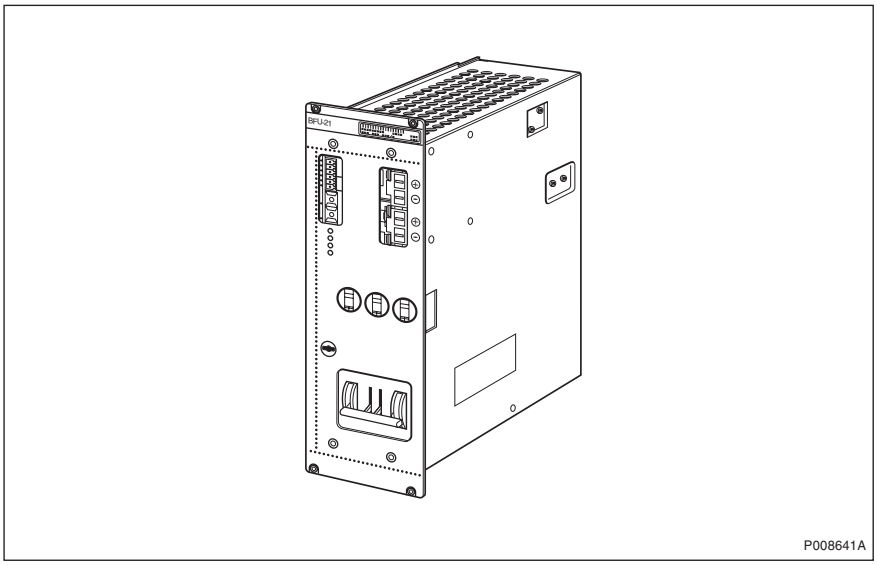
BFU-21

Battery Fuse Unit
Unit Description

The Battery Fuse Unit (BFU) monitors and controls the battery. It cuts off the load (the RBS) at low battery voltage, when the temperature of the battery is too high or if there is a short circuit between the distribution cables.



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Contents

1 Product Overview

The BFU-21 supplies battery back-up system voltage to the RBS and disconnects the battery when it has reached its lower discharge limit. The contactor can disconnect and connect the battery with a control signal from the Supervision Module (SM).

1.1 Main Functions

The BFU has the following functions:

- Supplies priority power to transmission equipment. Power to transmission equipment can be distributed even if a battery is not present. The relay can select the power source with a control signal from the SM.
- Supplies priority power to the EC output. The EC output is protected from reverse currents by a diode. Power to the EC output can be distributed even if a battery is not present. The relay can select the power source with a control signal from the SM.
- Communicates on the EPC bus (opto cable) with the DXU. If the EPC bus is not present, the BFU operates at its default values. The battery voltage, current and temperature are monitored and alarms are sent on the EPC bus.
- Disconnects the batteries, if the current is too low or the temperature is too high. Reconnects the batteries when the temperature returns to normal.
- Sends a "Battery temperature sensor fault" message to the DXU when the battery temperature is faulty.
- Disconnects battery back-up manually or by control signals on the EPC bus.
- The SM provides self-detection of internal faults and stores them in non-volatile memory.

2 Dimensions

The BFU-21 has the following dimensions:

Table 1 Size and Weight

Height	Width	Depth	Weight
267 mm	82 mm	226 mm	5 kg

3 Function Description

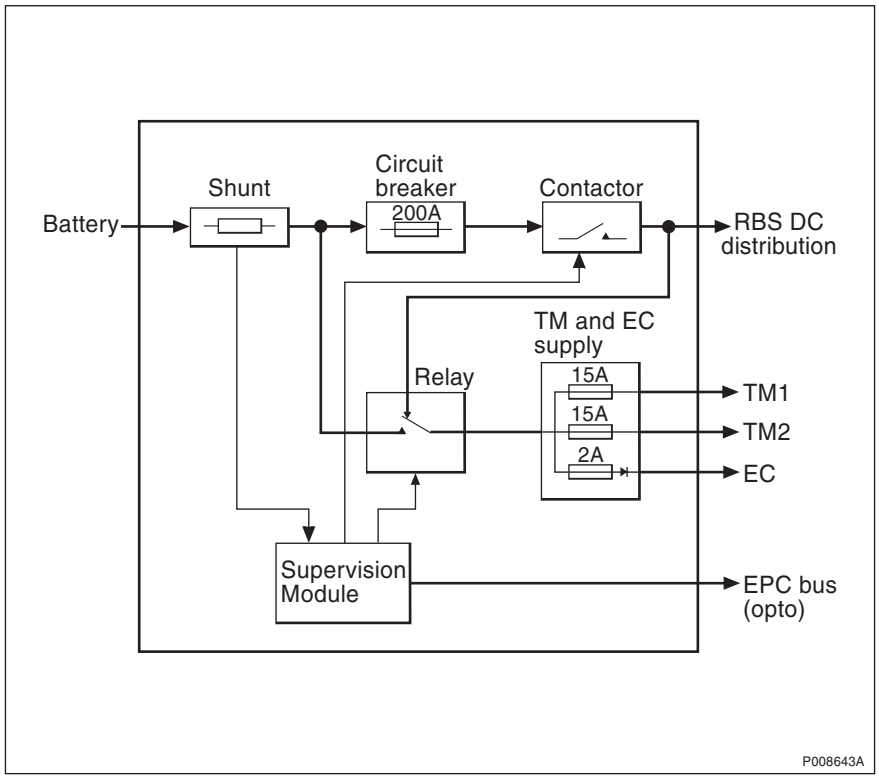

Figure 1 Block diagram of BFU-21

The BFU consists of the following blocks:

- Contactors
- Circuit breakers
- Shunt
- TM and EC supply
- Supervision module

3.1 Contactor

The Contactor is used to disconnect the batteries from the system. The Supervision Module controls the Contactor.

3.2 Circuit Breaker

The circuit breaker disconnects the batteries if the current becomes too high. It can also be manually operated on the front of the BFU to connect or disconnect the batteries from the DC distribution.

3.3 Shunt

The shunt is used to sense the input current. The SM senses the value, which is used for control of the BFU.

3.4 TM and EC Supply

There are two TM outputs for supply of transmission equipment and one EC output for priority supply of the Control Board in the ACCU.

4 Interfaces

The BFU has the following interfaces:

- Battery
- RBS DC distribution
- TM1 supply 15 A
- TM2 supply 15 A
- EC supply 2 A
- EPC bus

4.1 Signal and Power Interfaces

Connectors

The tables below show input data and output current.

4.2 Operator Interface

There is one switch on the front panel to set the internal attenuators for TMA or no TMA.

There are two indicators on the front inducating the status of the ASU.

Table 2 Input Data

Nominal input voltage	+24 V DC negative ground
Permitted variation input voltage	+18.0 to +29.0 V DC
Non-destruction input voltage	0.0 to +32.0 V DC
Power	4800 W
Nominal input current	4800 W
Maximum input current	205 A
Maximum current ripple (20 Hz - 20 kHz)	24 Arms

Table 3 Output Currents

RBS DC distribution (nominal)	160 A
RBS DC distribution (maximum)	180 A (during 3 hrs)
TM1 supply	12 A
TM2 supply	12 A
EC supply	1.5 A

4.3 Operator Interface

On the front panel there are four indicators (see table below) and four switches.

Table 4 Indicators

Indicator	Color
Fault	Red
Operational	Green
EPC bus fault	Yellow
Battery disconnected	Yellow

Switches

- Battery Disconnect - on/off
- DC out 1 - on/off
- DC out 2 - on/off
- EC - on/off

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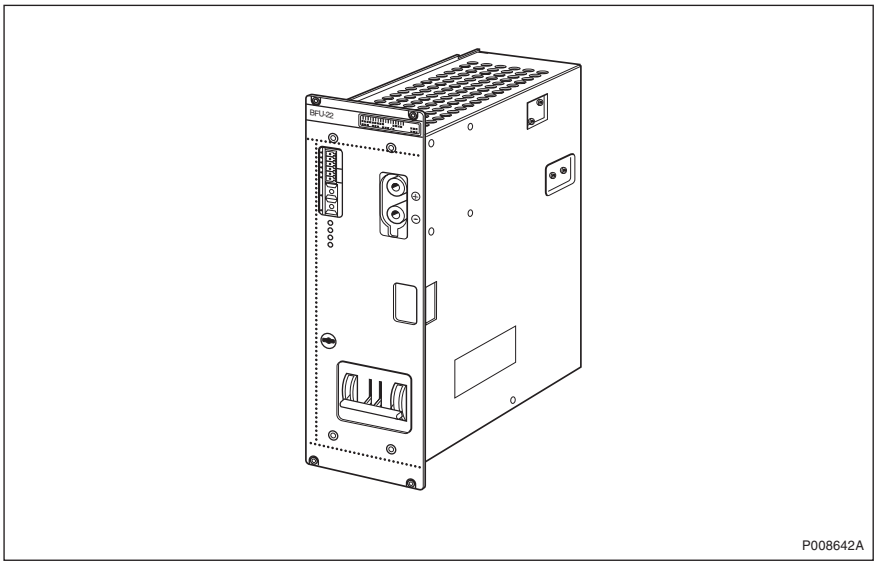
BFU-22

Battery Fuse Unit
Unit Description

The Battery Fuse Unit (BFU) monitors and controls the battery. It cuts off the load (the RBS) at low battery voltage, when the temperature of the battery is too high or if there is a short circuit between the distribution cables.



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Contents

1 Product Overview

The BFU-22 supplies battery back-up system voltage to the RBS and disconnects the battery when it has reached its lower discharge limit. The contactor can disconnect and connect the battery with a control signal from the Supervision Module (SM).

1.1 Main Functions

The BFU can supply priority power to transmission equipment. Power to transmission equipment can be distributed even if a battery is not present. The relay can select the power source with a control signal from the SM.

The BFU communicates on the EPC bus (opto cable) with the DXU. If the EPC bus is not present, the BFU operates at its default values. The battery voltage, current and temperature are monitored and alarms are sent on the EPC bus.

The BFU disconnects the battery, if the current is too low or the temperature is too high. When the temperature returns to normal, the battery is reconnected.

If the battery temperature sensor is faulty, a "Battery temperature sensor fault" message is sent to the DXU.

Battery back-up can also be manually disconnected or disconnected by control signals on the EPC bus.

The SM provides self-detection of internal faults and stores them in non-volatile memory.

2 Dimensions

Table 1 Size and Weight

Height	Width	Depth	Weight
267 mm	82 mm	226 mm	5 kg

3 Function Description

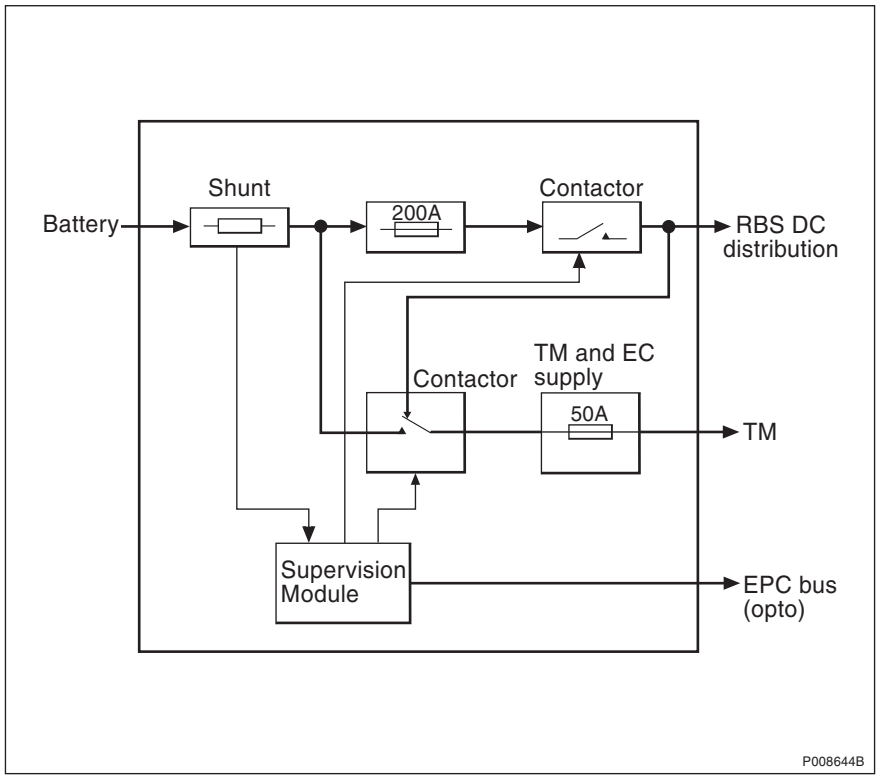

Figure 1 Block Diagram of BFU-22

The BFU consists of the following blocks:

- Contactors
- Circuit breakers
- Shunt
- TM and ED supply
- Supervision module

3.1 Contactor

The contactor is used to disconnect the batteries from the system. The SM controls the contactor.

3.2 Circuit Breaker

The circuit breaker disconnects the batteries if the current becomes too high. It can also be manually operated on the front of the BFU to connect or disconnect the batteries from the DC distribution.

3.3 Shunt

The shunt is used to sense the input current. The SM senses the value, which is used for control of the BFU.

3.4 TM Supply

One high-power TM output exists for supply of transmission equipment.

4 Interfaces

The BFU has the following interfaces:

- Battery
- RBS DC distribution
- TM supply 50 A
- EPC bus

4.1 Signal and Power Interfaces

The tables below show input data and output current.

Table 2 Input Data

Nominal input voltage	+24 V DC negative ground
Permitted variation input voltage	+18.0 to +29.0 V DC
Non-destruction input voltage	0.0 to +32.0 V DC
Power	4800 W
Nominal input current	200 A
Maximum input current	220 A
Maximum current ripple (20 Hz – 20 kHz)	24 Arms

Table 3 Output Current

RBS DC distribution (nominal)	160 A
RBS DC distribution (maximum)	180 A (during 3 hrs)
TM supply	40 A

4.2 Operator Interface

Indicators

Table 4 Indicators

Indicator	Colour
Fault	Red
Operational	Green
EPC bus fault	Yellow
Battery disconnected	Yellow

Switches

- Battery Disconnect – on/off
- DC out – on/off

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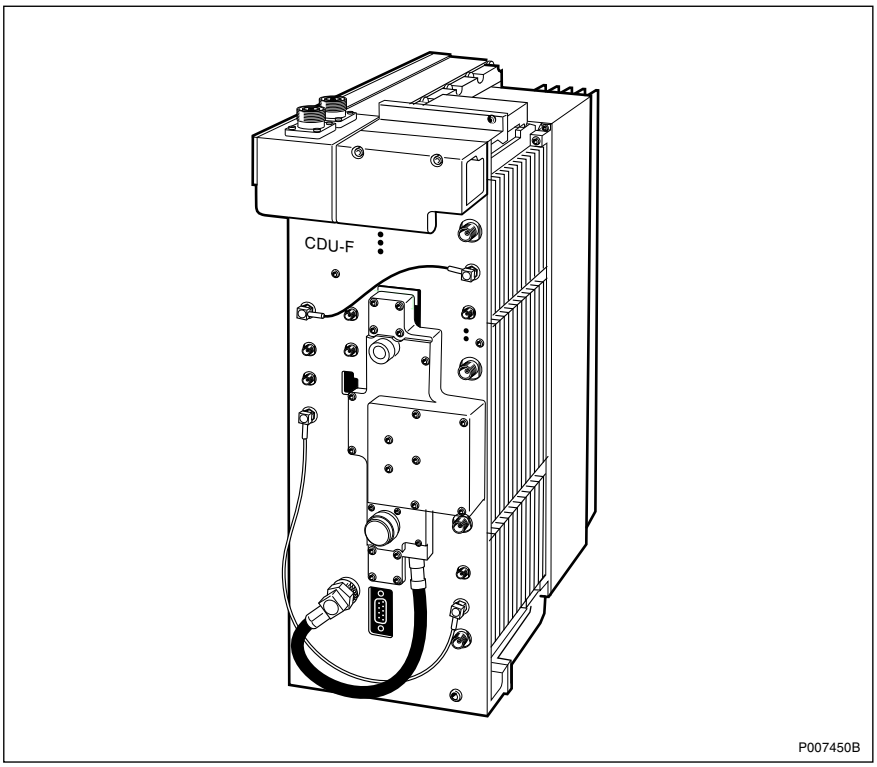
CDU-F

Combining and Distribution Unit
Description

The Combining and Distribution Unit (CDU) is the interface between the transceiver units (TRUs) and the antenna system.



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Contents

1 Product Overview

This document describes the CDU-F. A range of CDU types have been developed to support different configurations. The choice depends on the operator’s initial and future requirements.

The CDU-F handles one to six dTRUs. It is used in high capacity, medium output power configurations. The CDU-F supports baseband frequency hopping.

1.1 Main Functions

The CDU-F has the following main functions:

- Combines four TX signals to one antenna
- Provides automatically tuned cavity combiners, operated by step motors
- Supports baseband hopping
- Provides simultaneous transmission and reception on one antenna
- Amplifies two RX signals from two antennas for further distribution in the Configuration Switch Unit (CXU)

1.2 Variants

CDU-F is available for GSM 900 and GSM 1800.

2 Dimensions

This section describes the physical characteristics of CDU-F.

Table 1 CDU-F Size and Weight

Height	Width	Depth	Weight
400 mm (9 HE x 44.45 mm)	142 mm (28 TE x 5.08 mm)	239 + 90 mm(1)	15 kg

(1) The upper part protrudes 90 mm

3 Power Consumption and Heat Generation

Figures for power consumption and heat generation are shown in the table below.

Table 2 Power Consumption and Heat Generation

Max Power Consumption	Max Heat Generation
70W	70W

4 Function Description

This section describes the functions of the TX and RX parts of the CDU-F.

