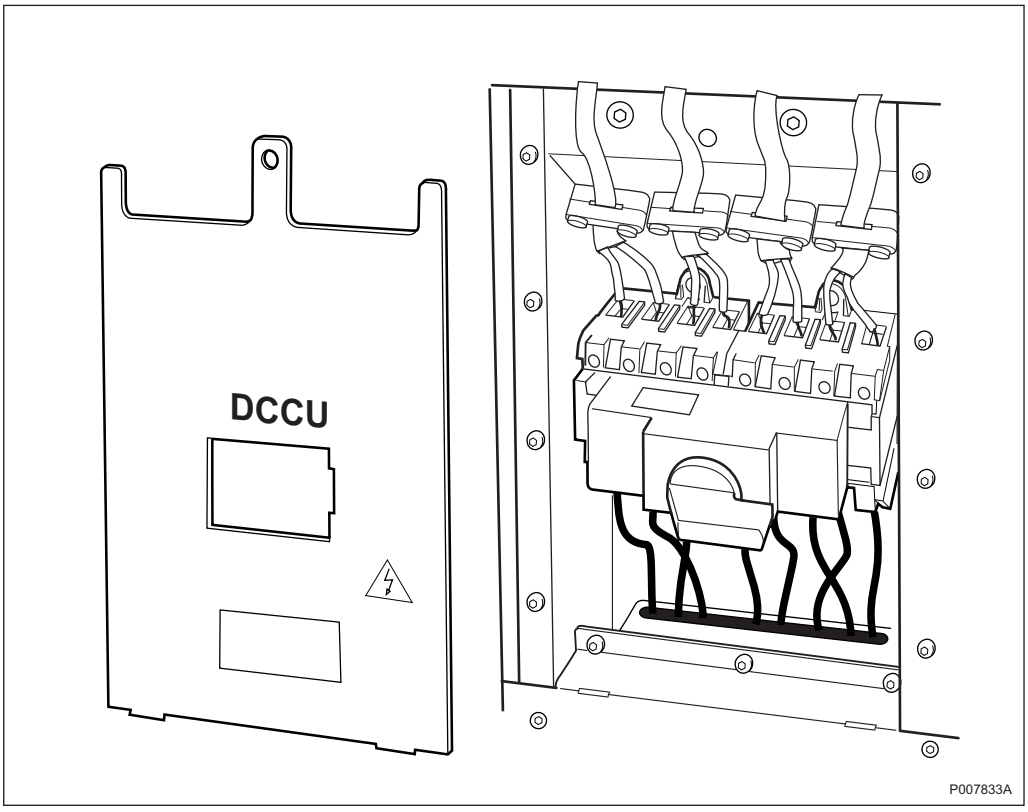
DCCU

DC Connection Unit
Unit Description

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



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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 ElectroMagnetic Compatibility (EMC)

2 Dimensions

The physical characteristics of the DCCU are shown in the table below.

Table 1 DCCU 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 unit containing:

- A terminal block for incoming DC cables
- An 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

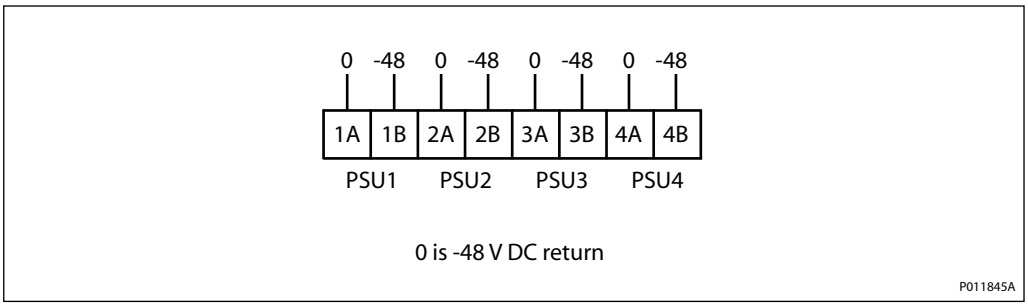

Figure 1 Connection Terminals

4.1 Signal and Power Interfaces

Input Data

The input data for the DCCU is shown in the table below.

Table 2 Input Data

Voltage	-40 to -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/cable

Output Data

The output data for the DCCU is shown in the table below.

Table 3 Output Data

Conductor Area	6 mm^2
Number of Conductors	2

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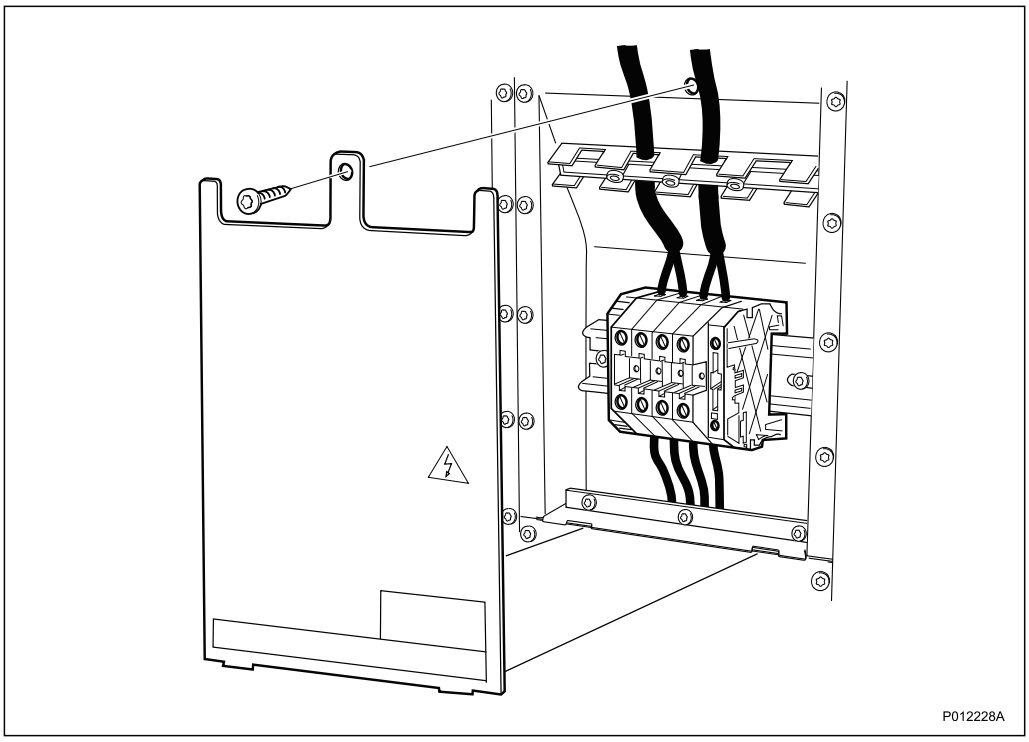
DCCU-02

DC Connection Unit
Unit Description

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



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Contents

1 Product Overview

The DCCU distributes primary power to the PSU.

