                                                                                                                                                                                      |
| <b>PFWD</b>             | Power Forward                                                                                                                                                                                                                                                            |
| <b>Physical Channel</b> | An air interface physical channel carries one or more logical channels. A physical channel uses a combination of frequency and time division multiplexing and is defined as a sequence of radio frequency channels and time slots.<br><br>⇒ TDMA frame ⇒ Logical channel |
| <b>PIN</b>              | Personal Identification Number                                                                                                                                                                                                                                           |
| <b>PLB</b>              | Payload Loop Back                                                                                                                                                                                                                                                        |

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| <b>PLMN</b>        | Public Land Mobile Network<br><br>A network, established and operated by an administration or its licensed operator(s), for the specific purpose of providing land mobile communication services to the public. It provides communication possibilities for mobile users. For communication between mobile and fixed users, interworking with a fixed network is necessary. |
| <b>PPE</b>         | Personal Protective Equipment                                                                                                                                                                                                                                                                                                                                               |
| <b>PREFL</b>       | Power Reflected                                                                                                                                                                                                                                                                                                                                                             |
| <b>PSA</b>         | Power Supply Adapter                                                                                                                                                                                                                                                                                                                                                        |
| <b>PSTN</b>        | Public Switch Telephone Network                                                                                                                                                                                                                                                                                                                                             |
| <b>PSU</b>         | Power Supply Unit                                                                                                                                                                                                                                                                                                                                                           |
| <b>PWU</b>         | Power Unit                                                                                                                                                                                                                                                                                                                                                                  |
| <b>RACH</b>        | Random Access CHannel<br><br>Uplink only subchannel of CCCH for MS request for allocation of a dedicated channel.<br><br>⇒ CCCH                                                                                                                                                                                                                                             |
| <b>RAI</b>         | Remote Alarm Indication                                                                                                                                                                                                                                                                                                                                                     |
| <b>RAM</b>         | Random Access Memory                                                                                                                                                                                                                                                                                                                                                        |
| <b>RBER</b>        | Radio Bit Error Ratio                                                                                                                                                                                                                                                                                                                                                       |
| <b>RBS</b>         | Radio Base Station<br><br>All equipment forming one or more Ericsson base station.<br><br>⇒ BTS                                                                                                                                                                                                                                                                             |
| <b>RCB</b>         | Radio Connection Box                                                                                                                                                                                                                                                                                                                                                        |
| <b>RD</b>          | Receive Data                                                                                                                                                                                                                                                                                                                                                                |
| <b>Remote mode</b> | When the RU is in RU Remote mode, a link is established between the BSC and the Central Main RU (CMRU).                                                                                                                                                                                                                                                                     |

|                |                                                                                                                                                    |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>RF</b>      | Radio Frequency                                                                                                                                    |
| <b>RFCH</b>    | Radio Frequency CHannel                                                                                                                            |
|                | A radio frequency carrier with its associated bandwidth.                                                                                           |
| <b>RFTL</b>    | Radio Frequency Test Loop                                                                                                                          |
| <b>RLC</b>     | Radio Link Control                                                                                                                                 |
| <b>RLC</b>     | Repair Logistic Centre                                                                                                                             |
| <b>RSL</b>     | Radio Signalling Link                                                                                                                              |
| <b>R-state</b> | Release state                                                                                                                                      |
| <b>RS232</b>   | American standard for term/MODEM interconnection.                                                                                                  |
| <b>rTMA</b>    | Receiver TMA                                                                                                                                       |
|                | rTMA has no duplexers. It is used for amplification of the RX signal. $\Rightarrow$ ddTMA $\Rightarrow$ dTMA $\Rightarrow$ TMA                     |
| <b>RTN</b>     | Return                                                                                                                                             |
| <b>RU</b>      | Replaceable Unit                                                                                                                                   |
|                | An RU consists of one or more HWUs. An RU may be replaced by another RU of the same type. The RU is the smallest unit that can be handled on site. |
| <b>RX</b>      | Receiver                                                                                                                                           |
| <b>RX1</b>     | Receiver antenna branch 1                                                                                                                          |
| <b>RX2</b>     | Receiver antenna branch 2                                                                                                                          |
| <b>RXA</b>     | Receiver antenna branch A                                                                                                                          |
| <b>RXB</b>     | Receiver antenna branch B                                                                                                                          |
| <b>RXD</b>     | Receiver Divider                                                                                                                                   |
| <b>RXDA</b>    | Receiver Divider Amplifier                                                                                                                         |
| <b>RXDP</b>    | Receiver Distribution Plane                                                                                                                        |
| <b>RXLEV</b>   | Measure of signal strength as defined in GSM:05.08:8.1.4                                                                                           |
| <b>RXQUAL</b>  | Measure of signal quality as defined in GSM:05.08:8.2.4                                                                                            |