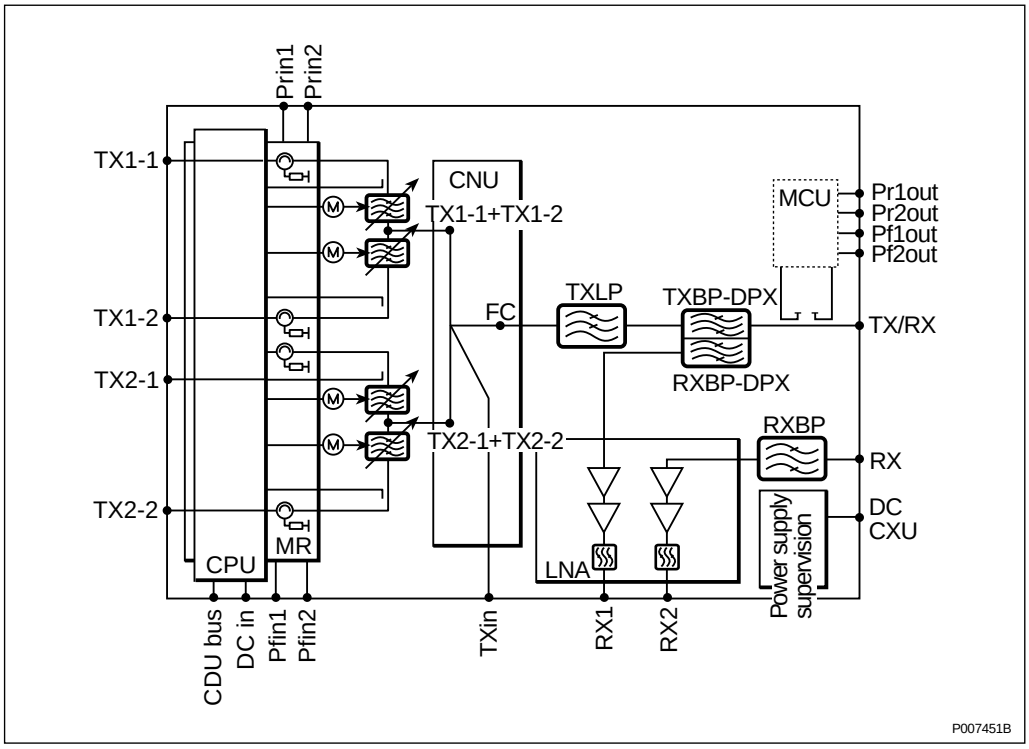

Figure 1 Block Diagram of CDU-F

4.1 TX Part Description

A CDU-F has four filter cavities grouped internally two and two. The two filters form a combiner for two TX signals and can be combined with a Combining Network Unit (CNU) to a combiner for four signals, or connected to another CDU-F to form a combining network for six signals.

The combined signals are fed through a lowpass TX filter to a duplex filter. The duplex filter allows the use of a single antenna both for transmitting and receiving. The duplex filter is connected directly to the antenna connector on top of the CDU.

All necessary connections for the TX combining network are done on the front of the CDU with the CNU.

Tuning the filter cavities is controlled by the Measurement Receiver (MR) and the Central Processor Unit (CPU).

A small part of the output and reflected power is distributed by the Measurement Coupler Unit (MCU) to four outputs. The signals are then connected to the MR in the same CDU-F, or the MR in another CDU-F, depending on the configuration.

The MR measures the input signal to the filter combiners and also the outgoing signal to the antenna. These two signals are used in the CPU to control the stepper motors, one for each filter cavity. Moving parts in the filter cavity, tune the combiner to the correct frequency.

4.2 RX Part Description

The duplex filter filters out the RX signal arriving to the antenna. This filtered signal is amplified in a two-stage low noise amplifier and then filtered in a lowpass filter.

The CDU-F also has an extra RX chain for diversity reception. This extra RX chain is similar to the duplex RX chain.

Distribution of RX signals is performed in the Configuration Switching Unit (CXU).

5 Interfaces

The external interfaces of the CDU-F are listed in the table below.

Table 3 Interfaces on CDU-F

Interface	**Type of Connector**
TX/RX, RX	7-16 female
RX1, RX2	QMA female
TX1 - TX4	TNC female
Pf in1, PF in2, Pr in1, Pr in2	SMA female
Pf out1, Pf out2, Pr out1, Pr out2	SMA female
FC	N female
CDU bus	9-pin male, D-sub
DC in	2-pin male Molex Mini-Fit

The CDU-F has the following indicators on the front panel.

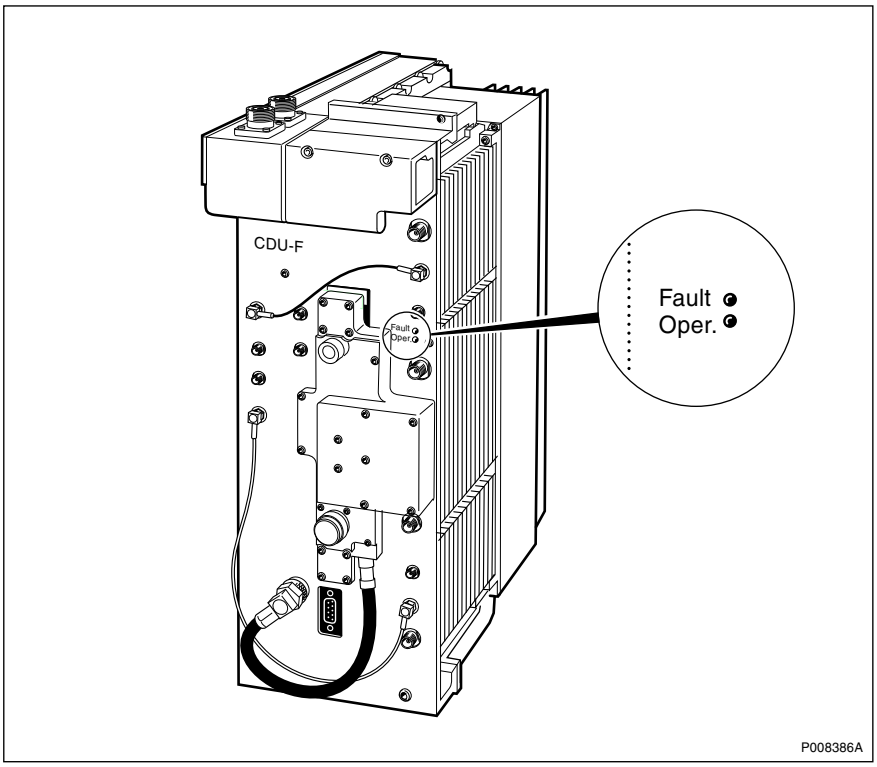

Figure 2 CDU-F Front Panel Indicators

The table below lists the various indicators on the CDU-F.

Table 4 Indicators on CDU-F

Colour, Label	**Mode**	**Indication**
Red, Fault	Off	No fault is localised in the unit.
	On	One or more faults are localised in the unit.
	Flashing	The unit has detected lost communication to a superior unit.
Green, Operational	Off	The unit is not operational.
	On	The unit is operational.

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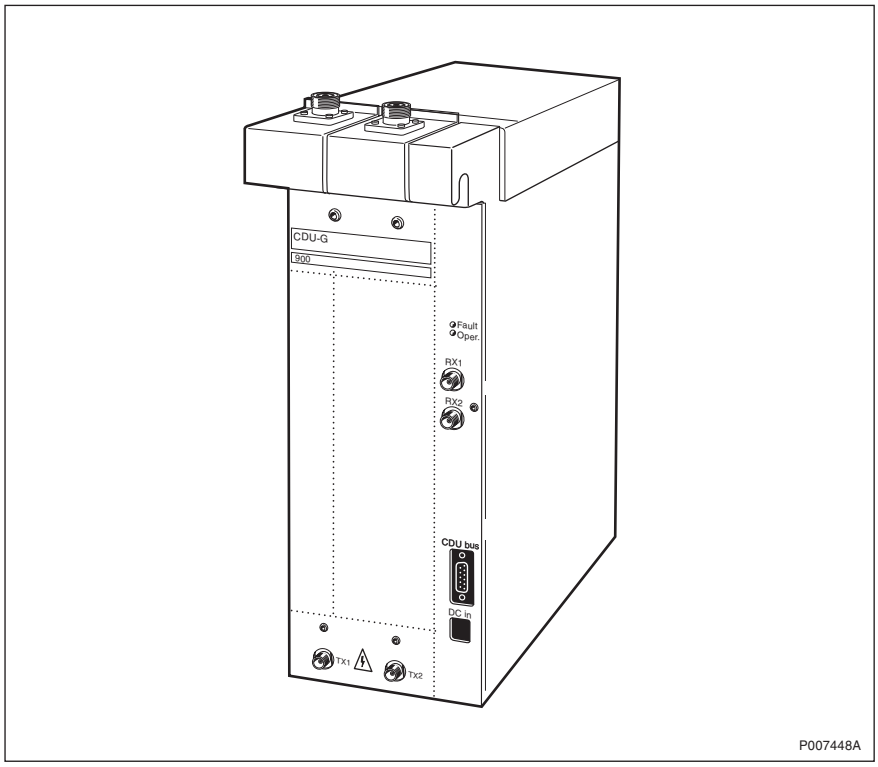
CDU-G

Combining and Distribution Unit
Description

The Combining and Distribution Unit (CDU) is the interface between the transceiver units (TRUs) and the antenna system.



Contents

1 Product Overview

This document describes the CDU-G. A range of CDU types have been developed to support different configurations. The choice depends on the operator's initial and future requirements.

The CDU-G handles one or two dTRUs. Connected to one dTRU, it provides a low capacity, high output power configuration. Connected to two dTRUs it provides a high capacity, low output power configuration. The CDU-G supports both synthesizer and baseband frequency hopping.

1.1 Main Functions

The CDU-G has the following main functions:

- Enables connection of two TX signals to two antennas. The TX signal can be two combined signals or two uncombined signals. A CDU-G has no combining circuits; the combining takes place outside the CDU
- Provides simultaneous transmission and reception on each antenna
- Amplifies two RX signals from two antennas for further distribution in the Configuration Switch Unit (CXU)

1.2 Variants

CDU-G is available for GSM 800, P-GSM 900, E-GSM 900, GSM 1800 and GSM 1900.

2 Dimensions

This section describes the physical characteristics of CDU-G.

Table 1 CDU-G Size and Weight

Height	Width	Depth	Weight
400 mm (9 HE x 44.45 mm)	142 mm (28 TE x 5.08 mm)	239 + 90 mm(1)	15 kg

(1) The upper part protrudes 90 mm

3 Power Consumption and Heat Generation

Table 2 Power Consumption and Heat Generation

Max Power Consumption	Max Heat Generation
30W	30W

4 Function Description

This section describes the functions of the TX and RX parts of the CDU-G.

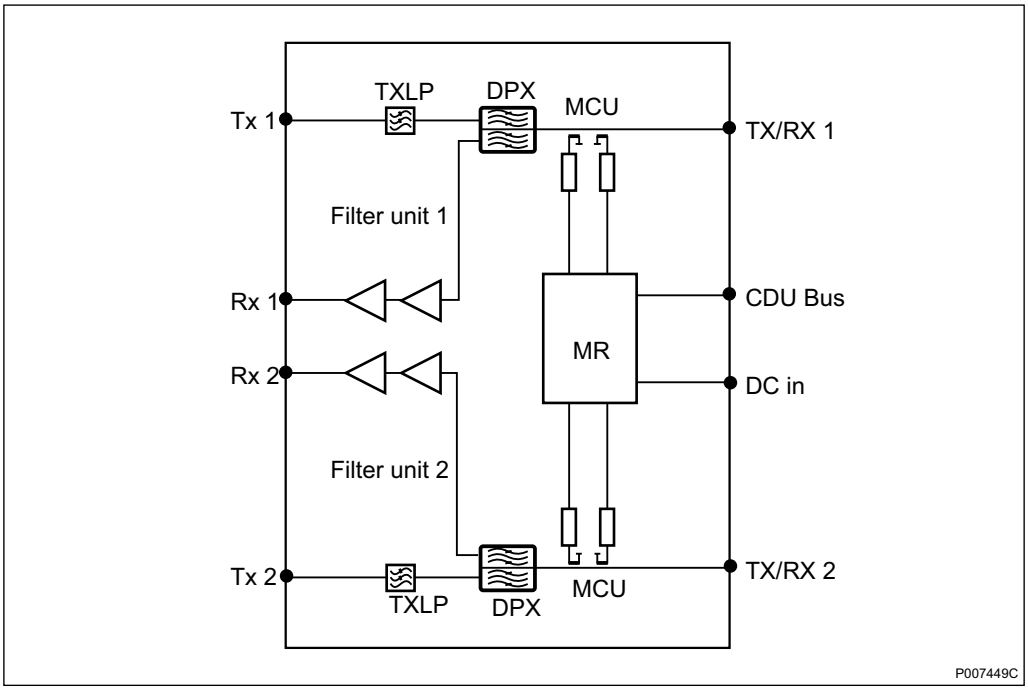


Figure 1 Block diagram of CDU-G

4.1 TX part description

A CDU-G consists of two identical TX chains — the top and bottom parts in the diagram above.

The TX part contains a lowpass filter and a duplex filter. The lowpass filter (TXLP) secures the required reverse isolation. It also reduces spuriouses from the transmitter on frequencies higher than the TX band. The duplex filter (DPX) enables the use of a single antenna for both transmitting and receiving.

There is a Measurement Coupler Unit (MCU) between the DPX and antenna connector. The MCU samples forward and reflected signals and distributes them to the Measurement Receiver (MR) for antenna return loss monitoring.

4.2 RX Part Description

A CDU-G consists of two identical RX chains — the middle part in the above diagram. The RX part consists of a filter and a low noise amplifier (LNA). The receiver filter is included in the duplex filter.

Distribution of RX signals is performed in the CXU.

5 Interfaces

The external interfaces of CDU-G are listed in the table below.

Table 3 Interfaces on CDU-G

Interface	Type of Connector
TX/RX1, TX/RX2	7-16 female
RX1, RX2	QMA female
TX1, TX2	TNC female
CDU bus	9-pin male, D-sub
DC in	2-pin male Molex Mini-Fit

The CDU-G has the following indicators on the front panel.

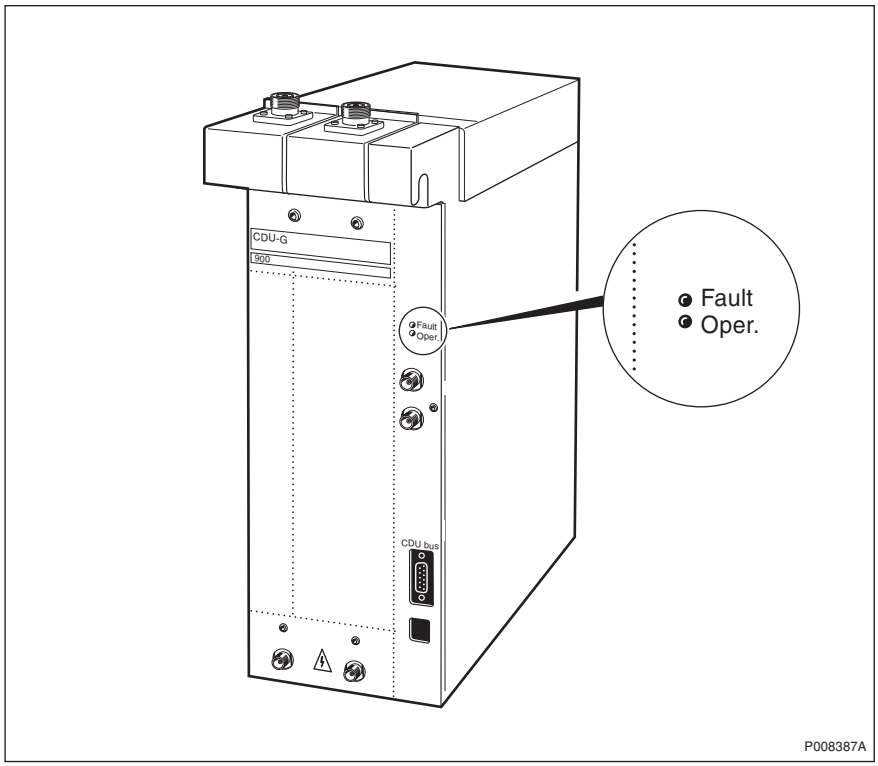


Figure 2 CDU-G Front Panel Indicators

The table below lists the various indicators on the CDU-G.

Table 4 Indicators on CDU-G

Colour, Label	Mode	Indication
Red, Fault	Off	No fault is localised in the unit.
	On	One or more faults are localised in the unit.
	Flashing	The unit has detected lost communication to a superior unit.
Green, Operational	Off	The unit is not operational.
	On	The unit is operational.

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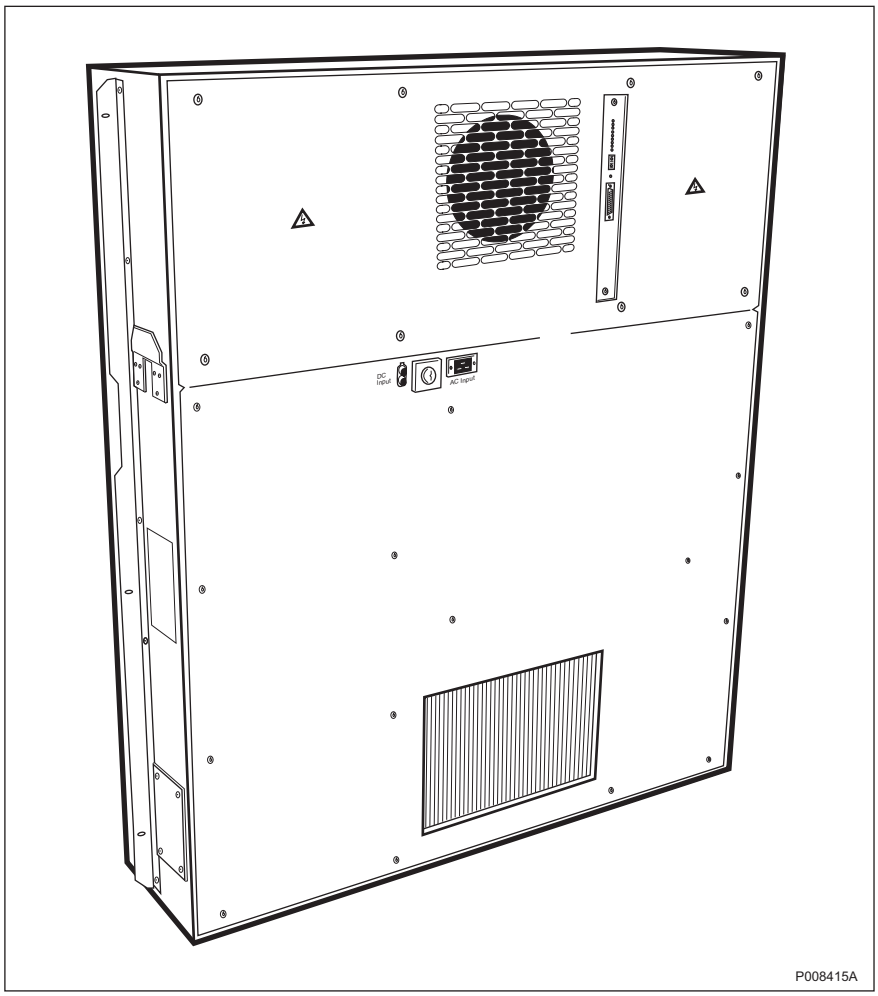
Combined Climate Unit
Unit Description

The climate unit maintains the internal environment regarding temperature and humidity within allowed ranges for the units inside the cabinet. The climate unit is mounted in the door of the cabinet.



