RBS 2308
Micro RBS

Product Description

The RBS 2308, a member of the RBS 2000 family, is a 4 TRX radio base station for indoor or outdoor use.

ERICSSON

Contents

1 Product Overview

The RBS 2308 is an outdoor micro base station. It can be used for indoor or outdoor applications, with four transceivers (TRX). The cabinet can be mounted on walls, poles or masts.

The RBS 2308 is designed for use with BSS R9.1C or later. It supports GPRS (CS-1, CS-2, CS-3, and CS-4), HSCSD, and EGPRS in the Micro concept.

Main applications of the RBS 2308 are:

- Hot spots, adding supplementary coverage
- Providing EDGE capacity
- Public meeting places, supplying additional capacity in dense areas
- Replacement of existing RBS 2302 sites where higher capacity is required.

1.1 Main Features

The RBS 2308 can support, among others, the following features:

- Scalable up to 12 TRXs
- EDGE
- External alarms
- Multidrop by-pass
- Positioning with GPS/LMU
- Power supply for MINI-LINK E Micro or LMU
- Synchronized networks

1.2 Variants

The RBS 2308 can support the following frequencies:

- GSM 1900
- GSM 800

1.3 Optional Equipment

The equipment listed below is available, but is not necessary for basic operation:

- Fan unit
- Mast-mounting fixtures
- Multicasting Box (MCB)
- RX Bandpass Filter (RXBP)

2 Dimensions

This section describes the RBS 2308 dimensions, space requirements and colour.

Size and Weight

The dimensions of the basic RBS 2308 cabinet (without options) are shown in the figure and table below.

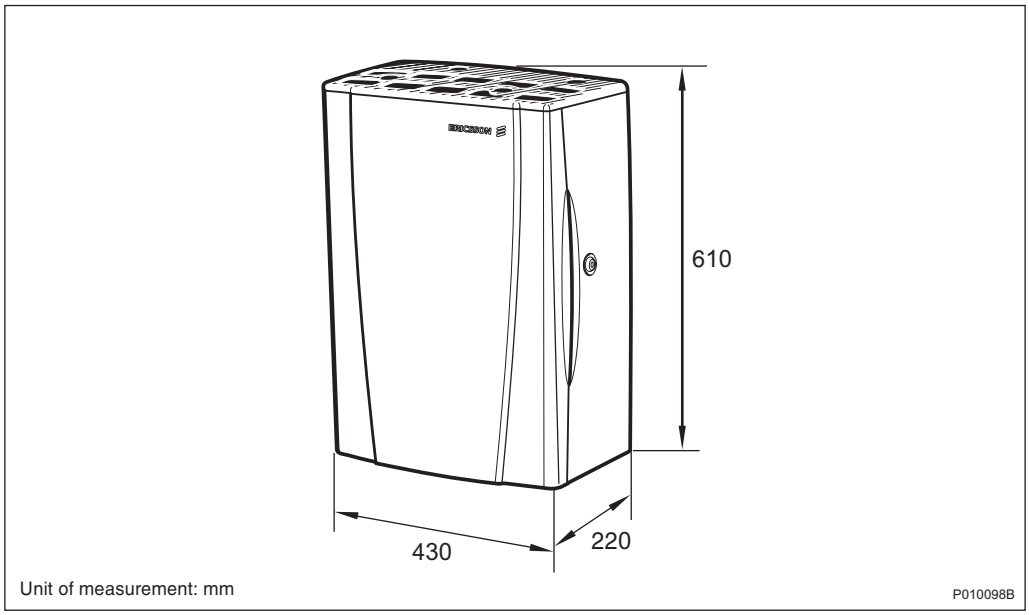

Figure 1 RBS 2308 dimensions

Use of the fan will increase the height of the cabinet, *see table below.*

Table 1 Maximum dimensions with and without fan

Dimension	Basic RBS 2308	RBS 2308, maximum dimensions
Height	610 mm	742 mm(1)
Width	433 mm	433 mm
Depth	224 mm	270 mm(2)

(1) With fan unit.
(2) With RXBP.

The weights of the RBS 2308 and of the major units to be handled are given in the table below.

Table 2 Weights of RBS 2308 and major units

Unit	**Weight**
IXU	9.5 kg
MBU	6.5 kg
RRU	23.5 kg
Sunshield	1.5 kg
Total	41 kg

Colour

The RBS 2308 is available in grey (reference number NCS S2502–R).