|               |                                                                                                                                                                                                                                                                           |
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| <b>SACCH</b>  | Slow Associated Control CHannel                                                                                                                                                                                                                                           |
| <b>SCH</b>    | Synchronization CHannel                                                                                                                                                                                                                                                   |
| <b>SDCCH</b>  | Stand alone Dedicated Control CHannel                                                                                                                                                                                                                                     |
|               | Main dedicated signalling channel on the air interface, mainly used for call locating and establishment.                                                                                                                                                                  |
| <b>SCU</b>    | Switching and Combining Unit                                                                                                                                                                                                                                              |
| <b>SE</b>     | Supervised Entity                                                                                                                                                                                                                                                         |
| <b>SES</b>    | Severely Errored Second                                                                                                                                                                                                                                                   |
| <b>SF</b>     | Slip Frequency                                                                                                                                                                                                                                                            |
| <b>SID</b>    | Silence Descriptor                                                                                                                                                                                                                                                        |
| <b>SIG</b>    | Signalling                                                                                                                                                                                                                                                                |
| <b>SIM</b>    | Subscriber Identity Module                                                                                                                                                                                                                                                |
| <b>SIR</b>    | Small Indoor RBS                                                                                                                                                                                                                                                          |
| <b>SMS</b>    | Short Message Service (point to point)                                                                                                                                                                                                                                    |
|               | A short message, up to 160 alphanumeric characters long, can be sent to or from an MS (point to point).                                                                                                                                                                   |
| <b>SO</b>     | Service Object                                                                                                                                                                                                                                                            |
| <b>SS</b>     | Swedish Standard                                                                                                                                                                                                                                                          |
| <b>Sub-RU</b> | A sub-replaceable unit is always connected to a superior Main RU. This connection is used for example for retrieval of the RU identity. A sub-RU normally does not have a processor. Note that an RU with a processor, which cannot be loaded, is classified as a sub-RU. |
| <b>SVS</b>    | System Voltage Sensor                                                                                                                                                                                                                                                     |
| <b>SW</b>     | SoftWare                                                                                                                                                                                                                                                                  |
| <b>SWR</b>    | Standing Wave Ratio                                                                                                                                                                                                                                                       |
| <b>SYNC</b>   | Synchronous                                                                                                                                                                                                                                                               |
| <b>T1</b>     | Transmission standard, G.703, a 1544 kbit/s PCM link                                                                                                                                                                                                                      |