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Contents

1 Product Overview

1.1 Main Functions

The combined climate unit for the RBS 2106 has the following main function:

- Provides the RBS cabinet with cooling or heating to maintain the operating temperature within specified limits

2 Dimensions

The Climate Unit has the following dimensions:

Table 1 Size and Weight

Height	Width	Depth	Weight
1250 mm	1050 mm	250 mm	105 kg

3 Power Consumption

Table 2 Power Consumption

Max AC power consumption	Max DC power consumption
2300 W (at 230 V 50 Hz)	450 W

4 Function Description

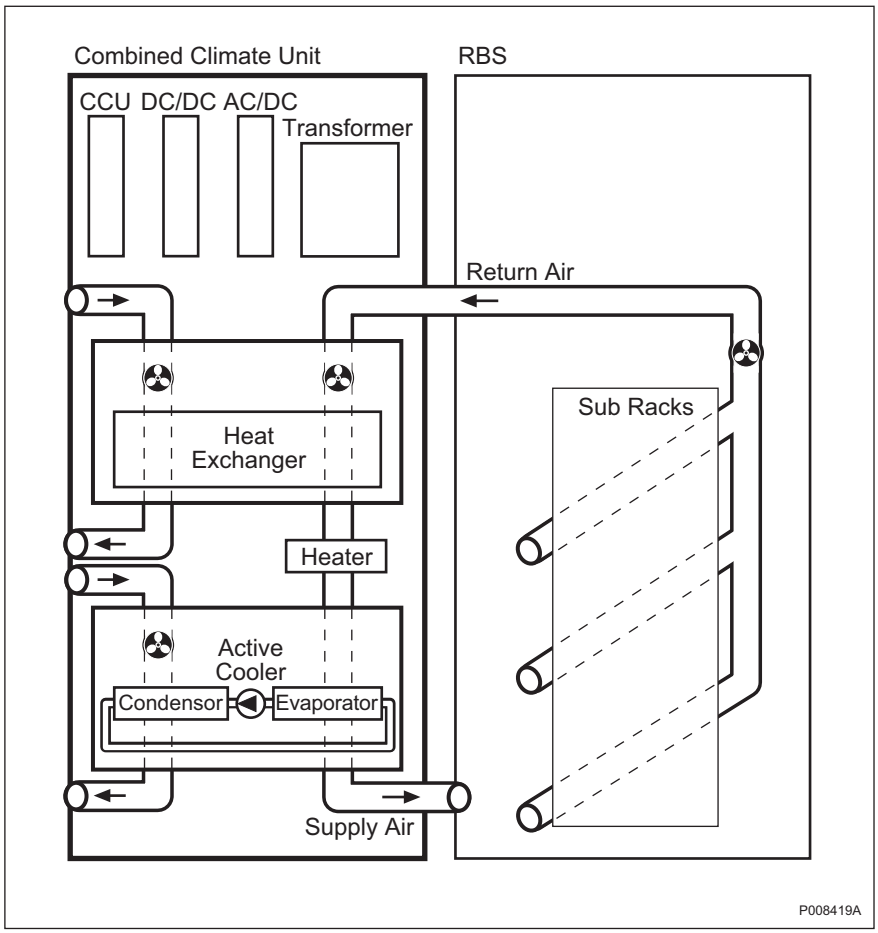

Figure 1 Block Diagram

The Combined Climate Unit consists of the following units:

- Heat exchanger
- Active cooler
- Heater
- Climate Control Unit (CCU)
- DC/DC converter
- AC/DC converter
- Transformer

4.1 Heat Exchanger

This unit consists of a cross-flow heat exchanger, DC-powered internal and external air circuit fans.

The outside air circulates through one side of the heat exchanger and the inside air circulates through the other side. DC-powered fans force the air through the heat exchanger. The inside air is cooled by the outside air.

4.2 Active Cooler

This unit consists of a compressor, reducing valve, condenser, evaporator and an AC-powered condenser fan.

The liquid coolant passes through a reducing valve, where it evaporates to a cold low-pressure gas. This gas flows through the evaporator and cools it. The inside air that has passed the heat exchanger is blown through the evaporator, cooled and returned to the cabinet subracks.

The compressor compresses the coolant to a liquid state again in the condenser. The coolant and the condenser become hot in the process. An AC-powered fan circulates the outside air through the condenser and cools it. The coolant consists of HFC 134a (tetrafluoroethane).

When the temperature exceeds the compressor start point, the CCU supplies mains voltage, first to the condenser fan and then to the compressor. The condenser fan runs when the compressor is running and one minute after the compressor is switched off. The compressor cannot start again before the condenser fan has stopped. This is done to equalise the pressure differences in the cooling system before the compressor starts.

When the temperature decreases below the compressor stop value, a compressor stop signal is activated, but the compressor will continue running for at least 10 minutes.

If the mains current to the compressor is missing, it is reported as compressor failure.

The condenser fan is provided with a rotation signal output. If the signal is missing, an active cooler fan alarm is reported.

4.3 Heater

The heater is placed in the internal air circuit and heats the air if the ambient temperature is too low for start up.

The heater is powered by mains voltage, and heats the inside air if the start-up temperature inside the cabinet is below +5° C. The heater has a capacity of 2 kW.

The CCU measures the return air temperature and controls the heater.

4.4 Climate Control Unit

The Climate Control Unit (CCU) is a processor based plug-in unit, that controls and supervises the climate unit. It has a set of default operating parameters, which can be overridden by loaded parameters. The backplane connectors contain the climate unit internal interfaces to DC power, AC power, fans, compressor, temperature sensors, and so on.

The front panel contains indicators, connectors for the EPC bus and a 25-pole D-sub connector for test and control.

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 condenser fan
- Monitors and controls the heater
- Handles alarm
- Supervises mains voltage
- Test

The test function is activated by the button on the front panel. After the test has been completed, the indicators will present the status for two minutes. No alarm is sent if there is a malfunction. It is possible to change the behaviour of the climate unit by sending a set of parameters to the CCU through the EPC bus.

4.5 DC/DC Converter

The DC/DC converter operates on +24 V DC from the RBS. The converter feeds -48 V DC to the internal air circuit fan, external air circuit fan in the heat exchanger and the CCU.

4.6 AC/DC Converter

The AC/DC converter converts AC mains to -48 V DC for the internal air circuit fan, external air circuit fan in the heat exchanger and the CCU, when +24 V DC supply is not present.

4.7 Transformer

The transformer supplies fans, heater, compressor and AC/DC converter with 230 V AC, independent of the mains input voltage.

The transformer has windings for mains input voltages of 200, 208, 230, 240 and 250 V AC. The mains voltage is selected using the voltage selector switch.

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

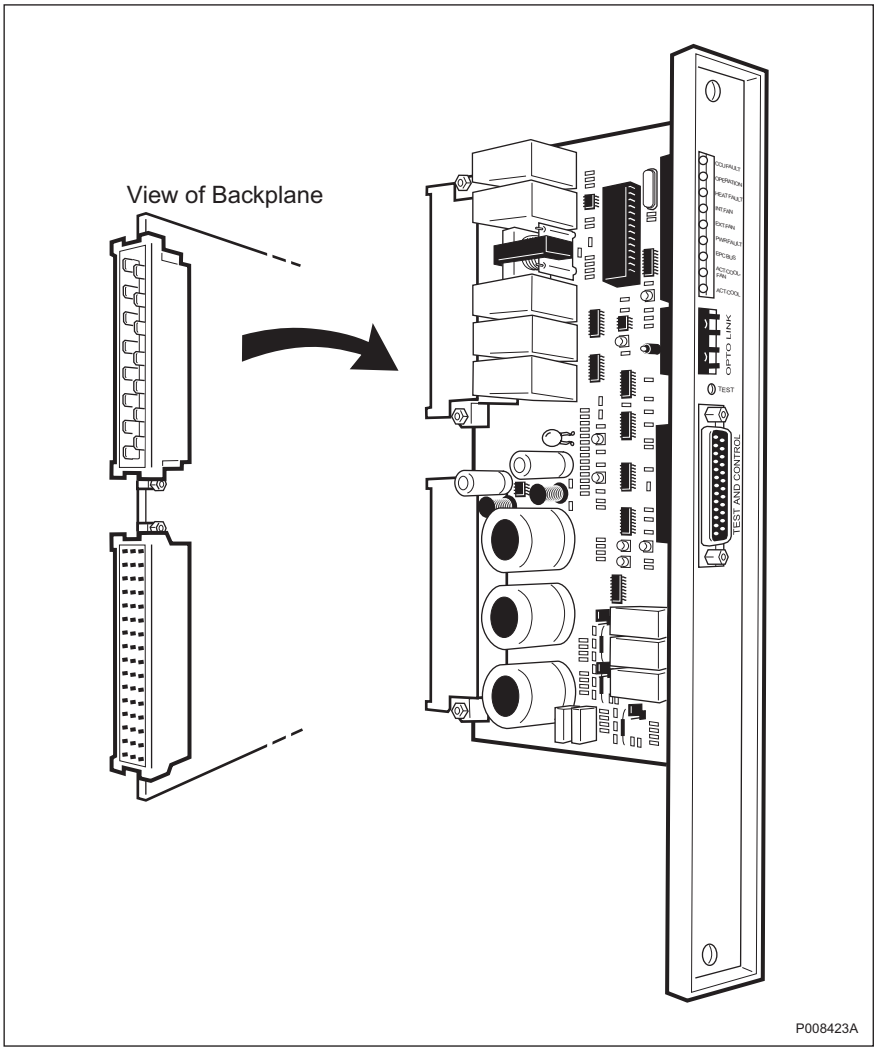

Figure 2 CCU

The CCU front panel has the following MMI interfaces:

- Indicators
- Test button
- Test and control connector

Indicators

Table 3 Indicators

Indicator	Color
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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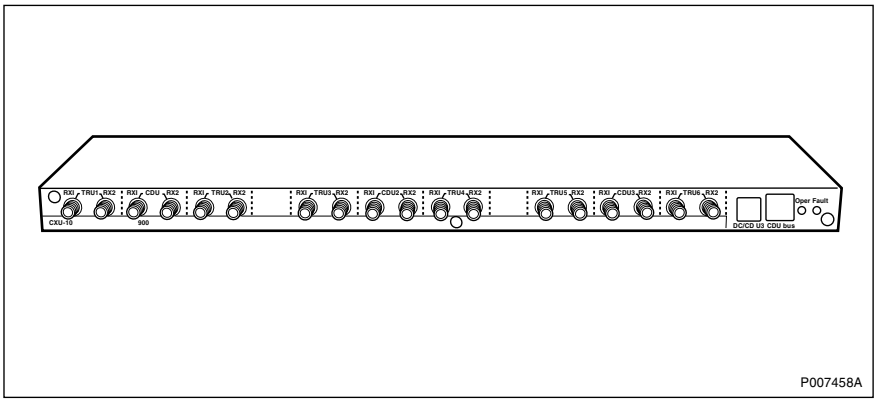
CXU-10

Configuration Switch Unit
Unit Description

The Configuration Switch Unit (CXU) distributes the RX signals from the CDU to the dTRU within the same RBS.



Contents

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

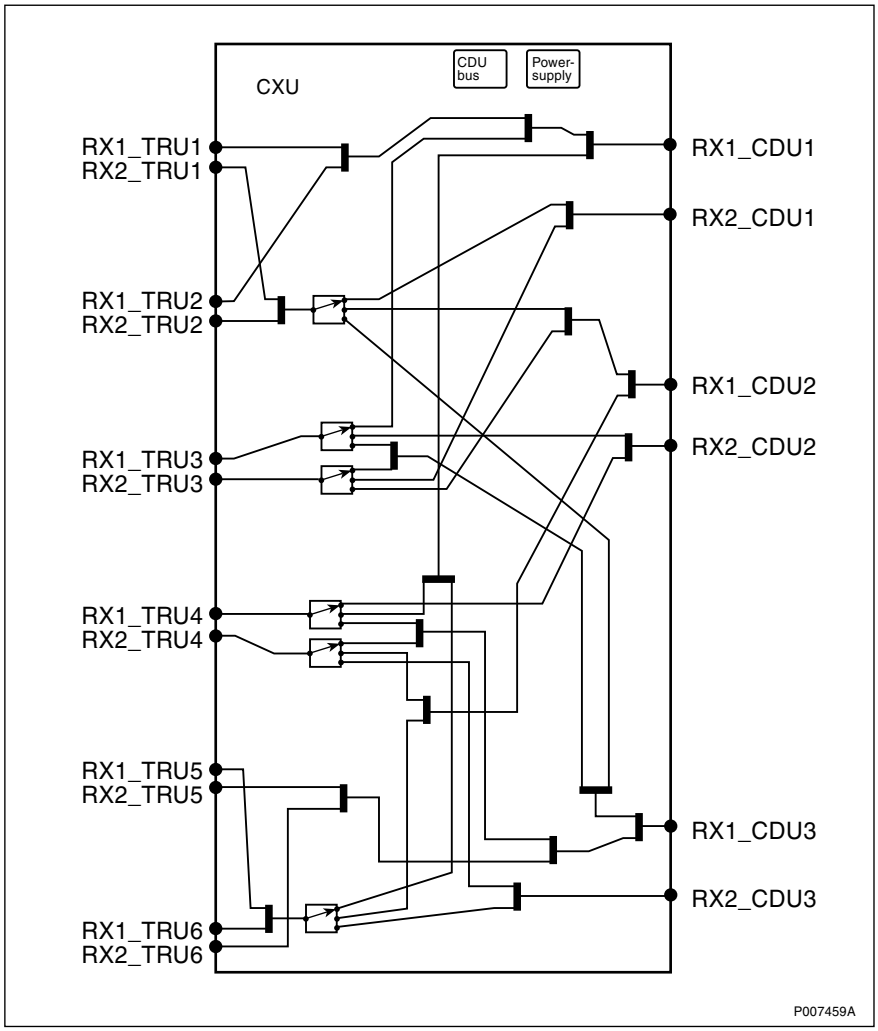


Figure 1 Block Diagram of the CXU

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

Indicators	Color
Operational	Green
Fault	Red

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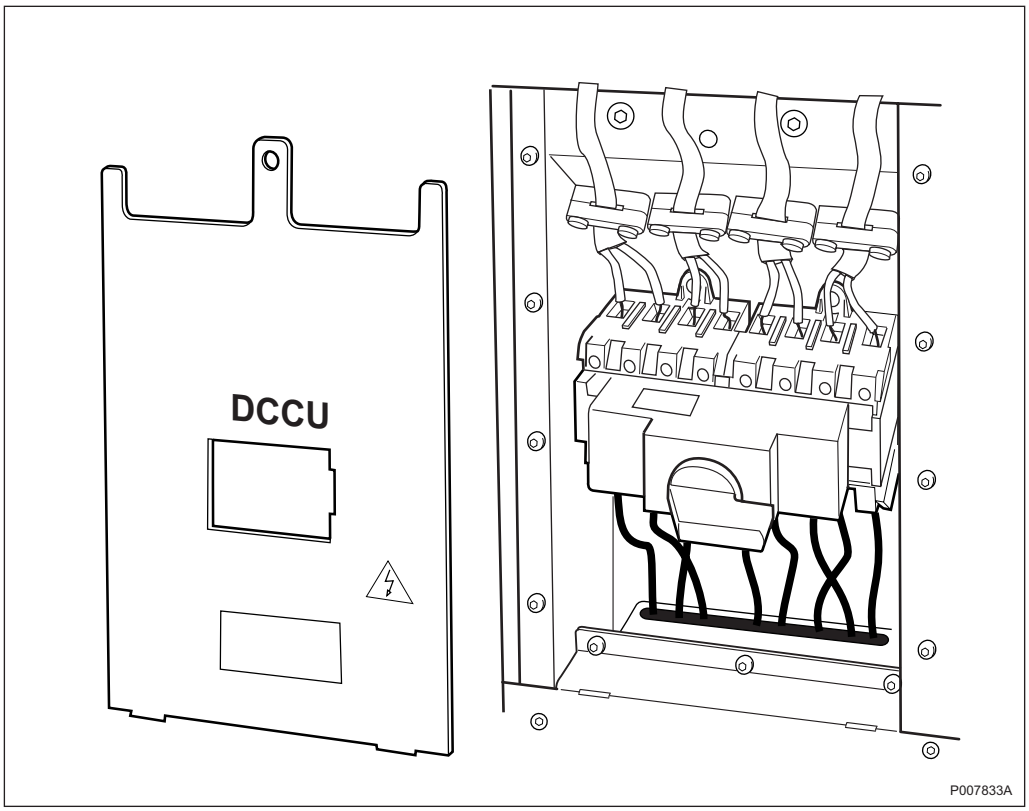
DCCU

DC Connection Unit

Unit Description

EN/LZT 720 0224 R1A

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



ERICSSON

Contents

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(1)