3 Space Requirements

For installation and maintenance, and proper cooling during operation, the space in front of the cabinet must be kept clear for a distance of 500 mm, and there must be at least 250 mm of free space on either side. 300 mm free space is required above the cabinet. The distance between the cabinet and the nearest obstruction below (floor, filing cabinet, another RBS, and so on) must be at least 500 mm.

No free space is needed at the back of the cabinet.

The figure below shows the minimum space requirements and the dimensions of the RBS in relation to the mounting base (if used). This information can be used to determine a suitable location with respect to other equipment at the site.

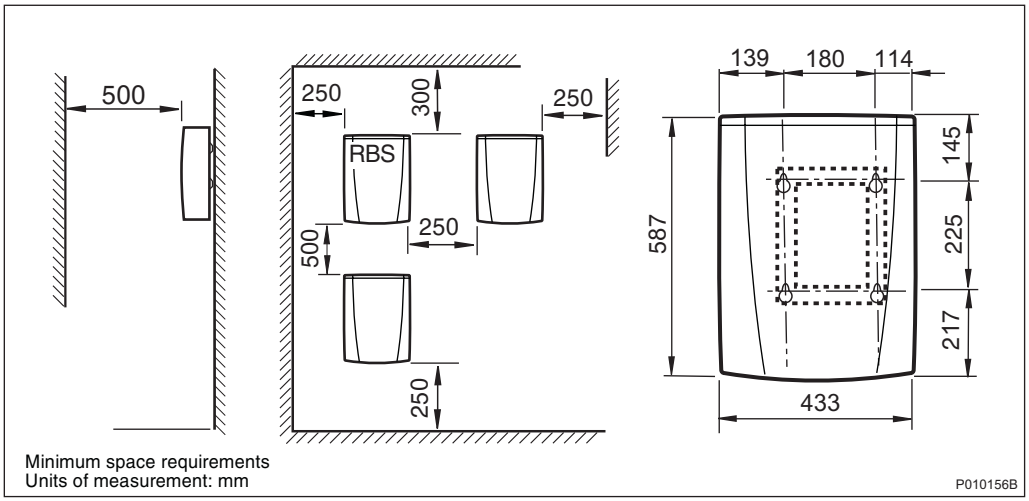

Figure 2 Space requirements

Mounting Base Holing Pattern

The mounting base of the RBS 2308 has the same holing pattern as that of the RBS 2302 mounting base, *see Figure 2 on page 7.*

4 Environment

This section provides an overview of the operating environment, environmental impact, and materials used in the RBS 2308.

4.1 Operating Environment

The operational temperature limits of the RBS 2308 depend upon the power supply and whether or not the fan is used, *see tables below.*

Table 3 Start-up and operational requirements using AC power

RBS 2308 Variant	Temperature range	Relative Humidity
Without optional fan	–33°C to +45°C	15 – 100%
With optional fan	–33°C to +55°C	15 – 100%

Table 4 Start-up and operational requirements using DC power

RBS 2308 Variant	Temperature range	Relative Humidity
Start-up	0°C to +45°C	15 – 100%
Operational, without optional fan	–15°C to +45°C	15 – 100%
Operational, with optional fan	–15°C to +55°C	15 – 100%

Temperature limits for transport, storage and handling of the RBS 2308 are given in the table below.

Table 5 Transport, storage and handling climatic requirements

Condition	Temperature range	Relative Humidity
Transport	–40°C to +70°C	5 – 100%
Storage	–25°C to +55°C	10 – 100%
Handling	–40°C to +70°C	5 – 100%

4.2 Environmental Impact

This section describes the effects that the cabinet has on the environment.

Heat Dissipation

Average heat loads of the RBS 2308 are given in the table below. The exact figures are dependent upon configuration, equipment and site-specific conditions.

Table 6 Average heat load

Operation Condition	Average Heat Load
Without heating	315 W

Acoustic Dispersion

The RBS 2308 cabinet does not contribute to the acoustic noise of its surroundings.

The optional fan unit generates acoustic noise. The maximum sound power of the fan unit is given in the table below.

Table 7 Average heat load

Ambient Temperature	Sound Power Level
<30°C	5.5 Bel
Maximum operating temperature	6.5 Bel

4.3 Materials

All Ericsson products fulfil the legal, market, and Ericsson requirements regarding:

- Fire resistance of material, components, wires and cables
- Declaration of materials
- Use of restricted materials
- Recycling

5 Hardware Units

A high level of availability is achieved using strict functional modularity in a system of standardised Replaceable Units (RUs). A faulty RU can easily be replaced by a new one.