1.1 Main Functions

The DCCU has the following functions:

- Terminates incoming DC supply cables
- Filters ElectroMagnetic Capability (EMC)

2 Dimensions

The dimensions of the DCCU are shown in the table below.

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 for incoming DC cables
- A feed-through capacitor filter
- Two cables to the PSUs

4 Interfaces

The DCCU has the following interfaces:

- Four terminal block for incoming DC supply cables
- Two outgoing cables to the PSUs

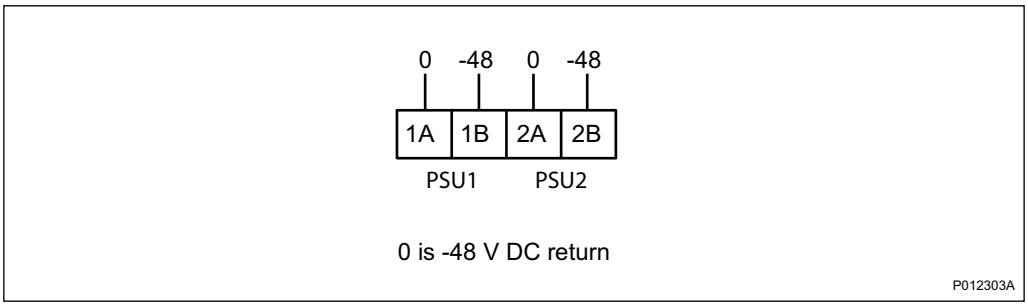

Figure 1 Connection Terminals

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	2 pcs, max. 40 A
Cable Diameter	4.5 – 7 mm
Conductor Area	6 – 10 mm^2
Number of Conductors	2/cable

Table 3 Output Data

Conductor Area	6 mm^2
Number of Conductors	2/cable

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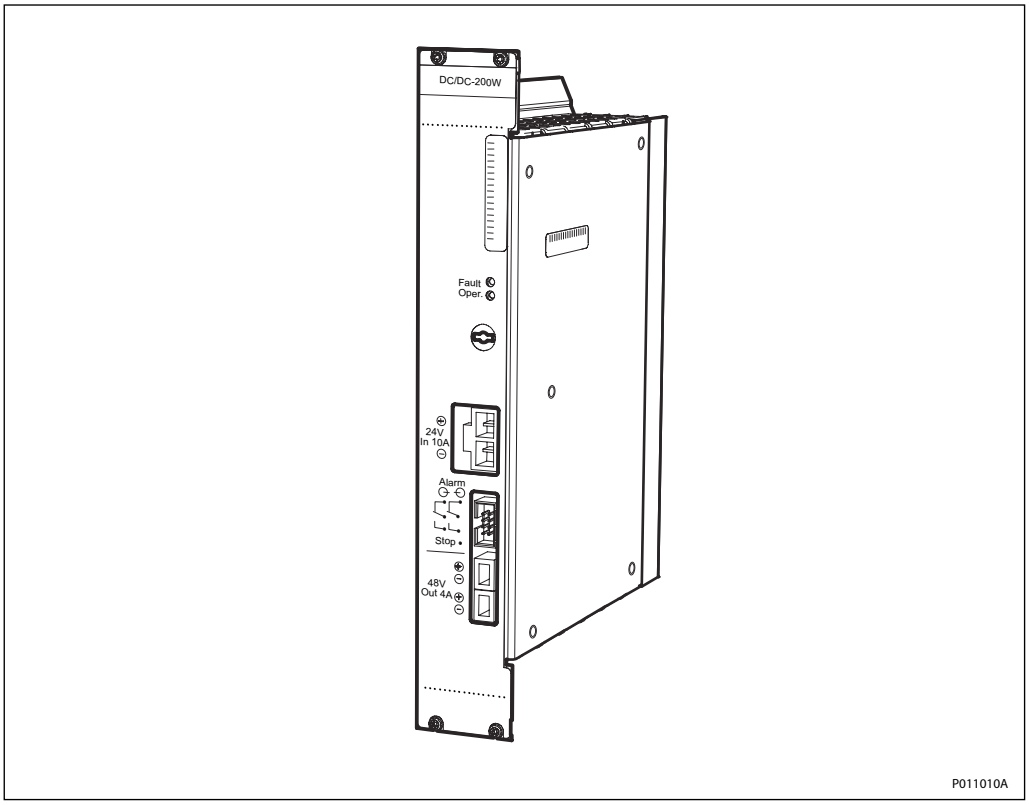
DC/DC Converter

+24 V DC to -48 V DC
Unit Description

The DC/DC converter in the RBS 2106 converts +24 V DC to -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
- Indicates alarms

2 Dimensions

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

Table 1 DC/DC Converter Size and Weight

Height	Width	Depth	Weight
262 mm (6 HE x 44.45 mm)	40.30 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 describes the function of the DC/DC converter.

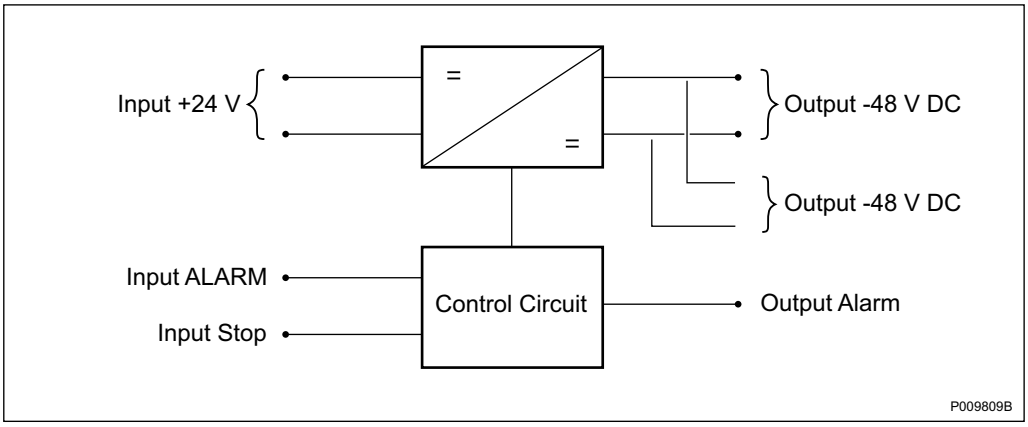


Figure 1 DC/DC Converter Block Diagram

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, which have 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 is shut down and 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 ±0.5 V. The converter starts automatically when the input voltage exceeds the start level, 20.0 ±0.5 V.