|                   |                                                                                                                                                                   |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TA</b>         | Timing Advance<br><br>A signal sent by the BTS to the MS which the MS uses to advance its timing of transmissions to the BTS to compensate for propagation delay. |
| <b>TC</b>         | Transaction Capabilities                                                                                                                                          |
| <b>TCB</b>        | Transceiver Control Board                                                                                                                                         |
| <b>TCH</b>        | Traffic CHannel<br><br>The traffic channels carry either encoded speech or user data.                                                                             |
| <b>TCH/F</b>      | Traffic Channel, Full-rate                                                                                                                                        |
| <b>TCH/H</b>      | Traffic Channel, Half-rate                                                                                                                                        |
| <b>TCC</b>        | Transmission Coherent Combining                                                                                                                                   |
| <b>TCH SIG</b>    | Traffic CHannel Signalling                                                                                                                                        |
| <b>TD</b>         | Transmit Data                                                                                                                                                     |
| <b>TDMA</b>       | Time Division Multiple Access<br><br>Multiplexing of several channels in a common frequency band. Each channel is assigned a certain time division, a time slot.  |
| <b>TDMA frame</b> | GSM air interface time frame comprising eight time slots.                                                                                                         |
| <b>TEI</b>        | Terminal Endpoint Identifier<br><br>TEI is an identification code carried by a LAPD frame as a terminal connection endpoint within a Service Access Point (SAP).  |
| <b>TEMS</b>       | TEst Mobile Station                                                                                                                                               |
| <b>TF</b>         | Timing Function                                                                                                                                                   |
| <b>TG</b>         | Transceiver Group                                                                                                                                                 |
| <b>Timing bus</b> | The timing bus carries air timing information from the timing unit in the DXU to the TRUs.                                                                        |
| <b>TLS</b>        | Terrestrial Link Supervision                                                                                                                                      |

|                   |                                                                                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TM</b>         | Transport Module                                                                                                                                    |
|                   | The Transport module is non-RBS equipment belonging to the transport network.                                                                       |
| <b>TMA</b>        | Tower Mounted Amplifier                                                                                                                             |
|                   | There are three types of TMAs: dTMA, rTMA and ddTMA. $\Rightarrow$ dTMA $\Rightarrow$ rTMA $\Rightarrow$ ddTMA                                      |
| <b>TMA-CM</b>     | Tower Mounted Amplifier – Control Module                                                                                                            |
| <b>TN</b>         | Time slot Number                                                                                                                                    |
| <b>TN O&amp;M</b> | Transport Network Operation and Maintenance (in general)                                                                                            |
| <b>Tora</b>       | ASIC in the TRU                                                                                                                                     |
| <b>TRA</b>        | Transcoder Rate Adapter                                                                                                                             |
|                   | The TRA Unit (TRAU) in BSC performs transcoding of speech information and rate adaptation of data information.                                      |
| <b>Tracy</b>      | ASIC in the TRU                                                                                                                                     |
| <b>TRS</b>        | Transceiver System                                                                                                                                  |
| <b>TRU</b>        | Transceiver Unit                                                                                                                                    |
| <b>TRX</b>        | Transceiver (combined transmitter and receiver)                                                                                                     |
| <b>TRXC</b>       | Transceiver Controller                                                                                                                              |
| <b>TS</b>         | Time Slot                                                                                                                                           |
|                   | A 0.577 ms period (TDMA frame subunit) corresponding to 156.25 raw bits of information. The eight time slots of each TDMA frame are numbered 0...7. |
|                   | $\Rightarrow$ Burst                                                                                                                                 |
| <b>TT</b>         | Total Time                                                                                                                                          |
| <b>TU</b>         | Timing Unit                                                                                                                                         |
| <b>TX</b>         | Transmitter                                                                                                                                         |
| <b>TXA</b>        | Transmitter Antenna A                                                                                                                               |

|               |                                                                                                        |
|---------------|--------------------------------------------------------------------------------------------------------|
| <b>TXB</b>    | Transmitter Antenna B                                                                                  |
| <b>TXBP</b>   | Transmitter BandPass filter                                                                            |
| <b>TXU</b>    | Radio Transmitter Unit                                                                                 |
| <b>UAS</b>    | Unavailable Seconds                                                                                    |
| <b>UAST</b>   | UnAvailable STate supervision                                                                          |
| <b>UL</b>     | Underwriter Laboratories                                                                               |
| <b>uplink</b> | Signalling direction from the MS to the system.                                                        |
| <b>UPS</b>    | Uninterrupted Power Supply                                                                             |
| <b>VCO</b>    | Voltage Controlled Oscillator                                                                          |
| <b>VSWR</b>   | Voltage Standing Wave Ratio RF signal measure. The quotient between transmitted and reflected voltage. |
| <b>X bus</b>  | The X bus carries transmit air data frames between transceivers.                                       |
| <b>Y link</b> | The interface between the DXU and each DSP System in core based TRUs.                                  |