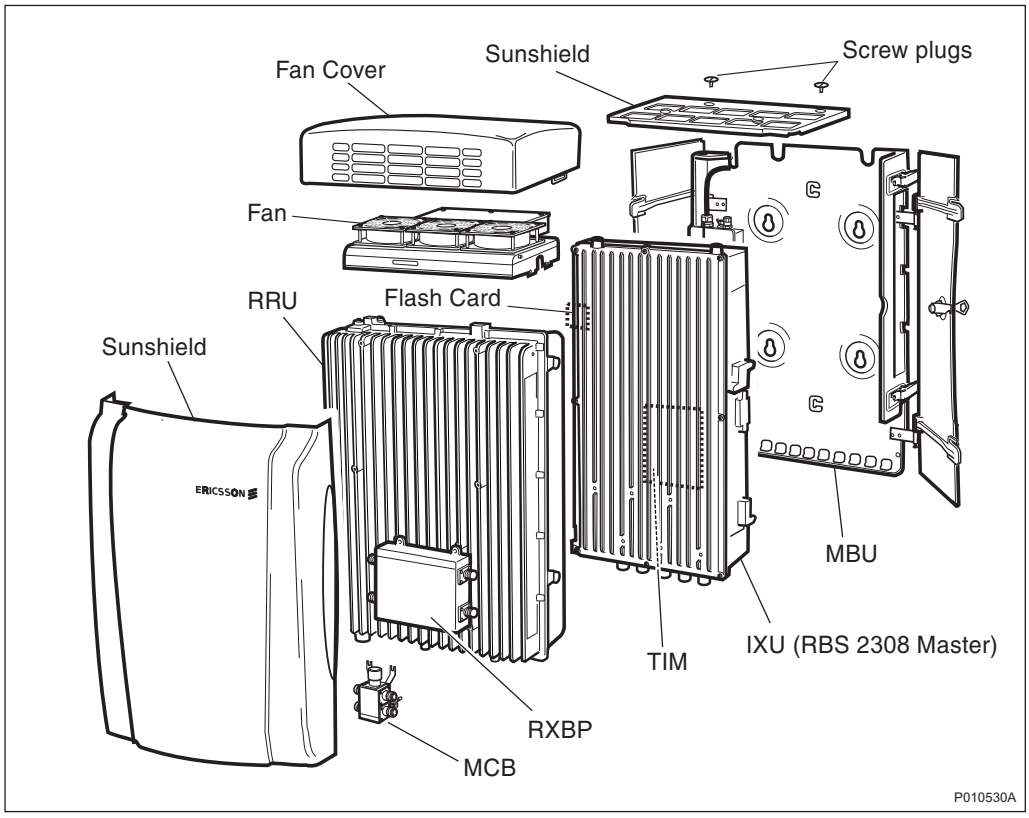

Figure 3 RBS 2308 overview

5.1 Standard Hardware Units

This section briefly describes the standard hardware units required for operation.

Flash Memory Card

All loadable software and the IDB are stored on this card. The cards contains all information for configuring replacement units if RBS 2308s are exchanged.

Number of units: 1

IXU — Interface and Switching Unit

The IXU is in the central control unit for one RBS. All switching of traffic is performed in the IXU. The IXU has integrated power supply and climate control. The Flash Memory Card, the TIM, and all external interfaces except AC/DC power, antennas and the fan unit are located on the IXU.

Number of units: 1

MBU — Mounting Base Unit

The MBU is the mechanical mounting interface for the RBS 2308. It also contains the interface for the main power supply, and provides surge and transient protection for incoming lines. Circuit breakers for primary power and a switch for RRU power are located here.

Number of units: 1 – 4

RRU — Remote Radio Unit

The RRU contains the transceivers; it handles the combining and distributing functions for the RBS 2308. The RRU has integrated power supply and climate control. The interfaces to the antennas and to the Fan Unit are located on the RRU.

Number of units: 1 – 3

Sunshields

The sunshields reduce heat from direct solar radiation and provide a lockable cover to the RBS 2308.

Number of units: 1 top, 1 front and 2 side panels per cabinet.