The converter can be stopped remotely by connecting a +5.0 V signal to the ‘‘Stop’’ pin. 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.

5.1 Signal and Power Interfaces

Input Data

The input data is shown in the table below.

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

The output data is shown in the table below.

Table 4 Output Data

Rated Voltage	-54 V DC
Default Output	-54 V DC
Overvoltage Protection	-58 ±1 V DC
Undervoltage Alarm	-44 ±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

An installed DC/DC converter is hard-coded to alarm input 16 in the external alarm unit.

Indicators

The indicators are shown in the table below.

Table 5 Indicators

Indicator	Colour
Input OK	Green
Output fail	Red

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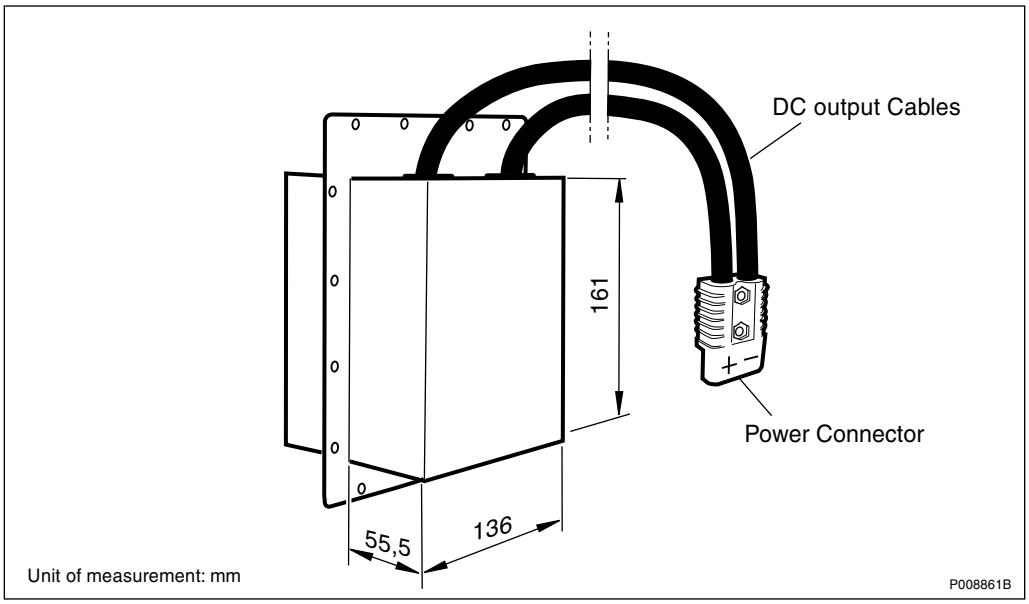
DC Filter for RBS 2106

Filter for External Batteries
Unit Description

The DC filter unit is the interface for external +24 V DC power supply to the RBS 2106.



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Contents

1 Product Overview

The DC filter is the interface between a +24 V DC external power supply, such as a battery, and the Internal Distribution Module (IDM) inside the RBS 2106.

1.1 Main Functions

The DC filter has the following main functions:

- ElectroMagnetic Compatibility (EMC) filtering
- Connects of +24 V DC power suppy to the cabinet
- Distributes +24 V DC power supply to the IDM
- Connects the battery temperature sensor

2 Dimensions

The physical characteristics of the DC filter are shown in the table below.

Table 1 DC Filter Size and Weight

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

3 Function Description

The circuit diagram of the DC filter is shown below.

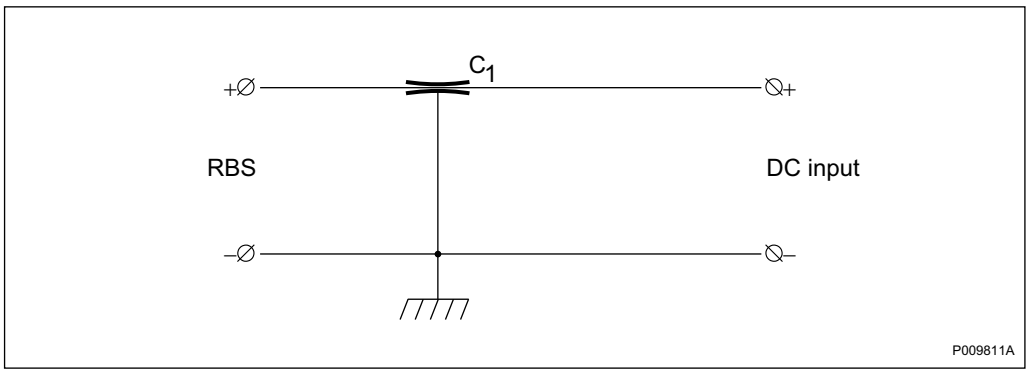

Figure 1 DC Filter Circuit Diagram

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

The filter consists of a coaxial feed-through capacitor. The capacitor provides full 360° earthing around the cable.

The DC filter is an EMC barrier against the outside electrical environment, and a mechanical barrier against the outside climatic environment.

4 Interface

4.1 Signal and Power Interface

The DC filter has the following external interfaces:

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

Voltage and Current

The limiting values are shown in the table below.