(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

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

Table 3 Output Data

Conductor area	6 mm^2
Number of conductors	2

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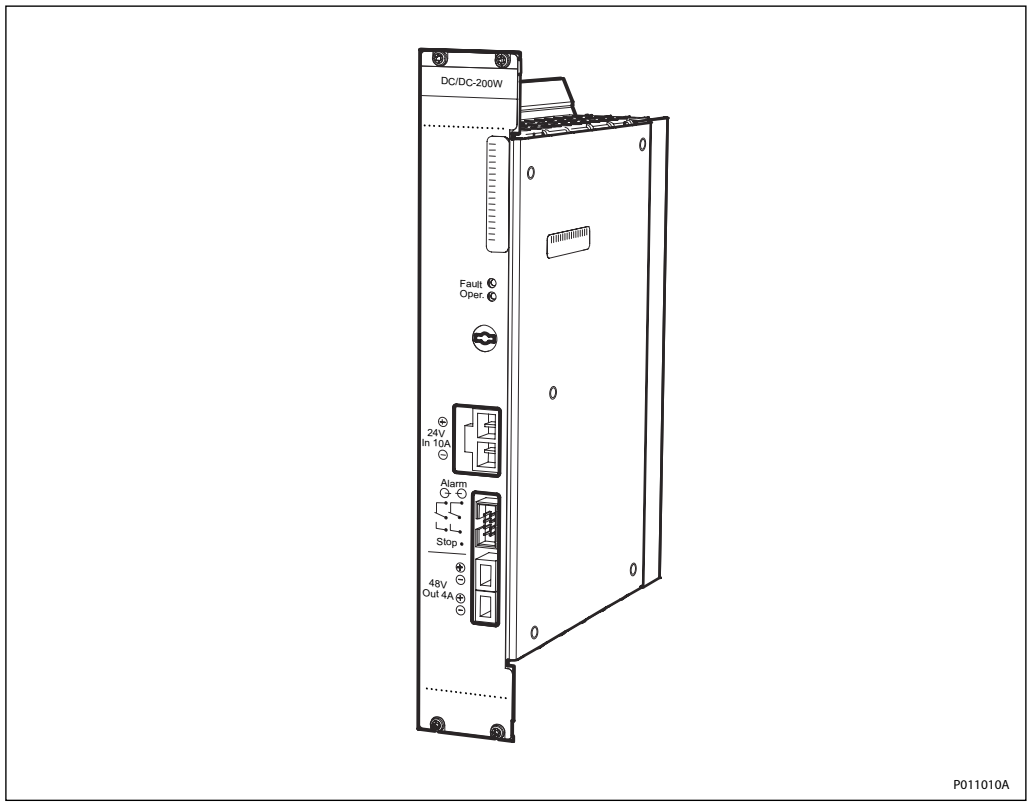
DC/DC Converter

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

Unit Description

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



Contents

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:

- Converts voltage
- Limits current
- Regulates voltage
- Protects from overvoltage and undervoltage
- Provides 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
262 mm (6 HE x 44.45 mm)	40,3 mm (8 TE x 5.08 mm)	159 mm	1.3 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

This section dscribes the function of the DC/DC Converter.

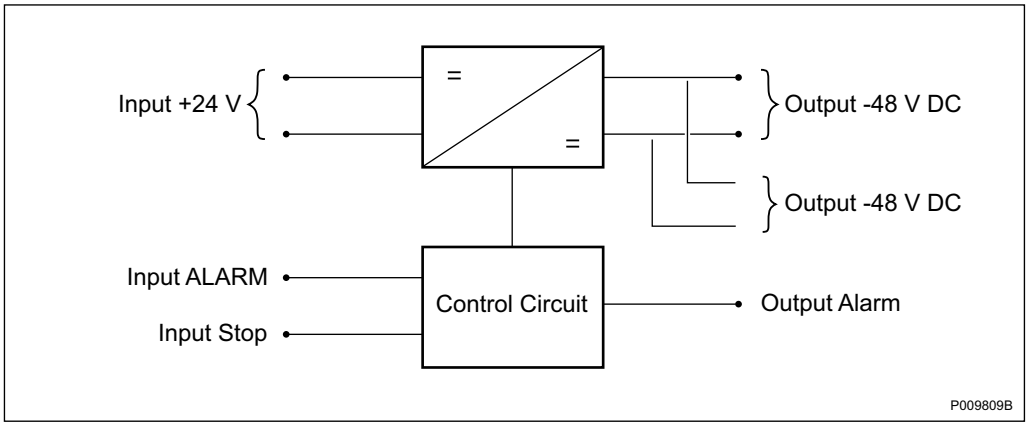


Figure 1 DC/DC Converter Block Diagram

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 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 DC/DC Converter reconnects after approximately 10 seconds when the output voltage decreases to nominal level. If this occurs five times, the converter will shut down and be blocked. To restart the converter, the input voltage supply must be disconnected and then reconnected after approximately 10 seconds.

The undervoltage protector monitors the input voltage and blocks the converter at an input voltage of 18 ±0.5 V. The converter starts automatically when the input voltage exceeds the start level, 20V ±0.5.

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 range due to either overload, overvoltage, or failure.

5 Interfaces

This section describes the interfaces of the DC/DC Converter.

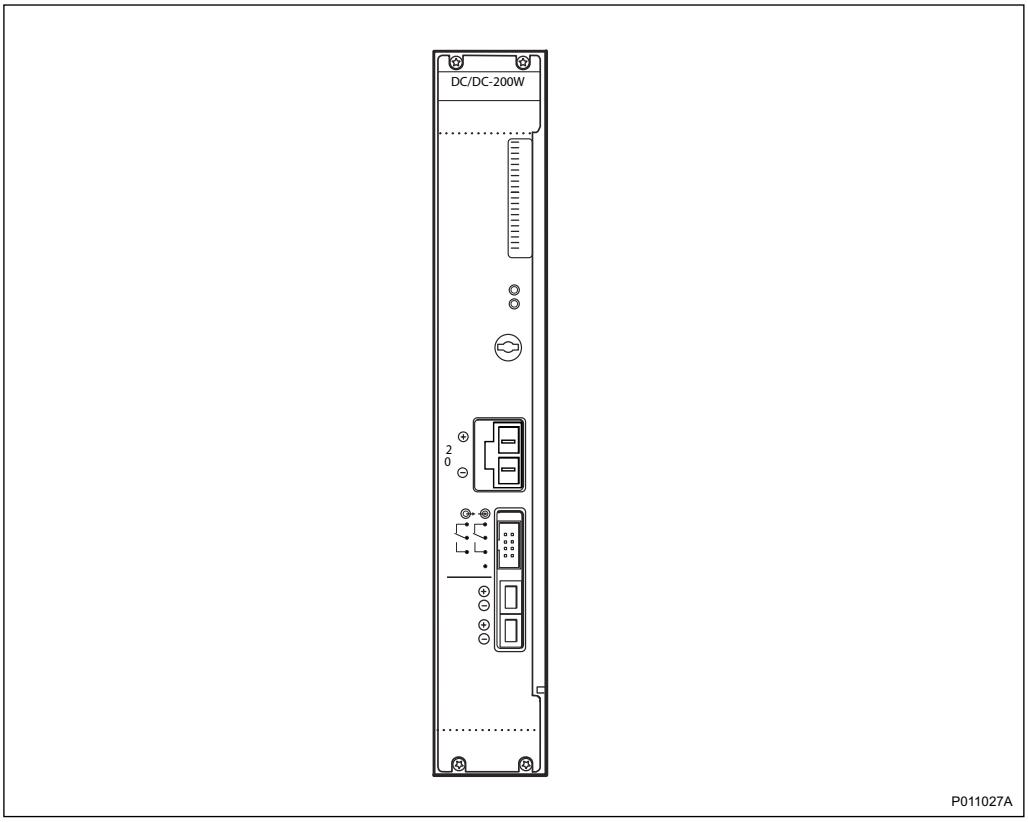


Figure 2 DC/DC converter Interfaces

5.1 Signal and Power Interfaces

Input data

Table 3 Input Data

Nominal voltage	+24 V DC
Permitted variations	+18.0 ±0.5 to 29.0 ±0.5 V DC
Default start level	+23.5 ±0.2 V DC
Default undervoltage stop level	+18.5 ±0.2 V DC
Default overvoltage stop level	31.0 ±0.5 V DC
Restart level after overvoltage	29.0 ±0.5 V DC
Rated power	200 W

Output data

Table 4 Output Data

Rated voltage	–54 V DC
Default output	–54 V DC
Overvoltage protection	–58 ±1 V DC
Undervoltage alarm	–44.0 ±1 V
Output current	4.0 A at –54 V DC
Efficiency at 200 W output	>88% at I_{out}=4.0 A and 27 V DC input
Current or power limitation at U (out):	225 W

5.2 Operator Interface

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

- ON/OFF switch
- Start and Stop pin

Indicators

Table 5 Indicators

Indication	**Colour**
Input OK	Green
Output fail	Red

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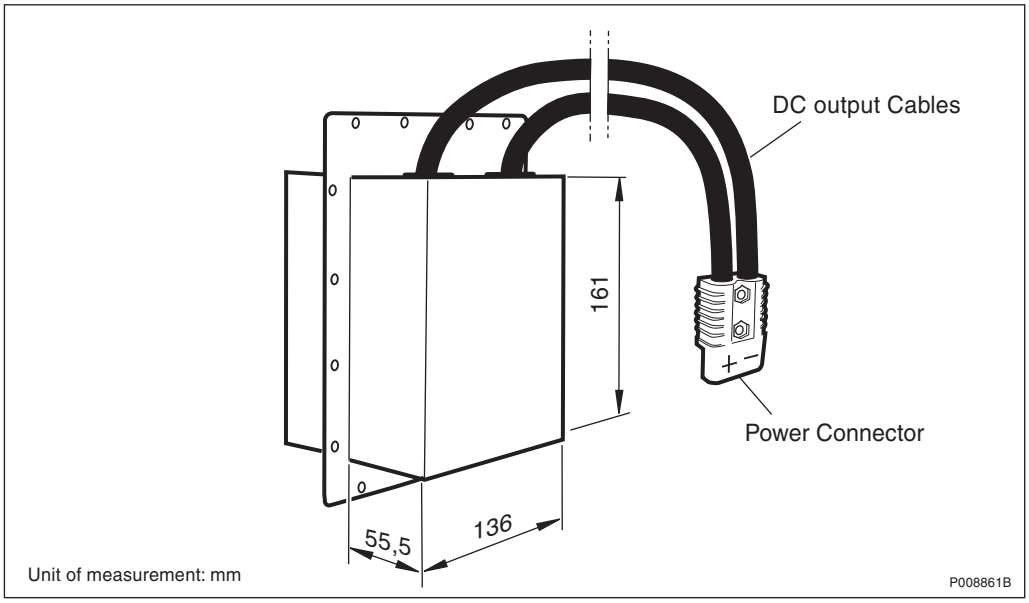
DC Filter for RBS 2106

Filter for External Batteries

Description

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



Contents

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

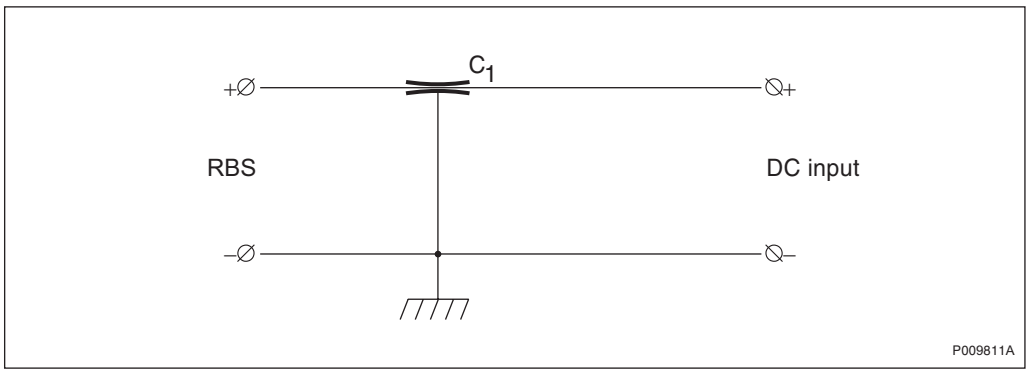


Figure 1 Circuit Diagram

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

he DC Filter has the following external interfaces:

- Two input terminals for 70 - 185 mm2 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 mm2 cable, about 420 mm long, with an Anderson power plug
- Output cable positive (+) is a 70 mm2 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

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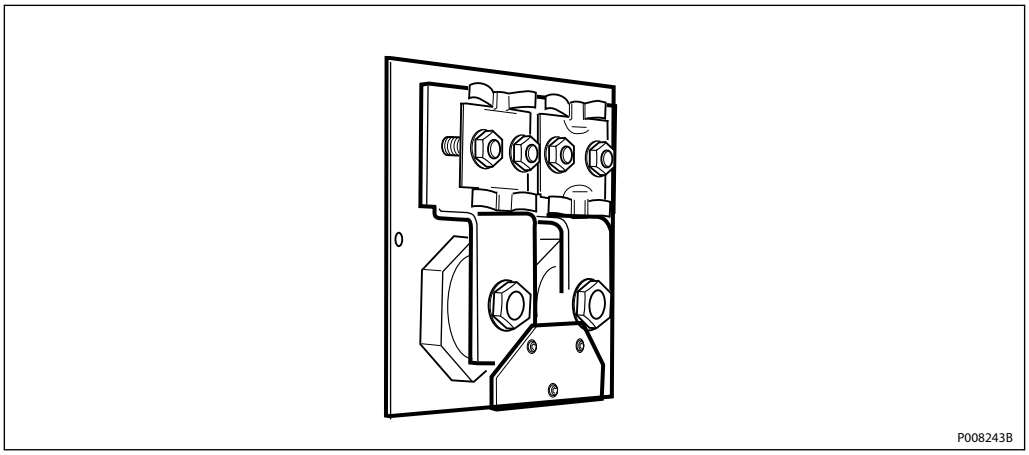
DC Filter 01 for RBS 2206 and RBS 2207

Description

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



Contents

1 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 Size and Weight

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^2 power cables
- Protects incoming cables from pulling forces
- Power connection for internal distribution

4 Interface

4.1 Signal and Power Interfaces

The DC-filter has the following external interfaces:

- Two input terminals for 70 - 185 mm^2
- Pull-relief clamps for incoming power cables with diameter 14 - 26 mm
- Two 70 mm^2 output cables

Table 2 Input Data

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

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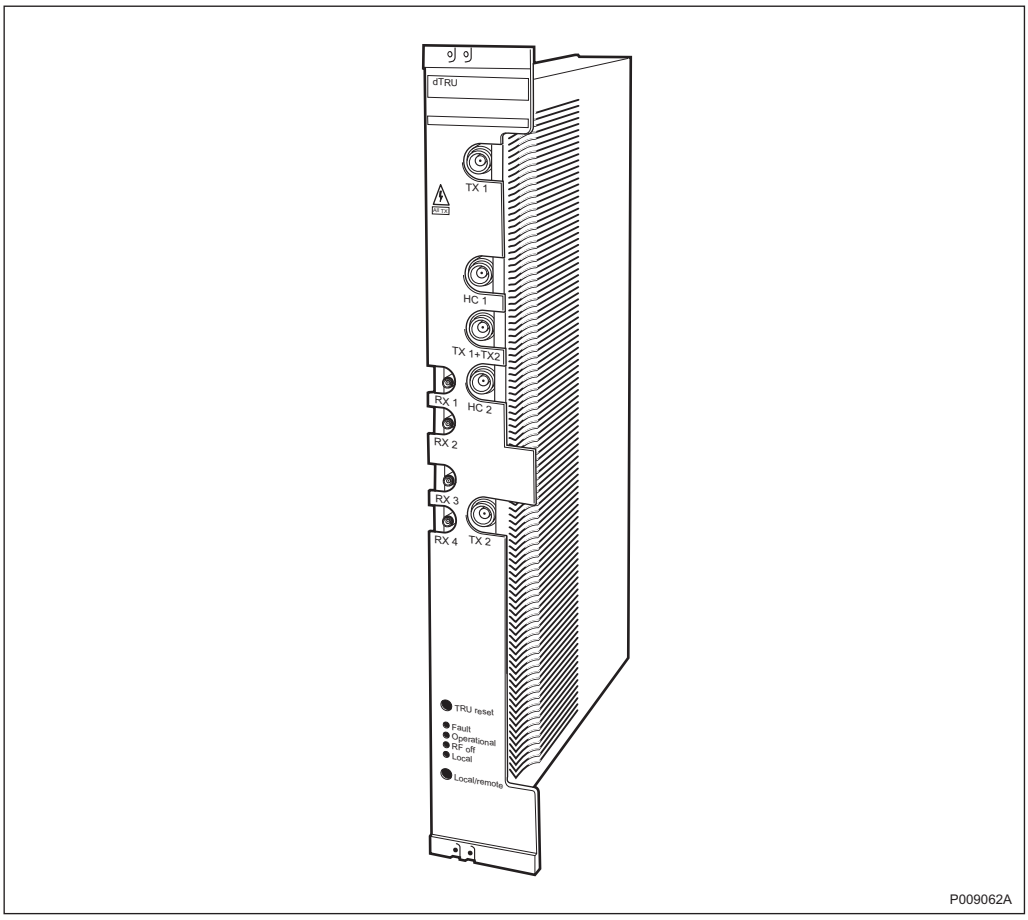
dTRU

Double Transceiver Unit
Unit Description

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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Contents

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 (9 HE x 44.45 mm)	71 mm (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