TIM — Transmission Interface Module

The TIM provides an interface to various transmission standards. Different TIMs can be defined for different standards. Currently only E1/T1 is supported.

Number of units: 1

5.2 Optional Hardware Units

This section describes the RBS 2308 optional hardware units.

Fan Unit

The fan unit provides addtional cooling to the RBS 2308. It is located on top of the RBS, on the RRU. The fan is controlled by the RRU and receives power from it.

Number of units: 0 – 1 per RRU

MCB – Multicasting Box

The multicasting box provides a single feeder interface for an external antenna/antenna system. Under certain conditions, the multicasting option enables the connection of two antennas/antenna systems for extension of the cell. This configuration would expand the cell to different floors in a building or into a tunnel.

The second antenna output on the multicasting box is normally connected to an internal 50 Ω load. As an alternative, a second antenna system can be connected to the output.

The MCB units can be connected to the RRU.

Number of units: 0 – 2 per RRU

RXBP – RX Bandpass Filter (GSM 800 only)

The RXBP filters the incoming RX signal, filtering out frequencies outside the RX spectrum in GSM 800.

Number of units: 0 – 1 per RRU

Note: The RXBP is currently available only for GSM 800.

6 Interfaces

In this section, all external and internal connections are listed, as well as the test interface and the operator interface.

Most external connectors enter the cabinet through the bottom of the cabinet. The earthing connection is located on the top of the MBU. Test and operator interfaces are located on cabinet hardware units.

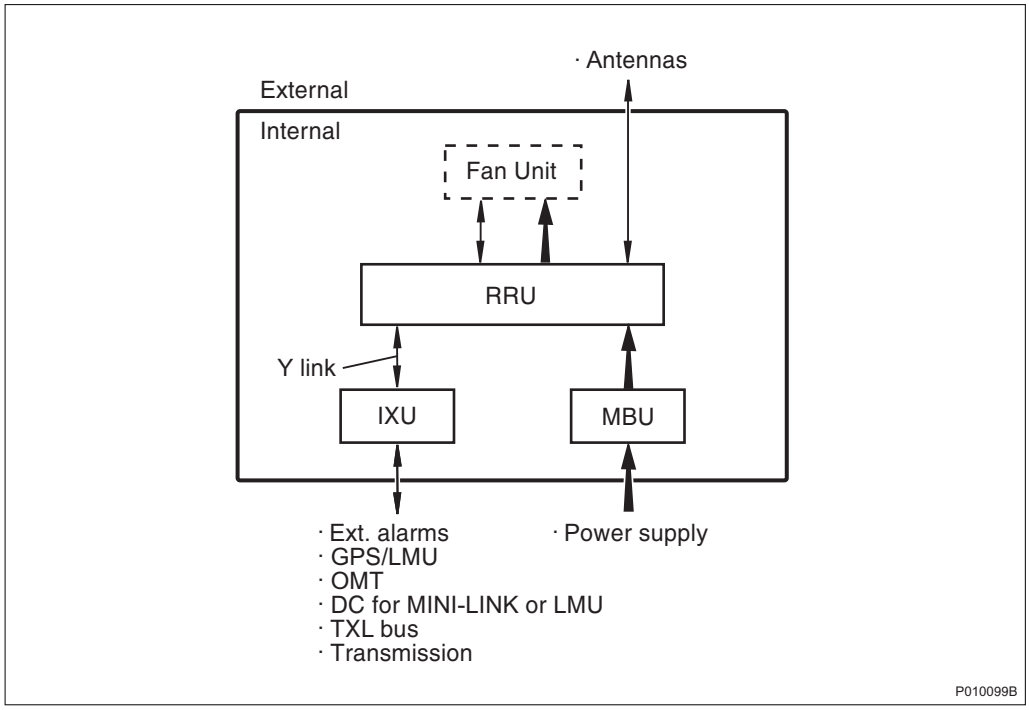

Figure 4 Internal and external interfaces

6.1 External Connections

Most external connectors enter the cabinet through the bottom. The earthing connection is located on the top of the MBU, and the OMT connection is on the side of the IXU.

External connections for the RBS 2308 include the following:

- Antenna interface
- AC mains and earthing interface
- DC power supply
- Transmission interface
- External alarm interface

- OMT interface
- GPS/LMU signalling interface
- DC for MINI-LINK or LMU

Antenna Connections

In GSM 1900, antenna connections are made at the RRU and the MCB. This section describes the antenna connectors located on the RRU and the MCB.