Table 2 Limiting Values

Rated Voltage	100 V DC
Feed-through Current	175 A

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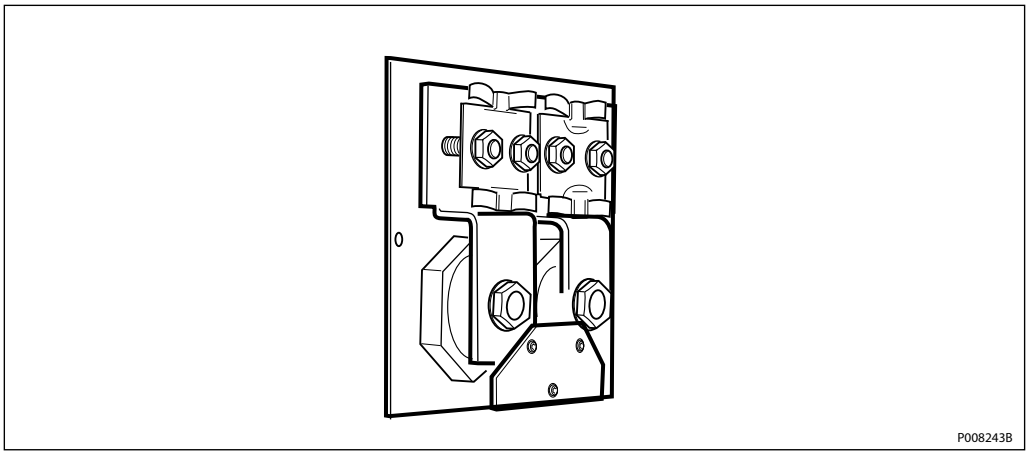
DC Filter-01 for RBS 2206

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 dimensions of the DC filter are shown in the table below.

Table 1 Size and Weight

Height	Width	Depth	Weight
293.5 mm	164 mm	70 mm	approx. 6 kg(1)

(1) Including cables.

3 Function Description

The DC-filter has the following functions:

- Filters ElectroMagnetic Capability (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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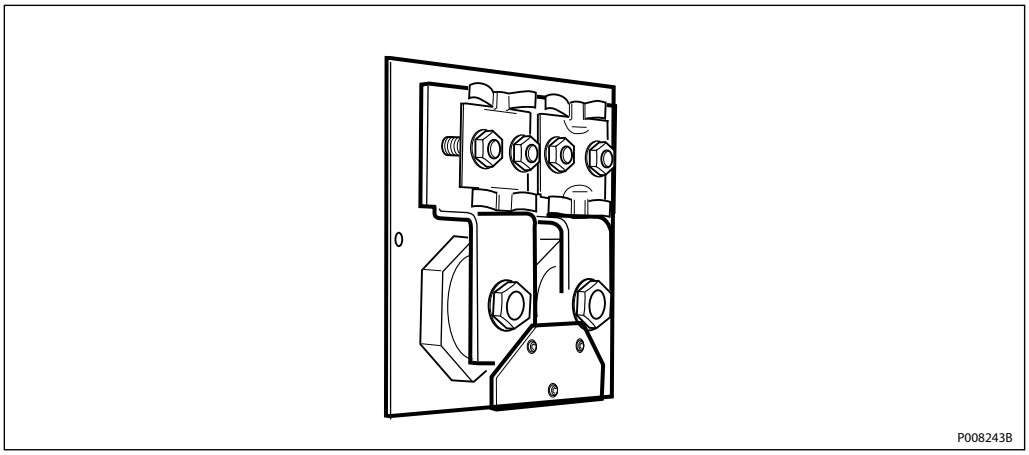
DC Filter-04 for RBS 2207

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 dimensions of the DC filter are shown in the table below.

Table 1 Size and Weight

Height	Width	Depth	Weight
293.5 mm	164 mm	70 mm	approx. 3 kg(1)

(1) Including cables.

3 Function Description

The DC-filter has the following functions:

- Filters ElectroMagnetic Capability (EMC)
- Connects incoming 16 – 150 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 16 – 150 mm^2
- Pull-relief clamps for incoming power cables with diameter 10 – 26 mm
- Two 35 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	90 A

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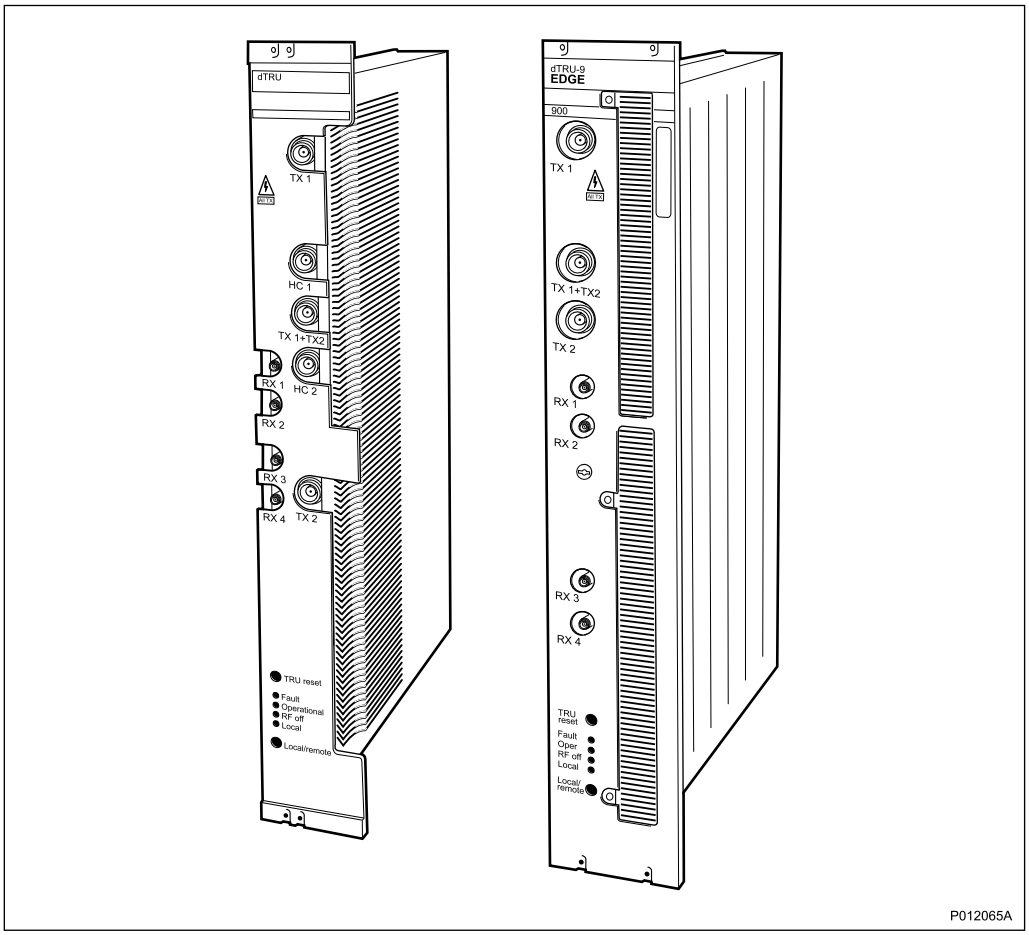
dTRU

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

1.2 Variants

There are two dTRU variants available:

- Built in hybrid combiner connected through jumper cables
- Built in hybrid combiner connected through a switching relay

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	6.2/7.6 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

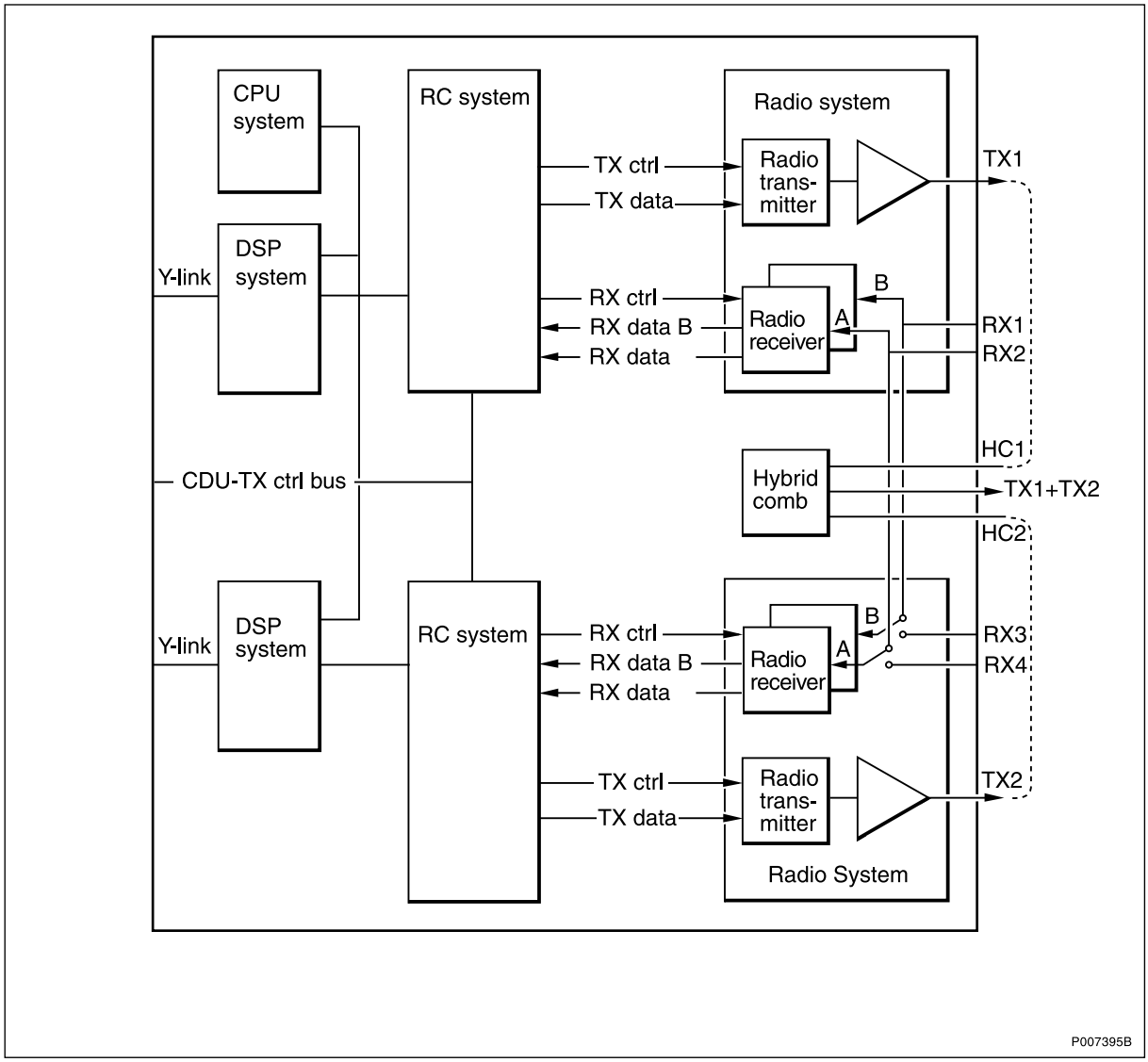

Figure 1 Block diagram of the dTRU

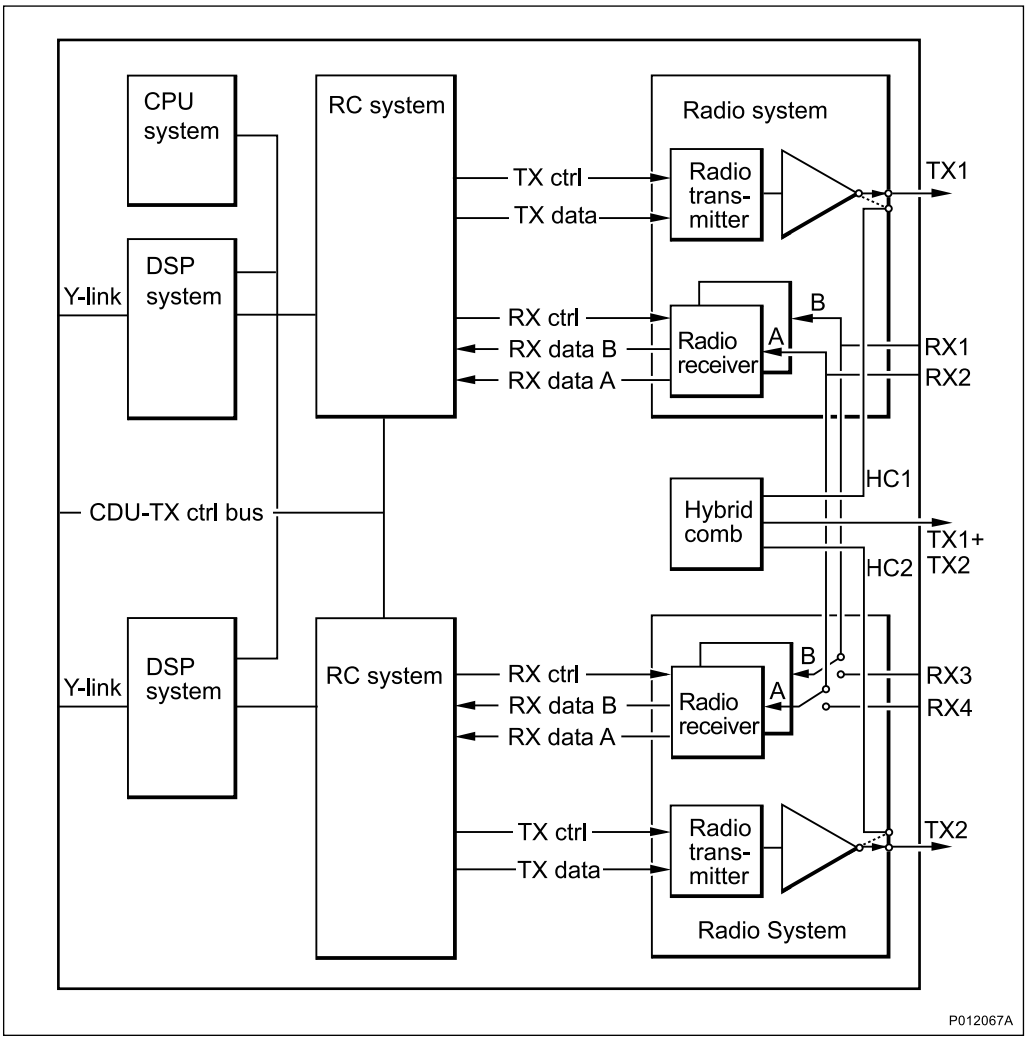

Figure 2 Block diagram of the dTRU with switching relay

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
- LEDs and buttons
- RX (front)
- TX (front)
- Y link

5.1 Signal and Power Interfaces

The Y link, CDU TX control bus and connectors are located on the back of the dTRU.