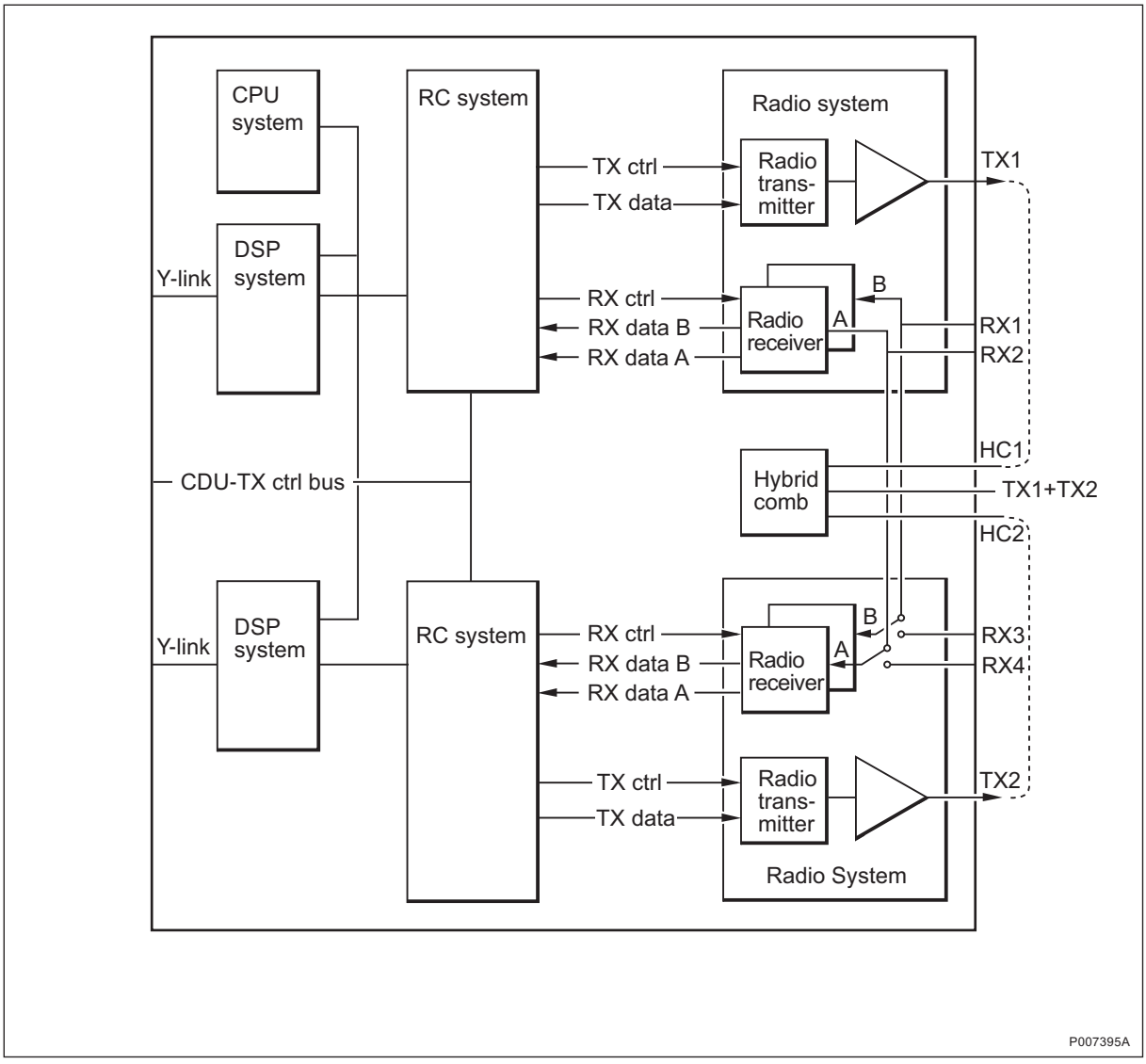

Figure 1 Block diagram of the dTRU

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	Color
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

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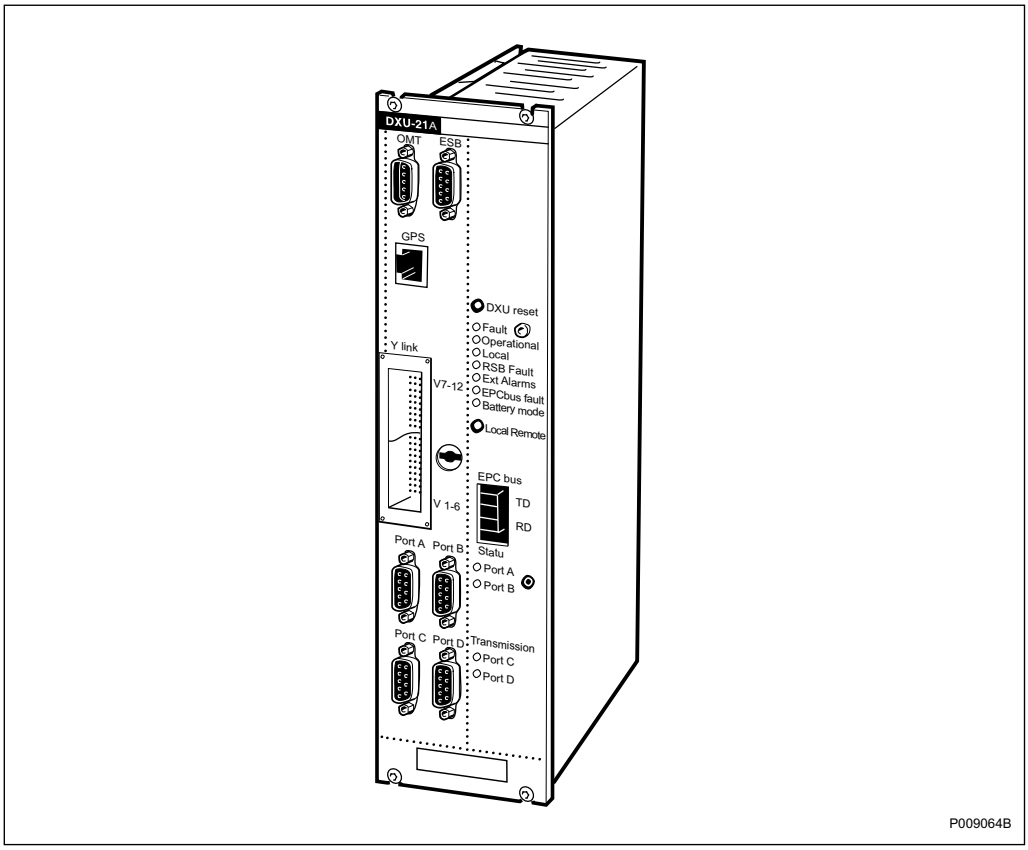
DXU-21 A

Distribution Switch Unit
Unit Description

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



Contents

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 transmission interfaces 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 configured to both 1.544 Mbit/s (T1) and 2.048 Mbit/s (E1) transmission interface modes.

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 (6 HE x 44.45 mm	71 mm (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

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

The relations of these main blocks are shown in the following figure.

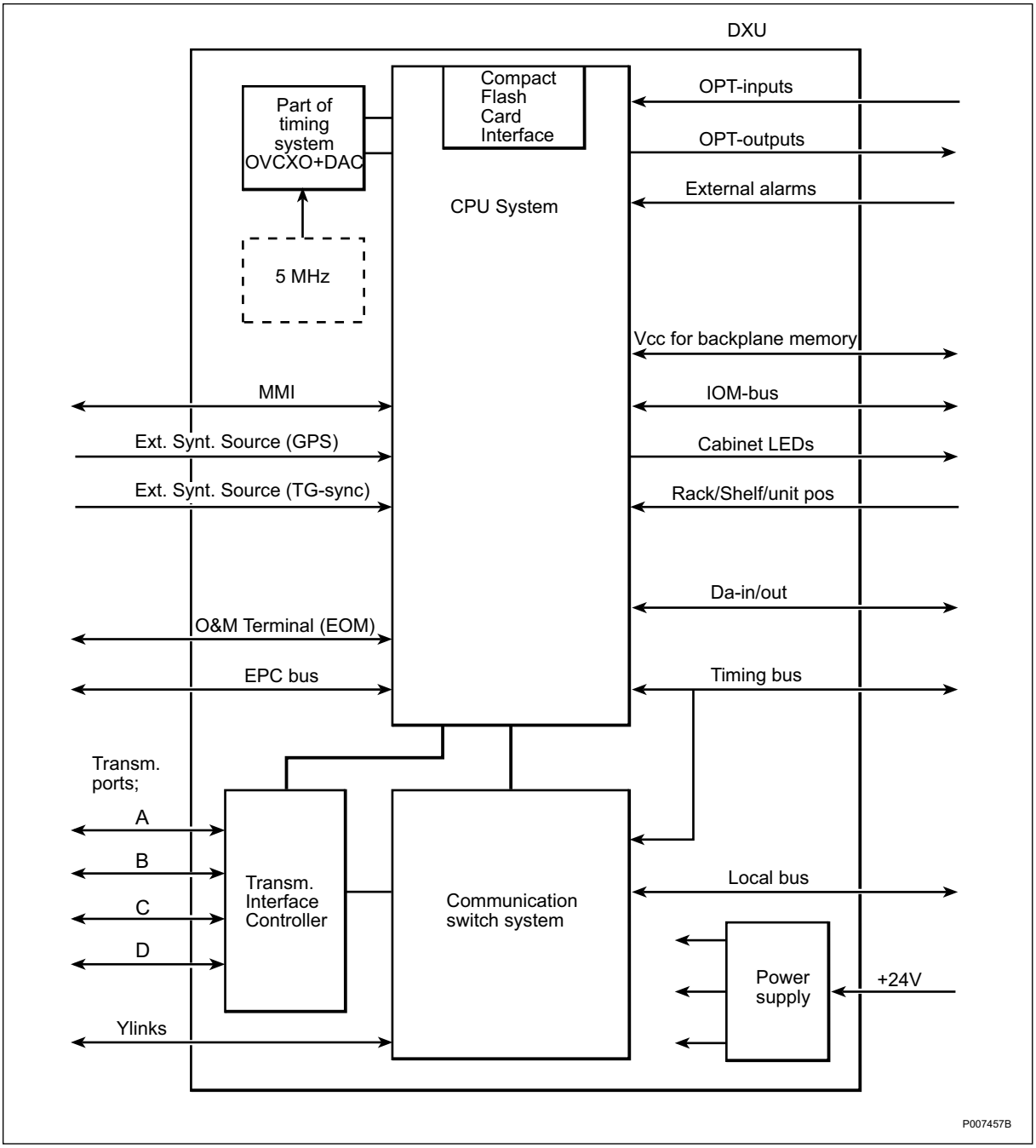


Figure 1 DXU-21, block diagram

4.1 CPU System

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

The CPU system consists of:

- I2C controller
- 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 ports and the transmission interface controller, which controls the traffic for all four transmission ports.

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

This section describes the signal and power interfaces, and the operator interface, of the DXU.

5.1 Signal and Power Interfaces

Transmission Interface

The four transmission 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 kΩ, and an open contact (logic one) is required to be above 100 kΩ.

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.

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.

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 I2C ports. It is used to communicate with the CDU, CXU and cabinet ID.

An I2C 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.

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".

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-extension 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

This section describes the operator interface, which consists of the OMT interface and indicators and buttons.

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

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
Battery mode	Yellow

Table 5 Switches

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

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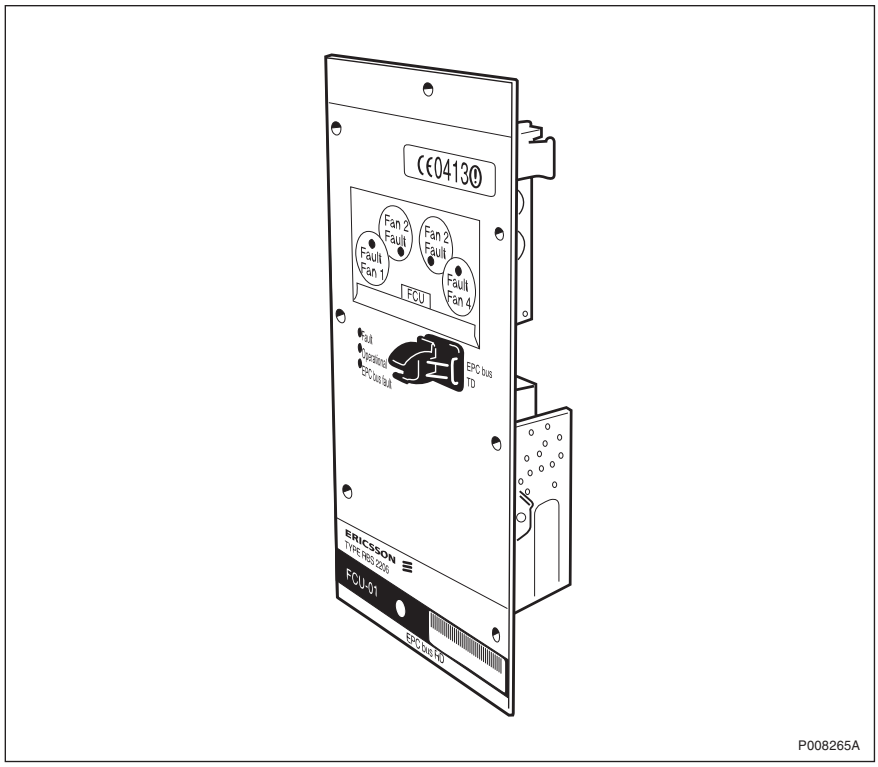
FCU-01

Fan Control Unit
Unit Description

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



Contents

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 Interfaces

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

Nominal input voltage	+24.0 V DC
Input voltage range	+19.0 - +29.0 V DC
Non destructive voltage	0.9 - +32.0 V DC
Input power	4 x 45 W

Table 3 Output Data

Output voltage	9 - 28.3 V DC
Output current	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

Alarm pos. U_{pos}	5 - 30 V DC
Alarm neg. U_{pos}	$<U_{pos}$- 2.4 V DC
Current I_{no_alarm}	5 - 20 mA

Table 5 Alarm

Alarm pos. U_{pos}	5 - 30 V DC
Alarm neg. U_{pos}	< 2 V DC
Current I_{no_alarm}	< 5 mA

Indicators

Table 6 Indicators

Indicator	**Color**
Fault	Red
Operational	Green
EPC bus fault	Yellow
Fan 1 fault	Red
Fan 2 fault	Red
Fan 3 fault	Red
Fan 4 fault	Red

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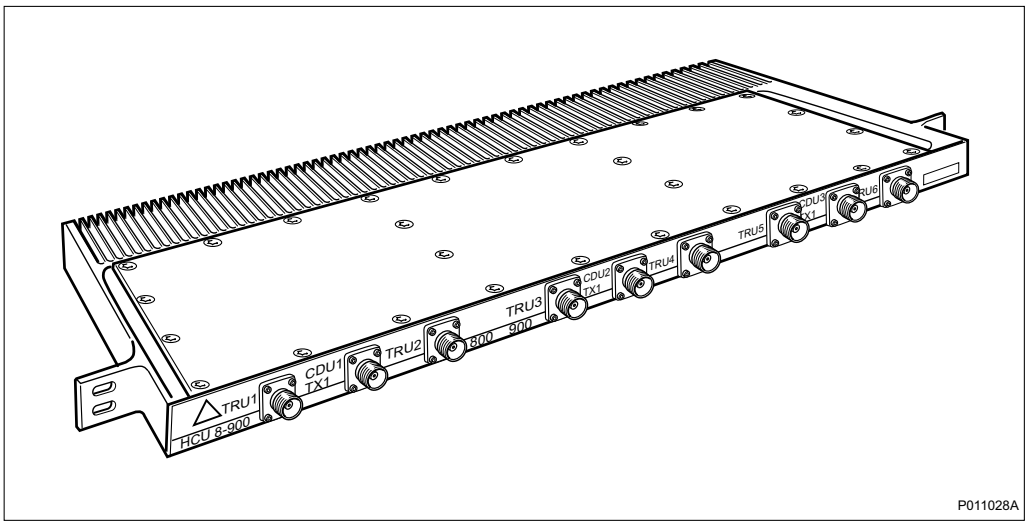
HCU
Hybrid Combiner Unit

Unit Description

The HCU combines the signals from two dTRUs into a common output, thus expanding capacity without increasing the number of antennas.



Contents

1 Product Overview

The HCU contains three hybrid combiners. Each hybrid combines two RF signals, delivered from the dTRU, into one. This is then passed to the CDU. This gives an expanded capacity using a minimum of TX/RX antennas. (There is no need to increase the number of TX antennas or to build a new site.) The HCU covers both GSM 800 and GSM 900.

2 Dimensions

The HCU has the following dimensions:

Table 1 Size and Weight

Height	Width	Depth	Weight
22 mm	482.6 mm (19’ standard)	236.6 mm(1)	<3.5 kg

(1) The HCU protrudes 40 mm from the rack (including the front panel)

3 Function Description

This section describes the function of the HCU.

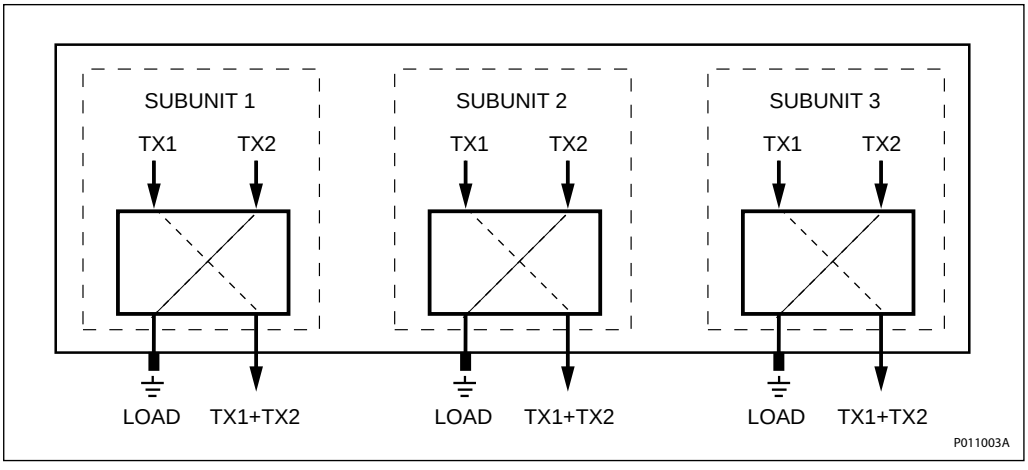


Figure 1 Block diagram for HCU

A dTRU has an internal hybrid combiner, which can combine the two transmitters into a common output. A CDU-G has no further combining function for the transmitted signal. If further combining is required, the Hybrid Combining Unit (HCU) must be introduced.

The HCU can combine the already combined signal from two dTRUs into a common output. The benefit is that it is possible to expand capacity without increasing the number of antennas. Synthesizer hopping is supported, and

using a HCU with a CDU-G makes synthesised frequency hopping possible. The drawback is that the output power is reduced by half.

The HCU is a passive unit that does not require power feeding.