Note: In GSM 800, depending upon configuration, antenna connections are also made at the RXBP, *see Page 15.*

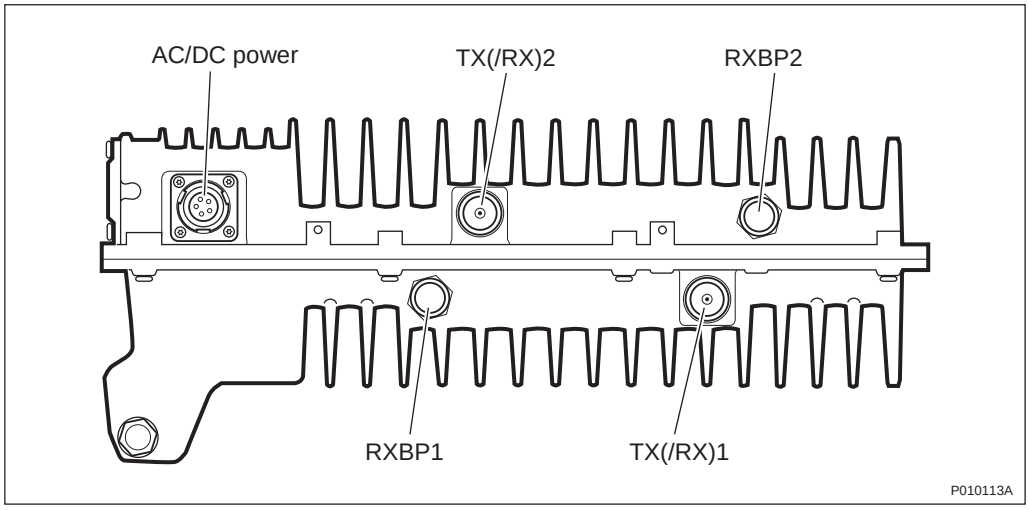

Figure 5 RRU antenna connections

Table 8 Antenna connections ports on the RRU

Connector	Type of Connector	Signal
TX(/RX)2	N connector (female)	TX/RX or TX
RXBP2	TNC (female)	RX
RXBP1	TNC (female)	RX
TX(/RX)1	N connector (female)	TX/RX or TX

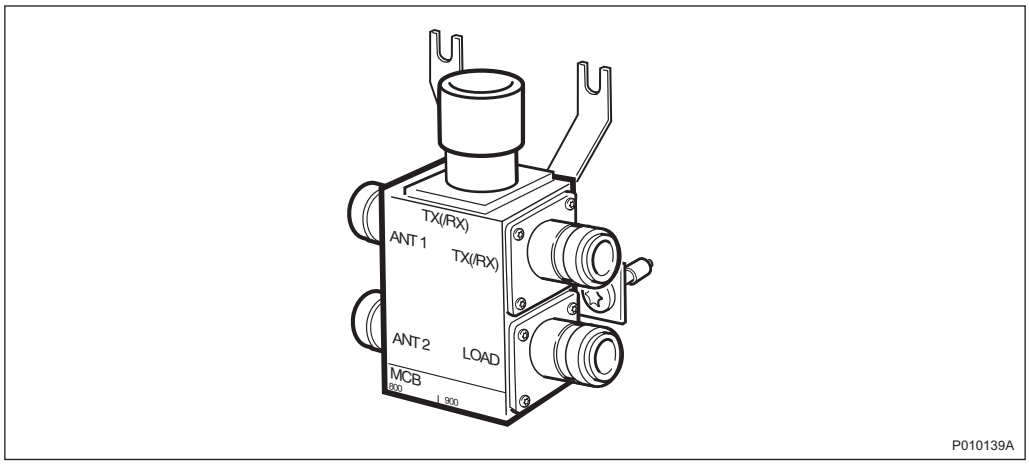

Figure 6 MCB antenna connection ports

Table 9 Antenna connections ports on the MCB

Connector	Type of Connector
TX(/RX) *top*	N connector (male)
TX(/RX) *side*	N connector (female)
Load	N connector (female)
Ant 1	N connector (female)
Ant 2	N connector (female)

RXBP Antenna Connections (800 MHz only)

This section is valid for GSM 800 only.

For certain configurations, antenna connections are made at the optional RXBP. Antenna connectors on the RXBP are shown in the figure below.