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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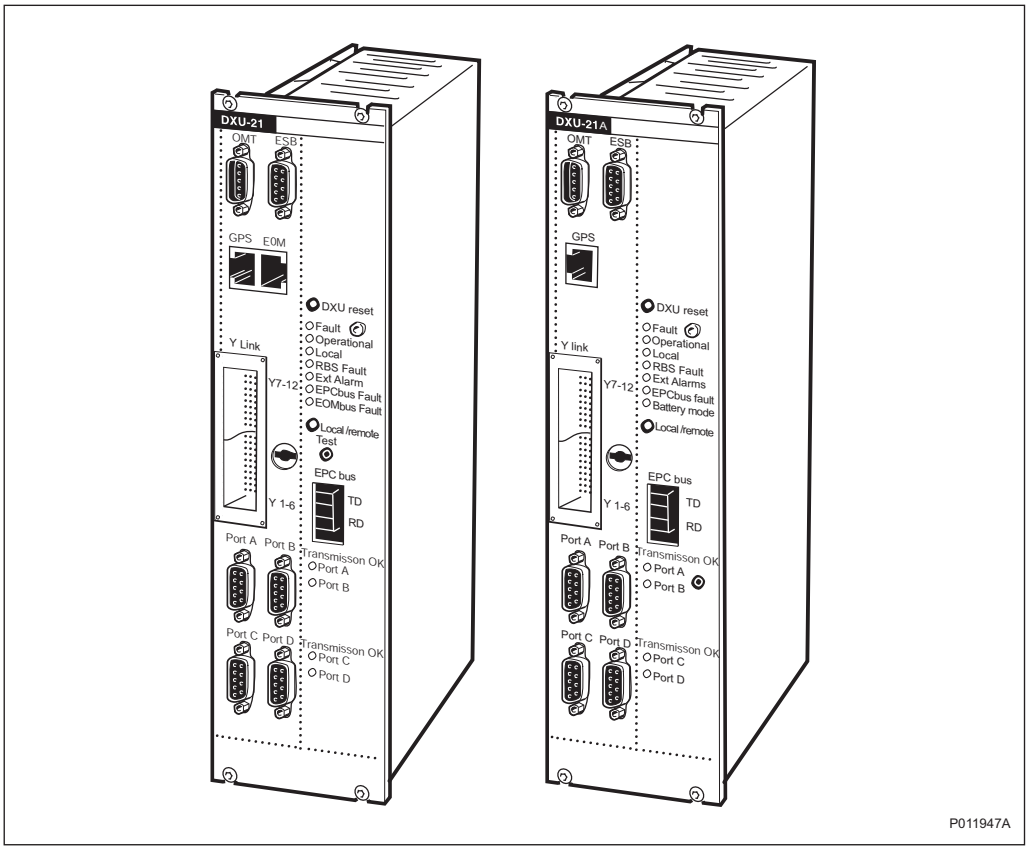
DXU-21

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 Replaceable Unit (RU), 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 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 climate and power systems in non-ECU equipped cabinets

1.2 Variants

The DXU exists in two variants:

- DXU-21
- DXU-21A

The DXU-21A differs from the DXU-21 in the following aspects:

- Battery Mode indicator
- No EOM port and indicator
- No 13 MHz test port

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
20 W (typical 13 W)	20 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.