4 Interfaces

This section describes connectors on the HCU.

Connectors

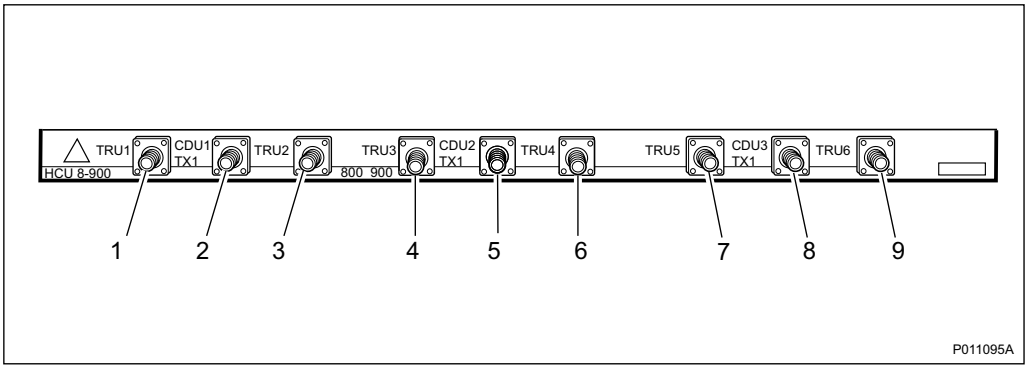


Figure 2 HCU Connectors

Table 2 HCU Connectors

Position	HCU Label	Connects to
1	TX1	dTRU 1
2	TX1+TX2	CDU-G 1.TX1
3	TX2	dTRU 2
4	TX1	dTRU 3
5	TX1+TX2	CDU-G 2:TX1
6	TX2	dTRU 4
7	TX1	dTRU 5
8	TX1+TX2	CDU-G 3.TX1
9	TX2	dTRU 6

Input Data

Table 3 Input Ports

Port	Marking
Input 1..6	TRU1..TRU6

Output Data

Table 4 Output Ports

Port	Marking
Output 1, 2, 3	CDU1 TX1, CDU2 TX1, CDU3 TX1

Indicators

The HCU does not have any indicators.

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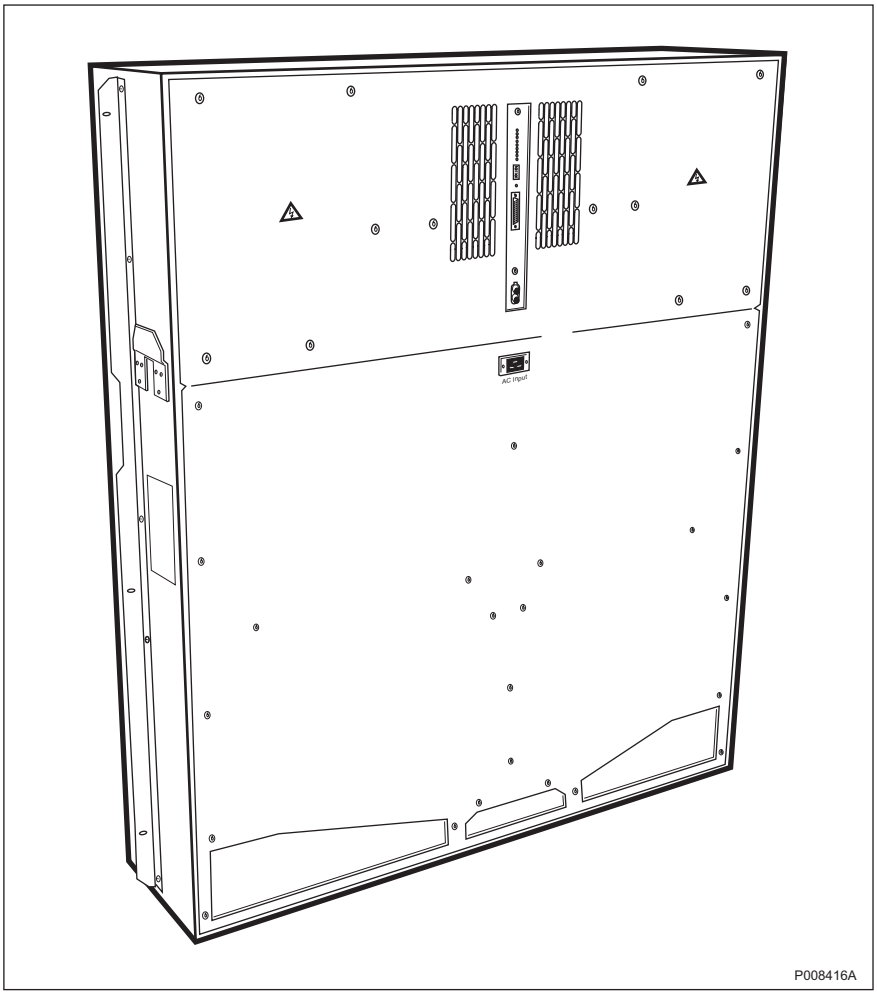
Heat Exchanger Climate Unit

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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Contents

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

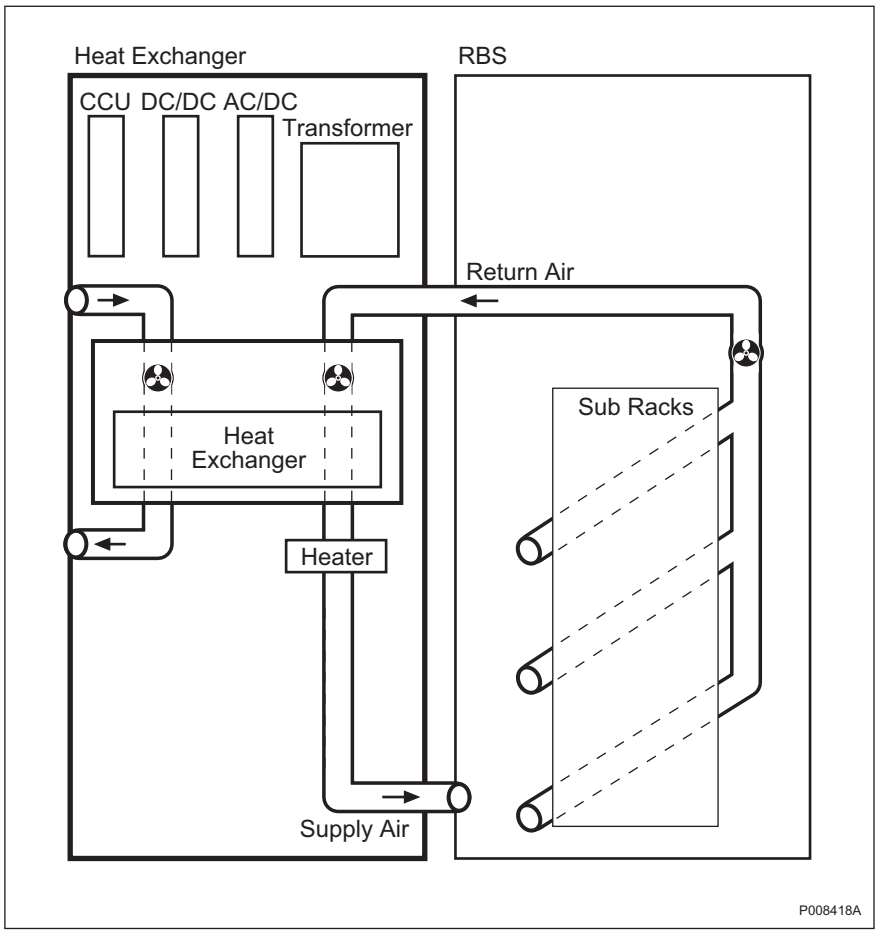

Figure 1 Block Diagram

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)

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

5.2 Operator Interface

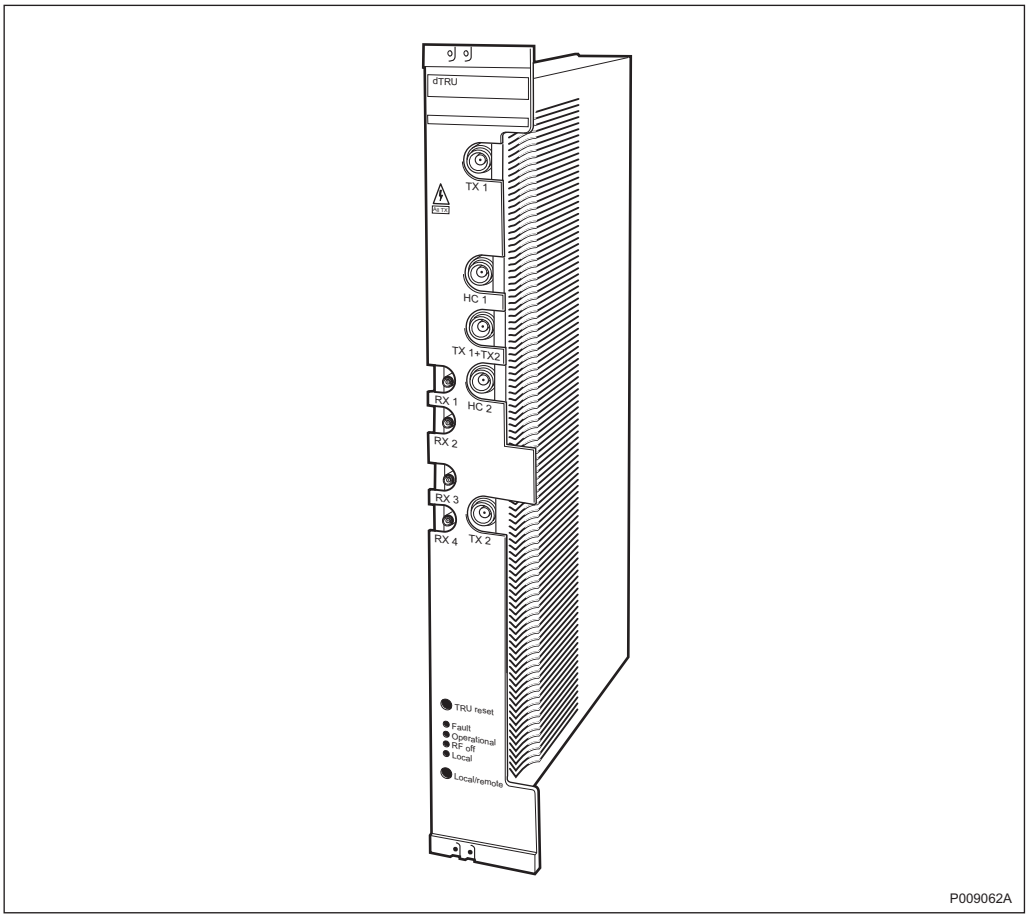

Figure 2 CCU

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.

Table 3 Indicators

Indicator	Description	Color
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 optional 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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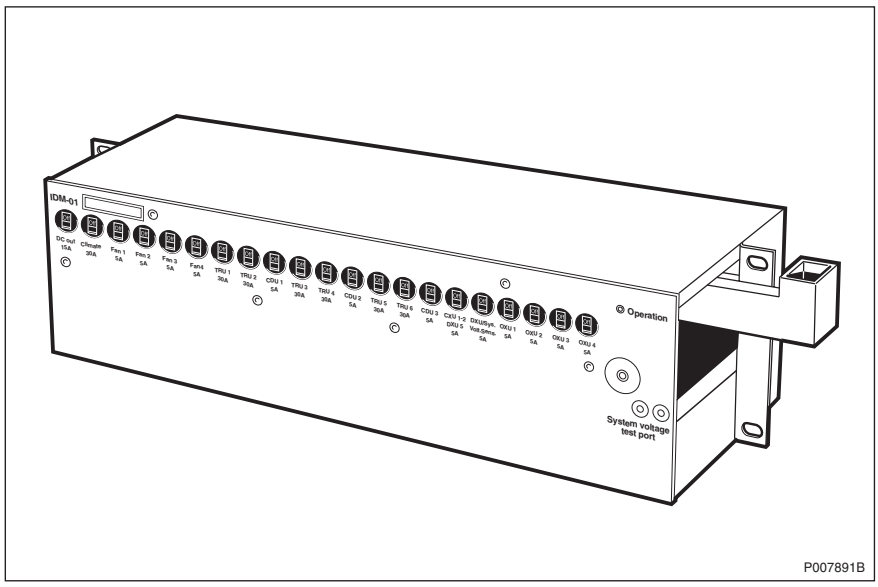
IDM

Internal Distribution Module
Unit Description

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



Contents

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 Interfaces

Input Data

Table 2 Input data

Nominal input voltage range	24 V DC
Input voltage	+20.0 - +29.0 V DC
Non-destructive range	0.0 - +32.0 V DC
Input power	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

Circuit breaker	Capacity	Quantity
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 4 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 5 Indicator

Indicator	Color
Operational	Green

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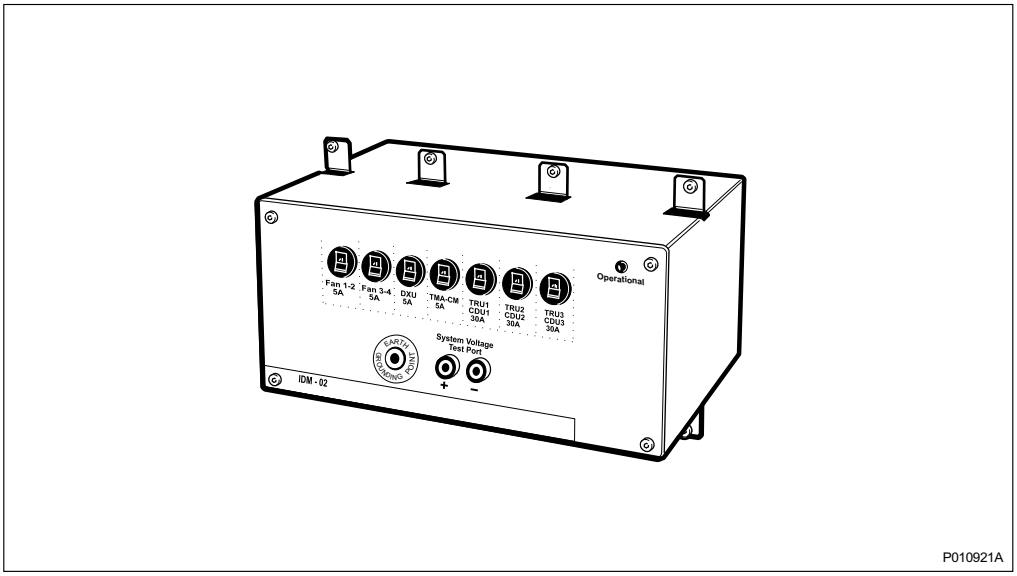
IDM-02
Internal Distribution Module
Unit Description

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



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Contents

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 seven circuit breakers, two PSU cables and connectors to the different DC powered units.

2 Dimensions

The IDM has the following dimensions:

Table 1 Size and weight

Height	Width	Depth	Weight
128 mm	217 mm	80 mm	2 kg

3 Function Description

The IDM has the following external interfaces:

- Two PSU cables
- Connection to DC filter (positive)
- Connection to DC filter (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 Interfaces

The tables below show input and output data.

Input Data

Table 2 Input data

Nominal input voltage range	24 V DC
Non destructive voltage	0.0 - +32.0 V DC

Output Data

Table 3 Circuit breaker capacity

Circuit breaker	Capacity	Quantity
Fan 1 - 2	5A	1
Fan 3 - 4	5A	1
DXU	5A	1
TMA - CM	5A	1
TRU 1, CDU 1	30A	1
TRU 2, CDU 2	30A	1
TRU 3, CDU 3	30A	1

Power Distribution Connectors

Table 4 Connectors

Connector	Function
P3	DC out, current limited 0.25 A
P5	Fan 1 - 4
P6	TRU 1
P7	TRU 2
P8	CDU 1
P9	TRU 3
P11	CDU 2
P14	CDU 3
P18	DXU/System voltage sensor/TMA - CM
P19	Test connector
P20	Indicator

4.2 Operator Interface

Indicator

Table 5 Indicator

Indicator	Colour
Operational	Green

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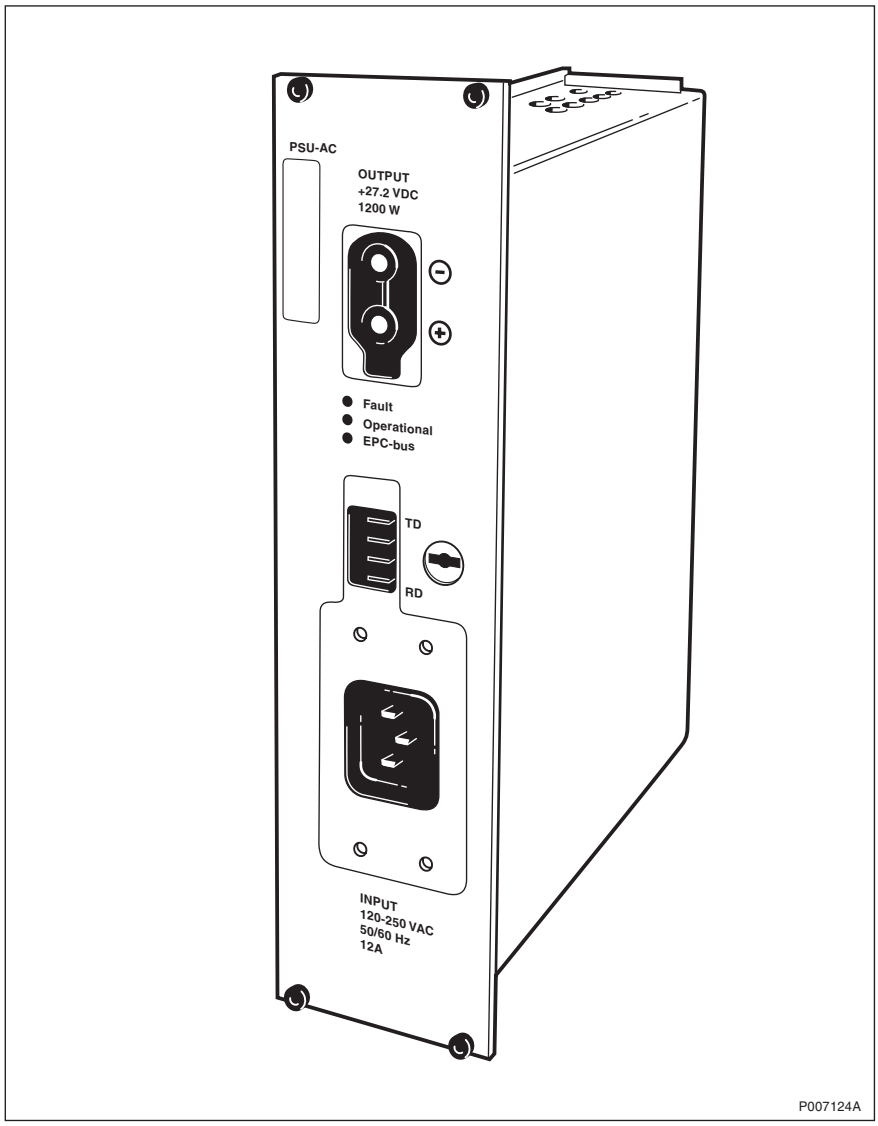
PSU AC