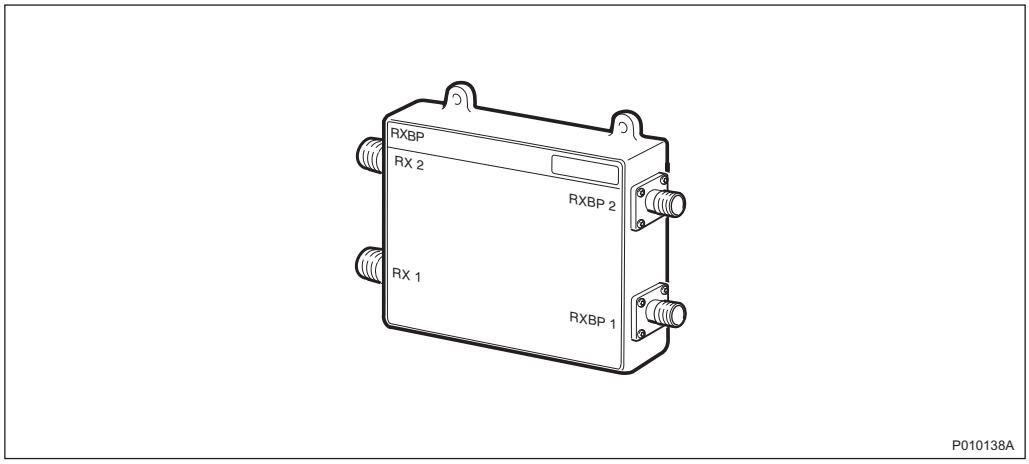

Figure 7 RXBP antenna connection ports

Table 10 Antenna connections ports on the RXBP

Connector	Type of connector
RX2	N connector (female)
RXBP2	TNC (female)
RX1	N connector (female)
RXBP1	TNC (female)

Transmission

The RBS 2308 has four transmission ports, located in the IXU, *see figure below.*

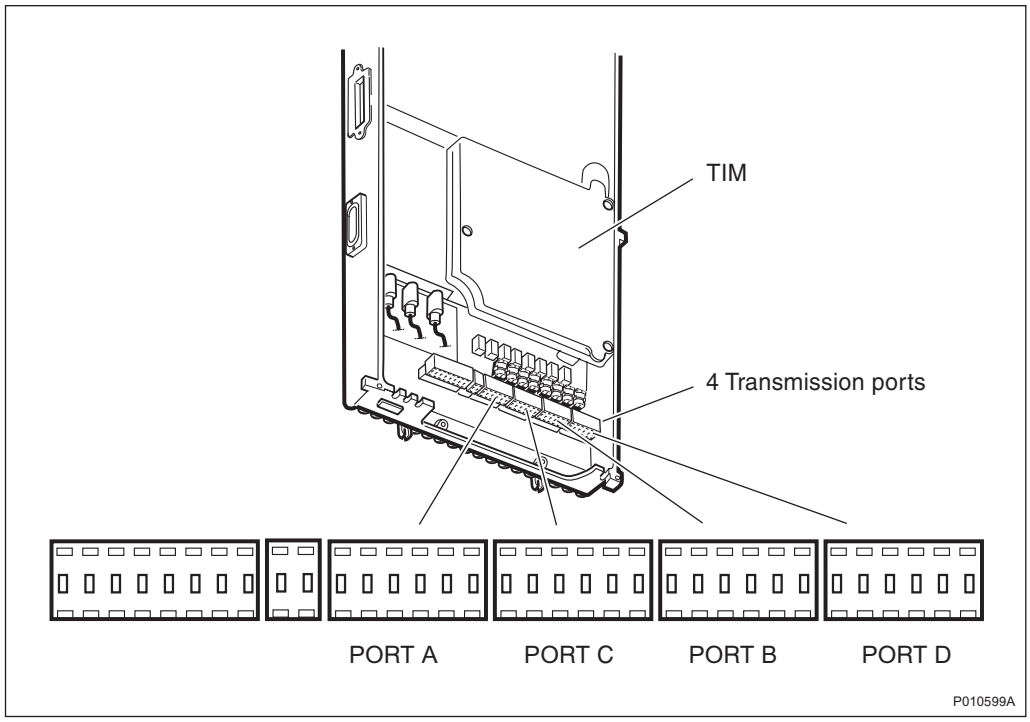

Figure 8 Location of T1 transmission ports in IXU

For connection parameters, *see the table below.*

Table 11 Transmission connection parameters

Type of connector	6–pin, 2.5 mm^2 each
Cable gland capacity	6 – 10 mm diameter
Grounding	Transmission wire screen is grounded. Receive wire screen can be grounded.