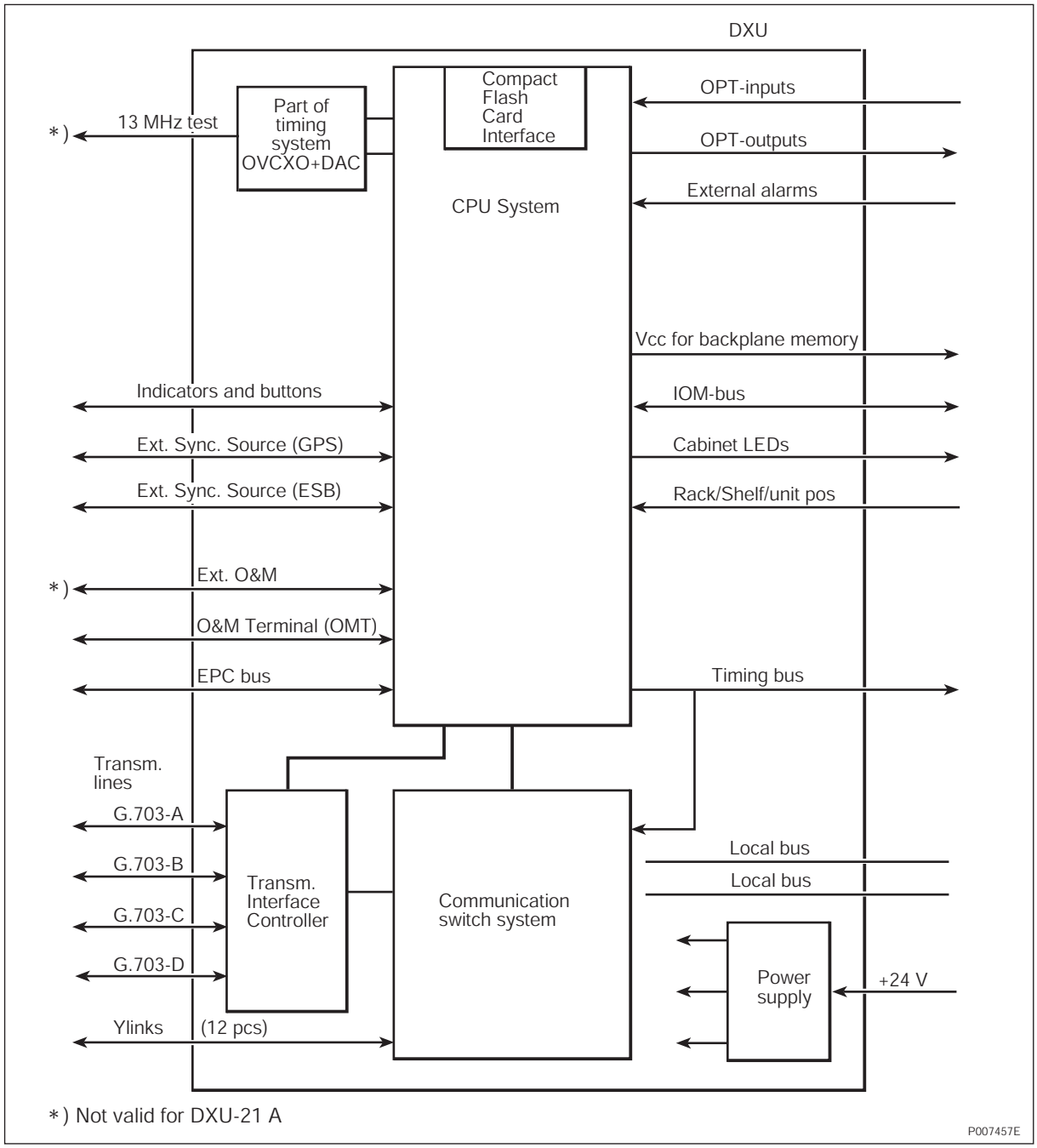


Figure 1 DXU, block diagram

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
- CPU
- 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 to generate timing for the TRUs.

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 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.

External Sync. (Freq. Ref.)

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

Optional Output

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

Optional Input

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

IOM Bus

This interface consists of three individual I2C ports. It is used to communicate with the CDU, CXU, TMA-CM 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’’.

Note: Not used in ECU-equipped cabinets.

GPS

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.

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 (only DXU-21A)	Yellow
EOM bus fault (only DXU-21)	Yellow

Table 5 Switches

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

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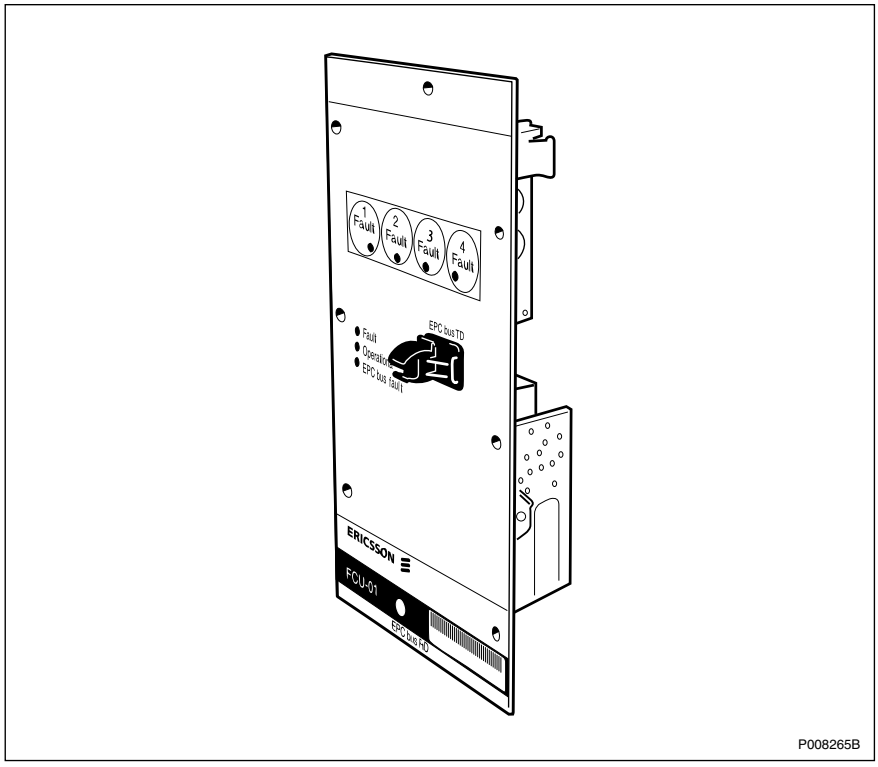
FCU-01

Fan Control Unit
Unit Description

The Fan Control Unit (FCU-01) controls and supervises the fans in the RBS 2206. Its indicators display fan status information.



Contents

1 Product Overview

The FCU-01 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 alarms
- Man-Machine Interface (MMI) for the fans

2 Dimensions

The physical characteristics of the FCU-01 are shown in the table below.

Table 1 FCU-01 Size and Weight

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

3 Function Description

The FCU-01 receives information on the Environmental and Power Control (EPC) bus about the required DC voltage level for each fan. The FCU-01 feeds each fan with the required DC voltage level. If no DC level is received, the DC level for the fans is equal to the FCU-01 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-01 compares the DC level for each fan with the required DC level. If these do not match, the ‘‘FCU fault’’ indicator is illuminated, and an alarm is sent through the EPC bus.

If the communication on the bus no longer is defined, the ‘‘EPC bus fault’’ indicator is illuminated, and an alarm is sent through the EPC bus to the Distribution Switch Unit (DXU).

4 Interfaces

The FCU-01 has the following interfaces:

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

4.1 Signal and Power Interface

Input Data

The input data is shown in the table below.

Table 2 Input Data

Nominal Input Voltage	+24.0 V DC
Input Voltage Range	+19.0 to +29.0 V DC
Non-destructive Voltage	0.9 to +32.0 V DC
Input Power	4 x 45 W

Output Data

The output data is shown in the table below.

Table 3 Output Data

Output Voltage	9 to 28.3 V DC
Output Current	Min. 1.8 A at 9 to 28.3 V DC

4.2 Operator Interface

One alarm signal exists 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

The indicators are shown in the table below.