Power Supply Unit
Unit Description

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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Contents

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 Genereation

Table 2 Power Consumption and Heat Generation

Max power consumption	Max heat generation
1446 V A	246 W

4 Function Description

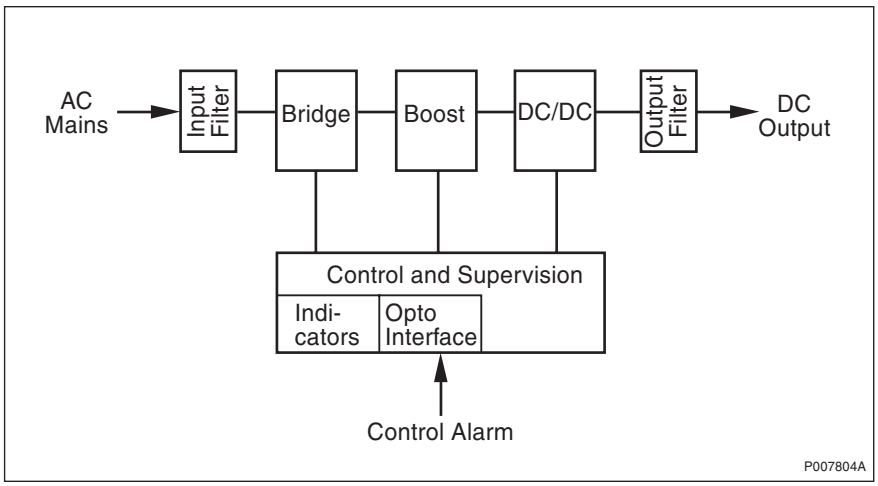

Figure 1

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

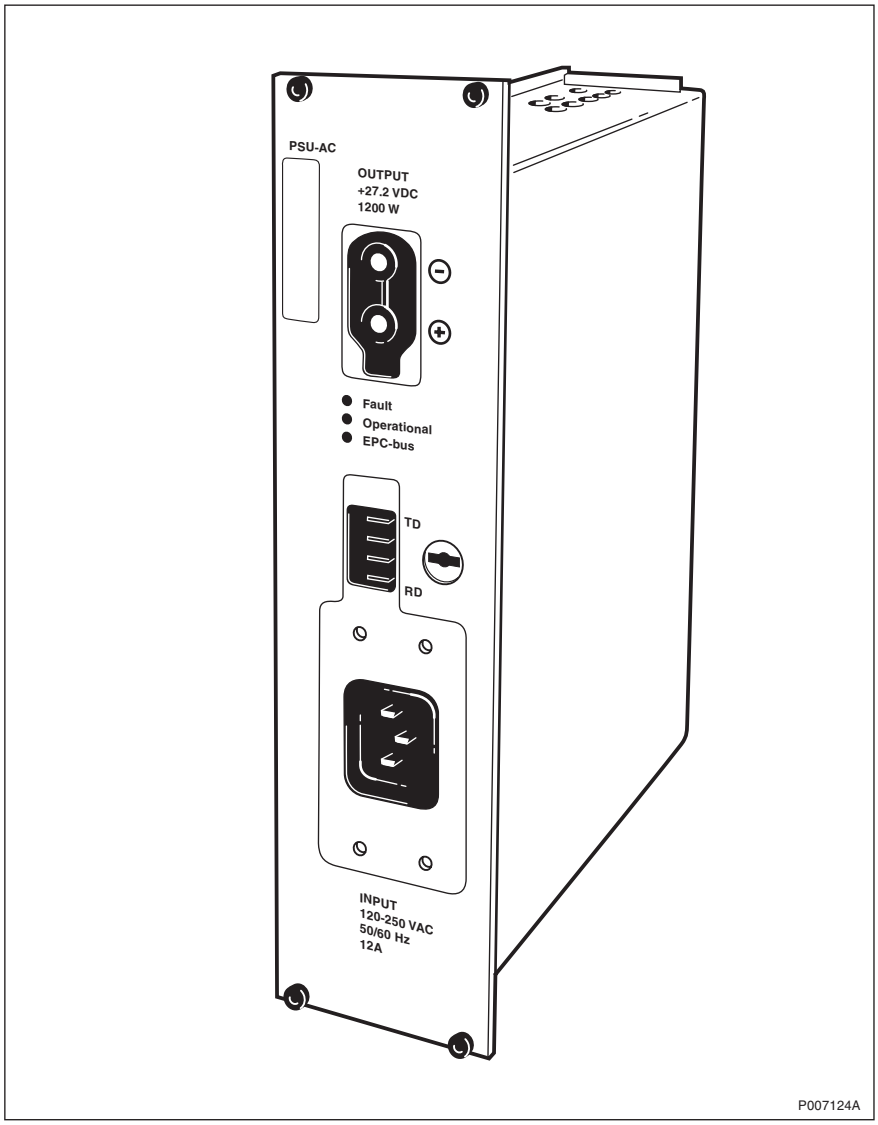

Figure 2 Interfaces

5.1 Signal and Power Interfaces

Input Data

Table 3 Input Data

Nominal input voltage	120 to 250 V AC(1)
Variation input voltage	108 to 275 V AC (1)
Frequency	45 - 65 Hz

Table 3 Input Data

Current **Inrush current**	< 8A (at 180 - 275 V AC) < 12 A (at 108 - 140 V AC) < 30 A peak
Internal fuse **Efficiency** **Power factor**	15 A (slow) > 83 % cos φ > 0.95
Non-destructive voltage **Pulses < 20 ms**	0 - 300 V AC 300 V AC

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

Output Data

Table 4 Output Data

Nominal output data	+24 V DC
Present output voltage	+27.2 ±0.1 V DC
Voltage range	+22.0 to +29.0 V DC
Output power (108 - 275 V)	1200 W
Output power (90 - 108 V)	1000 W
Output current at 27.2 V DC	36.8 A at 90 - 108 V AC 44.1 A at 108 - 275 V AC

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

Indicators

Table 5 Indicators

Indication	**Color**
Fault	Red
Operational	Green
EPC Bus Fault	Yellow

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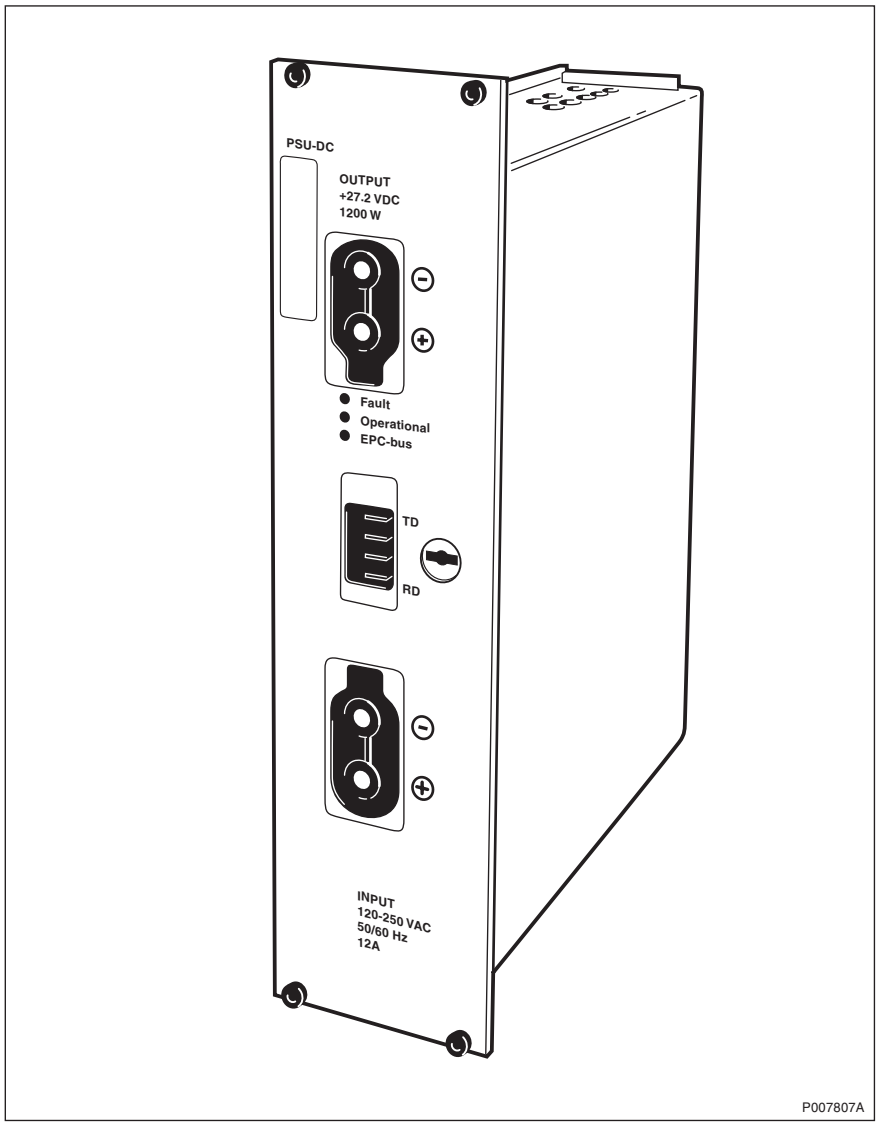
PSU DC

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

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 Genereation

Table 2 Power Consumption and Heat Generation

Max power consumption	Max heat generation
1411 W	211 W

4 Function Description

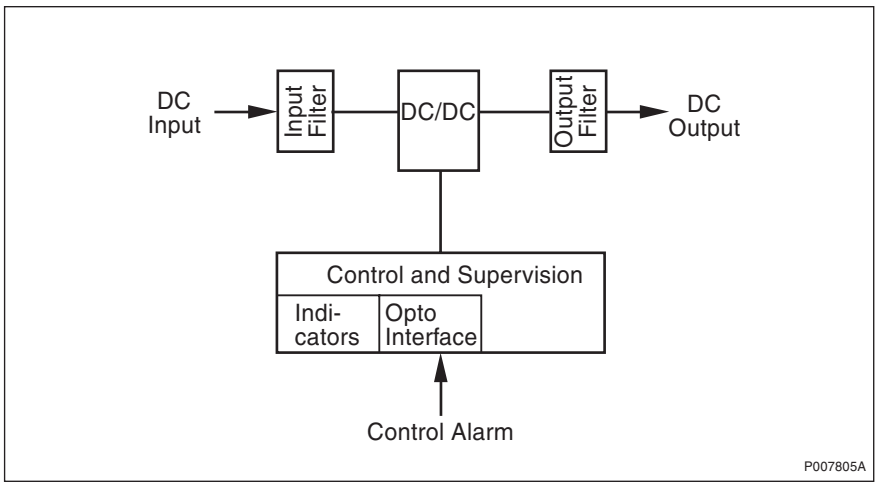


Figure 1 PSU -DC Block Diagram

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 ouput 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 Interfaces

5.1 Signal and Power Interfaces

Input Data

Table 3 Input Data

Nominal input voltage	(-48) - (-60) V DC
Permitted Variation input voltage	(-39) - (-72) V DC
Frequency	45 - 65 Hz
Input current **Inrush current**	< 36 A < 200 A
Efficiency	> 85 %
Non-destructive voltage	0 - (-75) V DC

Output Data

Table 4 Output Data

Nominal output data	+24 V DC
Factory set value	+27.2 ±0.1 V DC
Voltage range	22.0 - 29.0 V DC
Output power	1200 W
Output current at 27.2 V DC	44.1 A
Output current at short circuit	< 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

Indication	**Color**
Fault	Red
Operational	Green
EPC Bus	Yellow

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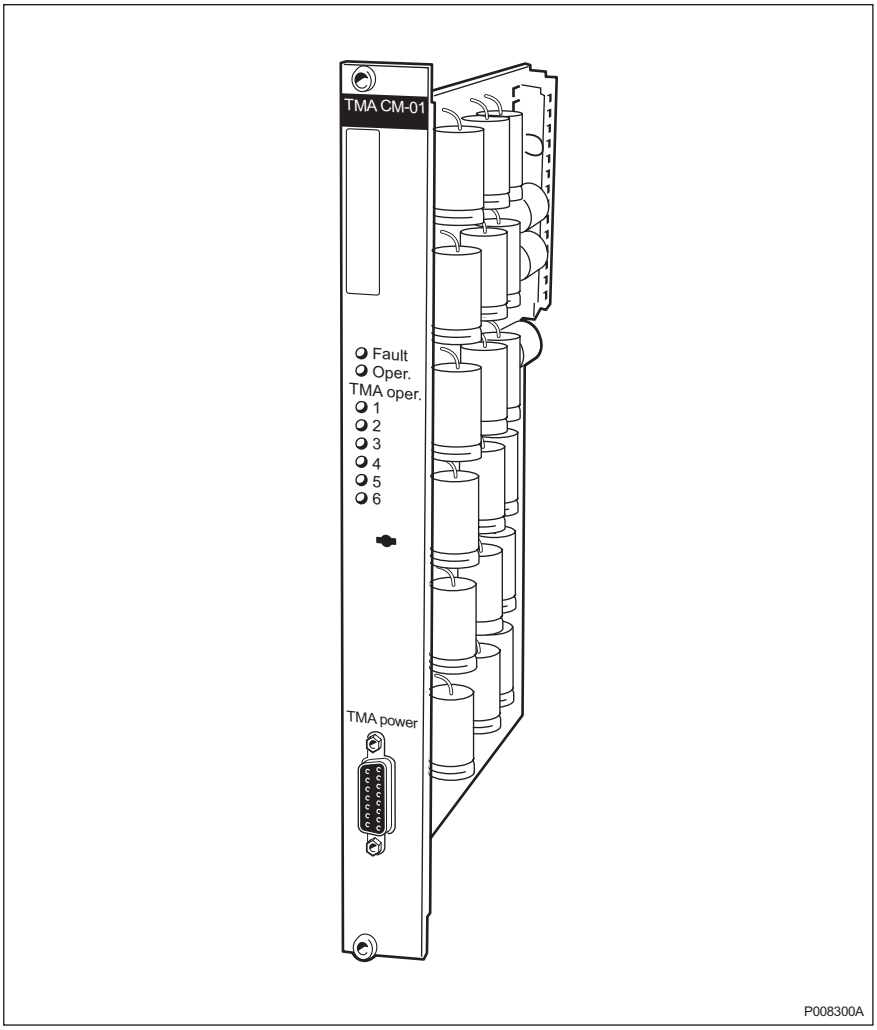
TMA-CM

Tower Mounted Amplifier - Control Module
Unit Description

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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Contents

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

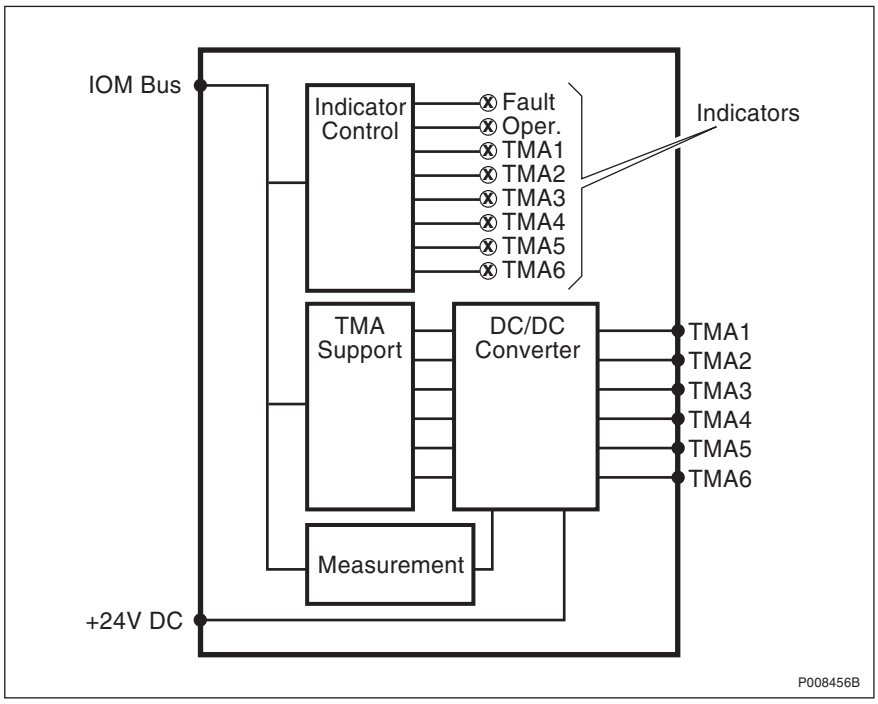

Figure 1 Block Diagram

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-circuites, 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

Nominal input voltage	+24 V DC
Input voltage range	+20.0 - 29.5 V DC
Non-destructive voltage	0 - +32 V DC
Maximum input power	60 W

Table 2 Output Data

Voltage per output (1 - 6)	+ 15 v DC(1)
Current per output	Maximum 500 mA

(1) Tolerance ±1.0 V at TMA current 0 300 mA. Tolerance ±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

Indicator	**Color**
Fault	Red
Operational	Green
TMA1 operating	Yellow
TMA2 operating	Yellow
TMA3 operating	Green
TMA4 operating	Green
TMA5 operating	Green
TMA6 operating	Green

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RBS 2000
Glossary

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

ERICSSON

Contents

1 Introduction

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 ⇒ is used to indicate a reference to another entry in the list.