External Alarms

The RBS 2308 is equipped with four external alarms, located in the IXU, *see figure below.* For external alarm parameters, *see Table 12 on page 17.*

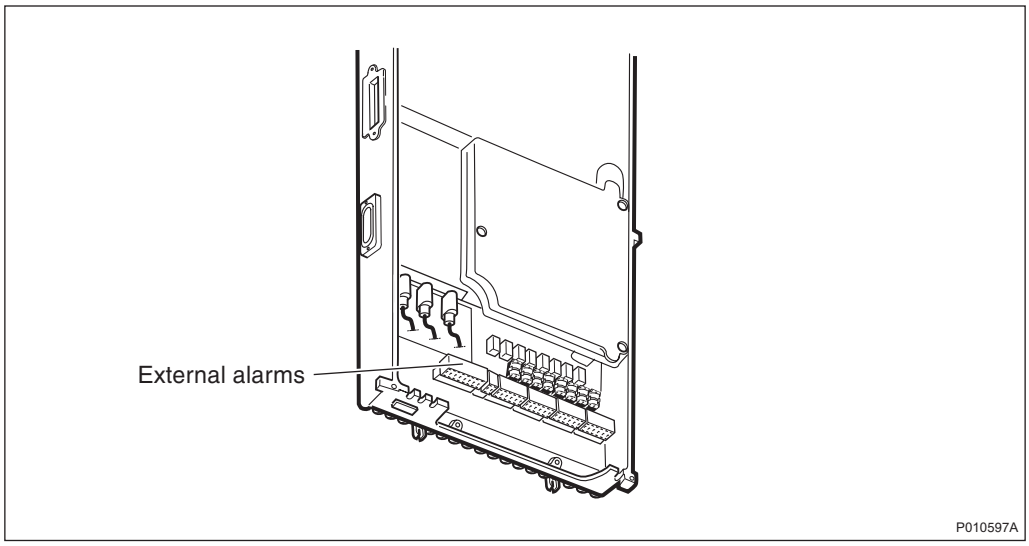

Figure 9 Location of external alarms in IXU

Table 12 External alarm connection parameters

Type of connector	Terminals for 8 x 2.5 mm^2 conductors
Cable gland capacity	6 – 10 mm diameter
Number of alarms	4

Earthing Connection

The earthing connection is an M8 screw terminal located on the top of the MBU.

MINI-LINK or LMU Power Supply

The RBS 2308 can supply DC power to a MINI-LINK E Micro or to an LMU. This interface is located on the IXU, *see figure below.*

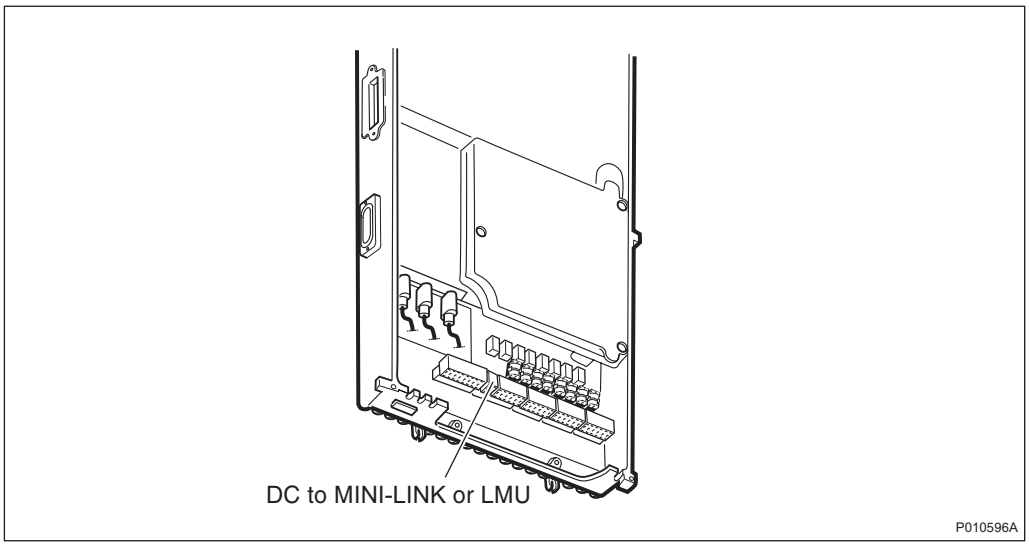

Figure 10 Location of MINI-LINK / LMU power supply in IXU

Parameters for the MINI-LINK / LMU power supply are given in the table below.