Table 6 Indicators

Indicator	**Colour**
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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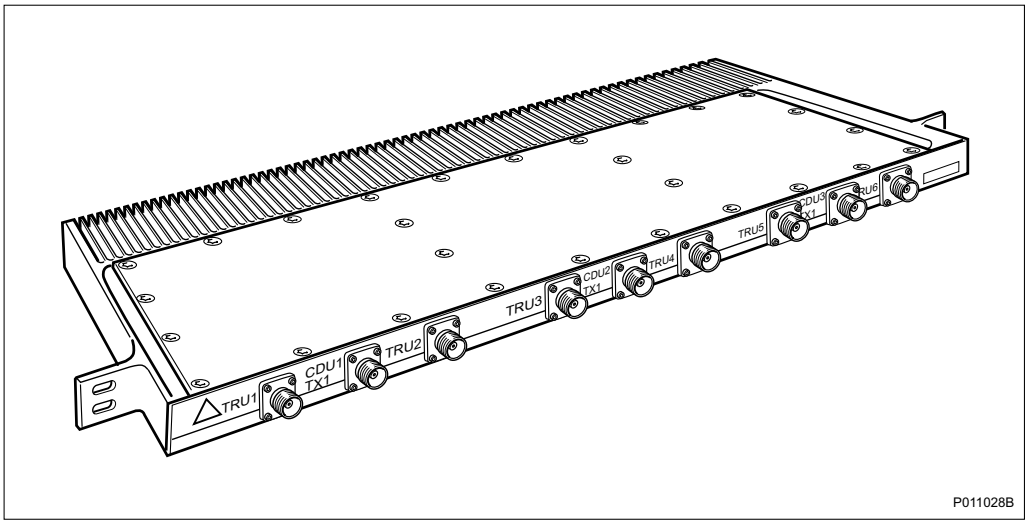
HCU
Hybrid Combiner Unit
Unit Description

The Hybrid Combiner Unit (HCU) combines the signals from two double TRansceiver Units (dTRU) 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 signal is then passed to the Combining and Distribution Unit (CDU), and provides an expanded capacity using a minimum number of TX/RX antennas. (It is unnecessary to increase the number of TX antennas or to build a new site.) The HCU covers both the GSM 800 and GSM 900 standards. The insertion loss is up to 3.3 dB.

1.1 Variants

The HCU is available for GSM 800 and GSM 900.

2 Dimensions

The physical characteristics of the HCU are shown in the table below.

Table 1 HCU Size and Weight

Height	Width	Depth	Weight
22 mm	482.6 mm (19in. standard)	236.6 mm(1)	2.6 kg

(1) The HCU protrudes 42 mm from the rack (excluding connector).

3 Function Description

This section describes the function of the HCU.

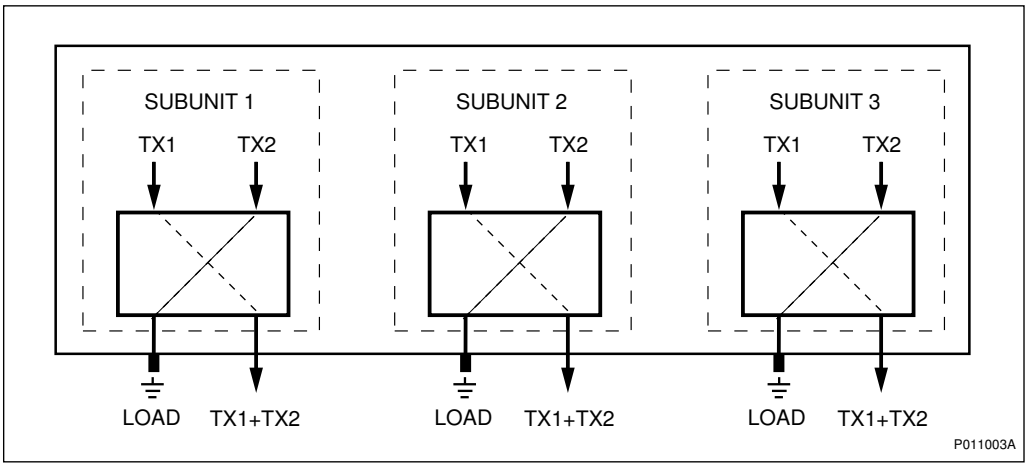


Figure 1 Block Diagram for the HCU

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 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 the connectors on the HCU.

Connectors

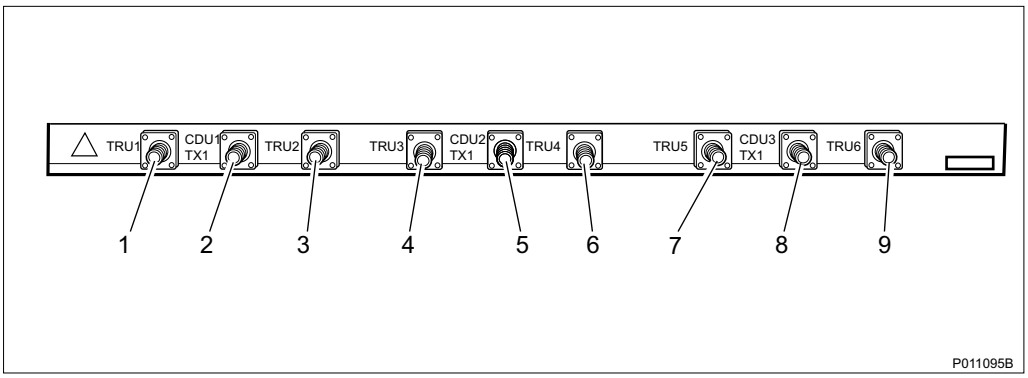


Figure 2 HCU Connectors

The connectors are shown in the table below.

Table 2 HCU Connectors

Position	Function	Connects to
1	TX1 in	dTRU 1
2	TX1+TX2 out	CDU-G 1:TX1
3	TX2 in	dTRU 2
4	TX1 in	dTRU 3
5	TX1+TX2 out	CDU-G 2:TX1
6	TX2 in	dTRU 4
7	TX1 in	dTRU 5
8	TX1+TX2 out	CDU-G 3:TX1
9	TX2 in	dTRU 6

Input Data

The input data is shown in the table below.

Table 3 Input Ports

Port	Marking
Input 1, 3, 4, 6, 7, 9	TRU1 to TRU6

Output Data

The output data is shown in the table below.

Table 4 Output Ports

Port	Marking
Output 2, 5, 8	CDU1 TX1, CDU2 TX1, CDU3 TX1

Indicators

The HCU does not have any indicators.

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