Where there are several meanings for the same term and the terms are cabinet size dependent, this is indicated using **Macro** and **Micro** where applicable..

The following RBSs are **Macro** cabinets:

- RBS 2101
- RBS 2102
- RBS 2103
- RBS 2106
- RBS 2202
- RBS 2205
- RBS 2206

The following RBSs are **Micro** cabinets:

- RBS 2301
- RBS 2302
- RBS 2401
- Maxite

2 Terms and Abbreviations

1-P	One-Pair connection with echo cancellation (= two wires)
2-P	Two-Pair connection with echo cancellation (= four wires)
AAU	Active Antenna Unit
Abis	GSM interface standard defining attributes of the communication between the BSC and the BTS.
AC	Alternating Current

ACB	Alarm Collection Board
ACCU	Alternating Current Connection Unit
ACCU-CU	ACCU Connection Unit
ACCU-DU	ACCU Distribution Unit
A/D converter	Analog to Digital converter
AFS	AMR Full-rate speech
AGW	Abis Gateway
AHR	AMR Half-rate speech
Air conditioner	One version of the climate unit (Active cooler)
AIS	Alarm Indication Signal
ALBO	Automatic Line Build Out
ALNA	Antenna Low Noise Amplifier
ALPU	Antenna Lightning Protection Unit
AMR	Adaptive Multi-Rate
AO	Application Object
ARAE	Antenna Related Auxiliary Equipment
ARFCN	Absolute Radio Frequency Channel Number
ARP	Antenna Reference Point
ARU	Active Replaceable Unit
ASIC	Application Specific Integrated Circuit
Astra	ASIC in the TRU
ASU	Antenna Sharing Unit
AT	Alphanumeric Terminal
ATRU	Adaptive Transceiver Unit
ATSR	Air Time Slot Resource

AU	Antenna Unit
	GSM 900 = CEU + Passive Antenna
	GSM 1800/1900 = AAU
BALUN	BALance and UNbalance transformer
Batt	Battery
BB	Battery Box
BBS	Battery Back-up System
BCCH	Broadcast Control CHannel
	Downlink only broadcast channel for broadcast of general information at a base station, on a base station basis.
BCS	Block Check Sequence
BDM	Battery Distribution Module
	The BDM is an IDM with a battery and a local processor.
BER	Bit Error Rate
BFF	Bit Fault Frequency
BFI	Bad Frame Indication
BFU	Battery Fuse Unit
Bias injector	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.
Bm	Denotes a full-rate traffic channel
BPC	Basic Physical Channel
	Denotes the air interface transport vehicle formed by repetition of one time slot on one or more radio frequency channels.
BS	Base Station
BSC	Base Station Controller
	GSM network node for control of one or more BTSs.

BSCSim Base Station Controller Simulator

BSS Base Station System

GSM network logical unit comprising one BSC and one or more BTSs.

BTS Base Transceiver Station

GSM network unit operating on a set of radio frequency channels in one cell.

burst A portion of digital information, the physical content, that is transferred within the time interval of one time slot.

cabinet The physical housing of a base station

Cascade connections Connection of several cabinets by the PCM cable. Similar to serial connection.

⇒ Cascading

Cascading Connection of several cabinets by the PCM cable. Similar to serial connection.

⇒ Cascade connections

CBCH Cell Broadcast CHannel

This is a downlink only channel used by the GSM defined SMSCB function.

CCCH Common Control CHannel

Channel combining the following common control channels:

- PCH Paging CHannel
- RACH Random Access CHannel
- AGCH Access Grant CHannel

CCU Climate Control Unit

CDU Combining and Distribution Unit

CE Conformité Européenne

cell An area of radio coverage identified by the GSM network by means of the cell identity.

CEU	Coverage Extension Unit
CF	Central Functions
channel	The common term channel denotes the virtual connection, consisting of physical and logical channels, between BSS and MS, during a call in progress. ⇒ Logical Channel ⇒ Physical Channel
Channel Combination	A physical channel on an air interface carrying a defined set of logical channels.
Channel group	A channel group is a group of dedicated logical channels to a specific MS.
CM	**Macro** = Control Module (for TMA) **Micro** = Common Mode
CMD	Digital Radio Communication Tester
CMRU	Central Main Replaceable Unit. The RBS is physically connected to the Base Station Controller (BSC) via the CMRU. There is only one CMRU in each RBS. **Macro:** CMRU = DXU **Micro:** CMRU = The whole RBS
CNU	Combining Network Unit
Compr	Compressor
CON	LAPD concentrator LAPD concentration is used to reduce the number of required physical links between the BSC and BTS.
Config	Configuration
Co-siting	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.
CPI	Communication and Power Interface
CPI	Customer Product Information

CPU	Central Processing Unit
CRC	Cyclic Redundancy Check
CS	Coding Scheme
CSA	Canadian Standards Association
CSES	Consecutive Severely Errored Second
CSU	**Macro** = Channel Service Unit
	Micro = Customer Service Unit
CU	Combining Unit (RU in CDU_D)
CXU	Configuration Switch Unit
Dannie	ASIC in the TRU
DB	DataBase
DC	Direct Current
DCC	Digital Cross Connector
DCCH	Dedicated Control CHannel
	Dedicated control channels carry signalling data.
DCCU	DC Connection Unit
ddTMA	dual duplex Tower Mounted Amplifier
	This type needs only one combined TX/RX feeder from the BTS to the TMA. ⇒ dTMA ⇒ rTMA ⇒ TMA ⇒ BTS
DF	Distribution Frame
DF	Disturbance Frequency
DFU	Distribution and Fuse Unit
DIP	DIgital Path
	The name of the function used for supervision of the connected PCM lines.
Dixie	ASIC in the TRU
DM	Degraded Minute

DM	Distribution Module
DM	**Micro** = Differential Mode
DMRU	Distributed Main Replaceable Unit
	If a Main RU is subordinated to the CMRU, it is said to be distributed.
downlink	Signalling direction from the system to the MS.
DP	Digital Path
DP	Distribution Panel
DPX	Duplexer
DS1	Digital Signal level 1 (1544 kbit/s)
DSP	Digital Signal Processor
DT	Data Transcript
DTE	Data Terminal Equipment
DTF	Distance To Fault
dTMA	duplex TMA
	dTMA is similar to the old ALNA except for different characteristics. ⇒ ddTMA ⇒ rTMA ⇒ TMA
dTRU	double TRansceiver Unit
DU	Distribution Unit (RU in CDU-D)
DUT	Device Under Test
DX	Direct Exchange
DXB	Distribution Switch Board
DXC	Digital Cross Connector
DXU	Distribution Switch Unit
DXX	Ericsson Cellular Transmission System including NMS
E1	Transmission standard, G.703, a 2048 kbit/s PCM link
E-GSM	Extended GSM

EACU	External Alarm Connection Unit
EC1	External Condition Map Class 1
EC2	External Condition Map Class 2
ECU	Energy Control Unit
EDGE	Enhanced Data rate for Global Evolution
EDGE dTRU	EDGE double TRansceiver Unit
	⇒ EDGE
EDT	Electrical Down Tilt
EEPROM	Electrically Erasable Programmable Read-Only Memory
EIRP	Effective Isotropic Radiated Power
EMC	ElectroMagnetic Compatibility
EMF	ElectroMotive Force
EMF	ElectroMagnetic Field
EMI	Electromagnetic Interference
ENV	Environmental
EOC	Embedded Operations Channel
EPC	Environmental and Power Control
ES	Errored Second
ESB	External Synchronization Bus
ESD	ElectroStatic Discharge
ESF	Extended Superframe Format
ESO	Ericsson Support Office
ETS	European Telecommunication Standard
EXT	External
FACCH	Fast Associated Control CHannel
	Main signalling channel in association with a TCH.

FCC	Federal Communications Commission
FCCH	Frequency Correction CHannel
FCOMB	Filter COMBiner
FCU	Fan Control Unit
FDL	Facility Data Link
FDU	Feeder Duplexer Unit
FER	Frame Erasure Ratio
FIU	Fan Interface Unit
FS	Function Specification
FSC	Field Support Centre
FU	Filter Unit (RU in CDU-D)
FUd	Filter Unit with duplexer (RU in CDU-D)
FXU	Future Expansion Unit
G01	MO model for RBS 200
G12	MO model for RBS 2000
G.703	Physical/electrical characteristics of hierarchical digital interfaces, as defined by the ITU.
G.704	Synchronous frame structures used at 1544, 6312, 2048, 8448 and 44 736 kbit/s, as defined by the ITU.
GPRS	General Packet Radio Services
GS	General Specification
GSL	GPRS Signalling Link
GSM	Global System for Mobile communications 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.

GSM 800	GSM system 800 MHz (generic)
GSM 900	GSM system 900 MHz (generic)
GSM 1800	GSM system 1800 MHz (generic)
GSM 1900	GSM system 1900 MHz (generic)
HCE	HDSL Central Equipment
HCOMB	Hybrid COMBiner
HDLC	High level Data Link Control
HDSL	High bit rate Digital Subscriber Line
Heat Exchanger	A version of the climate unit
HEU	Heat Exchanger Unit
HISC	Highway Splitter Combiner
HLIN	High Level IN
HLOUT	High Level OUT
HMS	Heat Management System
Hum	Humidity
HW	HardWare
HWU	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).
I1A	Internal Fault Map Class 1A
I1B	Internal Fault Map Class 1B
I2A	Internal Fault Map Class 2A
IA	Immediate Assignment
IC	Integrated Circuit
ICMI	Initial Codec Mode Indicator

ID	IDentification
IDB	Installation DataBase
IDM	Internal Distribution Module
IEC	International Electric Commission
IF Box	Interface Box
IMSI	International Mobile Subscriber Identity
INIT	Initial
INT	Internal
IOG	Input/Output Group
IOM	Internal Operation and Maintenance bus
IR	InfraRed
IS	Interface Switch
IWD	InterWork Description
JTC	Joint Technical Committee
LAN	Local Area Network
LAPD	Link Access Procedures on D-channel LAPD is the data link layer (layer 2) protocol used for communication between the BSC and the BTS on the Abis interface. Abis layer 2 is sometimes used synonymously with LAPD.
LBO	Line Build Out
LED	Light Emitting Diode
LLB	Line Loop Back
LNA	Low Noise Amplifier
Local bus	The local bus offers communication between a central main RU (DXU) and distributed main RUs (TRU and ECU).

Local mode When the RU is in Local mode, it is not communicating with the BSC.

Local/Remote switch A switch used by the operator to order the RU to enter Local or Remote mode.

LOF Loss Of Frame

Logical Channel A logical channel represents a specified portion of the information carrying capacity of a physical channel.

GSM defines two major categories of logical channels:

- TCHs – Traffic CHannels, for speech or user data
- CCHs – Control CHannels, for control signalling

⇒ Physical Channel ⇒ Channel Combination

Logical RU A unit which can be referred to, but is not a single physical unit. There are three different kinds of logical RUs:

- Antennas
- Buses
- Environment

LOS Loss Of Signal

LVD Low Voltage Directive

LVF Low Voltage Filter

MAC Medium Access Controller

MADT Mean Accumulated DownTime

magazine A magazine is a reserved space in the cabinet, which may hold one or more RUs.

Main RU 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.

Main RU A main replaceable unit is a replaceable unit that contains one or more processors, to which software can be downloaded from the BSC.

MCB	MultiCasting Box
MHS	Modification Handling System
	Ericsson trouble report database
MMI	Man-Machine Interface
MO	Managed Object
MR	Measurement Receiver
MRT	Mean Repair Time
MS	Mobile Station
MSC	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.
MSTP	Mobile Station Test Point
MTBF	Mean Time Between Failure
MTBCF	Mean Time Between Catastrophe Failure
Multidrop	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.)
NCS	National Colour System
NEBS	Network Equipment Building System
NMS	Ericsson Network Management System in DXX
Nominal Power	The nominal power is the power level defined when configuring the transceiver.
N terminal	Neutral terminal in an AC mains connection
NTU	Network Terminating Unit
OL/UL	Overlaid/Underlaid

O&M	Operation and Maintenance 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.
OMC	Operation and Maintenance Centre
OML	Operation and Maintenance Link Layer 2 communication link for operation and maintenance services on Abis.
OMT	Operation and Maintenance Terminal The OMT is a terminal that supports functions for handling the RBS on site. The terminal can be a portable PC.
Operation	Operation is the normal, everyday running of the RBS with full functions.
OPI	OPerational Instructions
OVP	OverVoltage Protection
OXU	Space for Optional Expansion
P-GSM	Primary GSM
PA	Power Amplifier
PAM	Power Amplifier Module
Passive RU	A passive replaceable unit has a very low level of intelligence and is independent of the processor system.
PBA	Printed Board Assembly
PBC	Power and Battery Cabinet
PC	Personal Computer
PCAT	Product CATalogue A web-based ordering system on Ericsson’s Intranet.
PCB	Printed Circuit Board

PCH	Paging CHannel Downlink only subchannel of CCCH for system paging of MSs. ⇒ CCCH
PCM	Pulse Code Modulation
PCU	Packet Control Unit
PDCH	Packet Data Channel
PE terminal	Protective Earth terminal in an AC mains connection
PFWD	Power Forward
Physical Channel	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. ⇒ TDMA frame ⇒ Logical channel
PIN	Personal Identification Number
PLB	Payload Loop Back
PLMN	Public Land Mobile Network 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.
PPE	Personal Protective Equipment
PREFL	Power Reflected
PSA	Power Supply Adapter
PSTN	Public Switch Telephone Network
PSU	Power Supply Unit
PWU	Power Unit

RACH Random Access CHannel

Uplink only subchannel of CCCH for MS request for allocation of a dedicated channel.

⇒ CCCH

RAI Remote Alarm Indication

RAM Random Access Memory

RBER Radio Bit Error Ratio

RBS Radio Base Station

All equipment forming one or more Ericsson base station.

⇒ BTS

RCB Radio Connection Box

RD Receive Data

Remote mode When the RU is in RU Remote mode, a link is established between the BSC and the Central Main RU (CMRU).

RF Radio Frequency

RFCH Radio Frequency CHannel

A radio frequency carrier with its associated bandwidth.

RFTL Radio Frequency Test Loop

RLC Radio Link Control

RLC Repair Logistic Centre

RSL Radio Signalling Link

R-state Release state

RS232 American standard for term/MODEM interconnection.

rTMA Receiver TMA

rTMA has no duplexers. It is used for amplification of the RX signal. ⇒ ddTMA ⇒ dTMA ⇒ TMA

RTN	Return
RU	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.
RX	Receiver
RX1	Receiver antenna branch 1
RX2	Receiver antenna branch 2
RXA	Receiver antenna branch A
RXB	Receiver antenna branch B
RXD	Receiver Divider
RXDA	Receiver Divider Amplifier
RXDP	Receiver Distribution Plane
RXLEV	Measure of signal strength as defined in GSM:05.08:8.1.4
RXQUAL	Measure of signal quality as defined in GSM:05.08:8.2.4
SACCH	Slow Associated Control CHannel
SCH	Synchronization CHannel
SDCCH	Stand alone Dedicated Control CHannel
	Main dedicated signalling channel on the air interface, mainly used for call locating and establishment.
SCU	Switching and Combining Unit
SE	Supervised Entity
SES	Severely Errored Second
SF	Slip Frequency
SID	Silence Descriptor
SIG	Signalling
SIM	Subscriber Identity Module

SIR	Small Indoor RBS
SMS	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).
SO	Service Object
SS	Swedish Standard
Sub-RU	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.
SVS	System Voltage Sensor
SW	SoftWare
SWR	Standing Wave Ratio
SYNC	Synchronous
T1	Transmission standard, G.703, a 1544 kbit/s PCM link
TA	Timing Advance 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.
TC	Transaction Capabilities
TCB	Transceiver Control Board
TCH	Traffic CHannel The traffic channels carry either encoded speech or user data.
TCH/F	Traffic Channel, Full-rate
TCH/H	Traffic Channel, Half-rate
TCC	Transmission Coherent Combining
TCH SIG	Traffic CHannel Signalling

TD Transmit Data

TDMA Time Division Multiple Access

Multiplexing of several channels in a common frequency band. Each channel is assigned a certain time division, a time slot.

TDMA frame GSM air interface time frame comprising eight time slots.

TEI Terminal Endpoint Identifier

TEI is an identification code carried by a LAPD frame as a terminal connection endpoint within a Service Access Point (SAP).

TEMS TEst Mobile Station

TF Timing Function

TG Transceiver Group

Timing bus The timing bus carries air timing information from the timing unit in the DXU to the TRUs.

TLS Terrestrial Link Supervision

TM Transport Module

The Transport module is non-RBS equipment belonging to the transport network.

TMA Tower Mounted Amplifier

There are three types of TMAs: dTMA, rTMA and ddTMA. ⇒ dTMA ⇒ rTMA ⇒ ddTMA

TMA-CM Tower Mounted Amplifier – Control Module

TN Time slot Number

TN O&M Transport Network Operation and Maintenance (in general)

Tora ASIC in the TRU

TRA	Transcoder Rate Adapter The TRA Unit (TRAU) in BSC performs transcoding of speech information and rate adaptation of data information.
Tracy	ASIC in the TRU
TRS	Transceiver System
TRU	Transceiver Unit
TRX	Transceiver (combined transmitter and receiver)
TRXC	Transceiver Controller
TS	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.
TT	Total Time
TU	Timing Unit
TX	Transmitter
TXA	Transmitter Antenna A
TXB	Transmitter Antenna B
TXBP	Transmitter BandPass filter
TXU	Radio Transmitter Unit
UAS	Unavailable Seconds
UAST	UnAvailable STate supervision
UL	Underwriter Laboratories
uplink	Signalling direction from the MS to the system.
UPS	Uninterrupted Power Supply
VCO	Voltage Controlled Oscillator
VSWR	Voltage Standing Wave Ratio RF signal measure. The quotient between transmitted and reflected voltage.

X bus The X bus carries transmit air data frames between transceivers.

Y link The interface between the DXU and each DSP System in core based TRUs.

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