Table 13 MINI-LINK / LMU DC supply connection parameters

Type of connector	Terminals for 2 x 2.5 mm^2 (maximum)
Cable gland capacity	6 – 10 mm diameter (Quantity: 1)

Note: The maximum cable length between the IXU and the LMU is 5 m.

Other External Connections

Table 14 Other external connections

Connection Location	Connection to	Type of Connector
MBU	AC Mains connections	Screw terminal for 3 x 5.26 mm^2 (maximum) conductors; cable gland capacity 14 mm diameter
	DC supply connections	Screw terminal for 3 x 5.26 mm^2 (maximum) conductors; cable gland capacity 14 mm diameter
IXU	GPS/LMU (synchronisation or positioning)	15 pin D-sub HD, female; *see Figure 11 on page 19.*

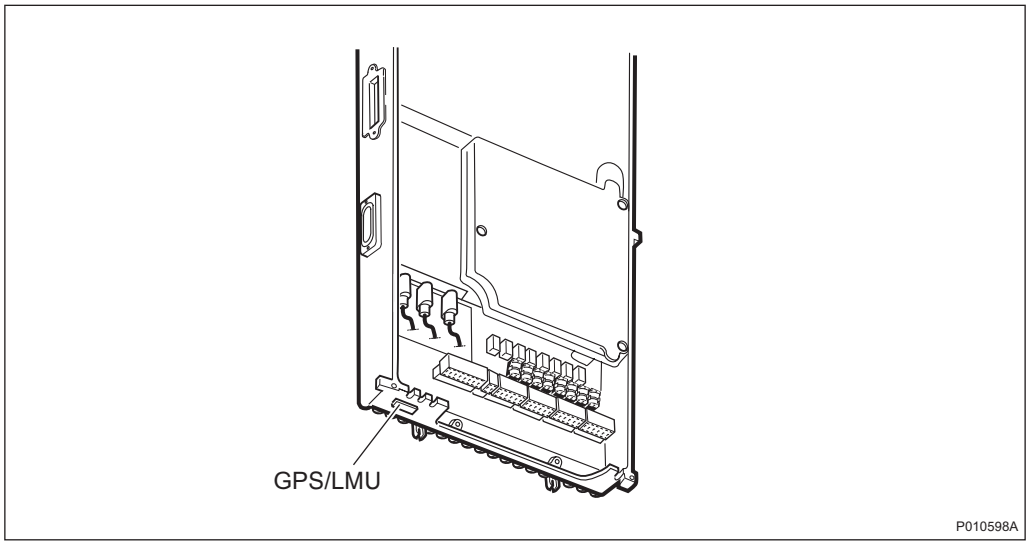

Figure 11 GPS/LMU connection port on IXU

6.2 Internal Interface

The RBS 2308 uses a Y link internal interface when multiple RRUs are connected to the IXU. Parameters for the Y link are given below.

Table 15 Y link connection parameters

Type of connector	IEEE-1394
Maximum cable length	5 m

6.3 OMT Interface

The OMT interface for RBS 2308 is located on the right side of the IXU. It is a 9–pin D-sub (female) connector.

6.4 Operator interface

The Man-Machine Interface (MMI) in the RBS 2308 is comprised of indicators and buttons located on the hardware units in the cabinet.

RRU

The table below describes buttons found on the RRU.

Table 16 RRU buttons

Button	Description
RRU Reset	Resets the RRU.
Local/Remote	Changes mode between local and remote.

The table below describes the RRU indicators, and their meaning when the indicator is on.

Table 17 RRU indicators

Indicator	Colour	Description
Fault	Red	Fault detected on the RRU.
Operational	Green	At least one TRX is operational in the RRU.
Local	Yellow	RRU is in local mode.
RF off	Yellow	No RF to antennas.
AC power on	Green	AC power supply within operational range.
DC power on	Green	DC power supply within operational range.
RRU temp.	Yellow	RRU internal temperature is out of range.

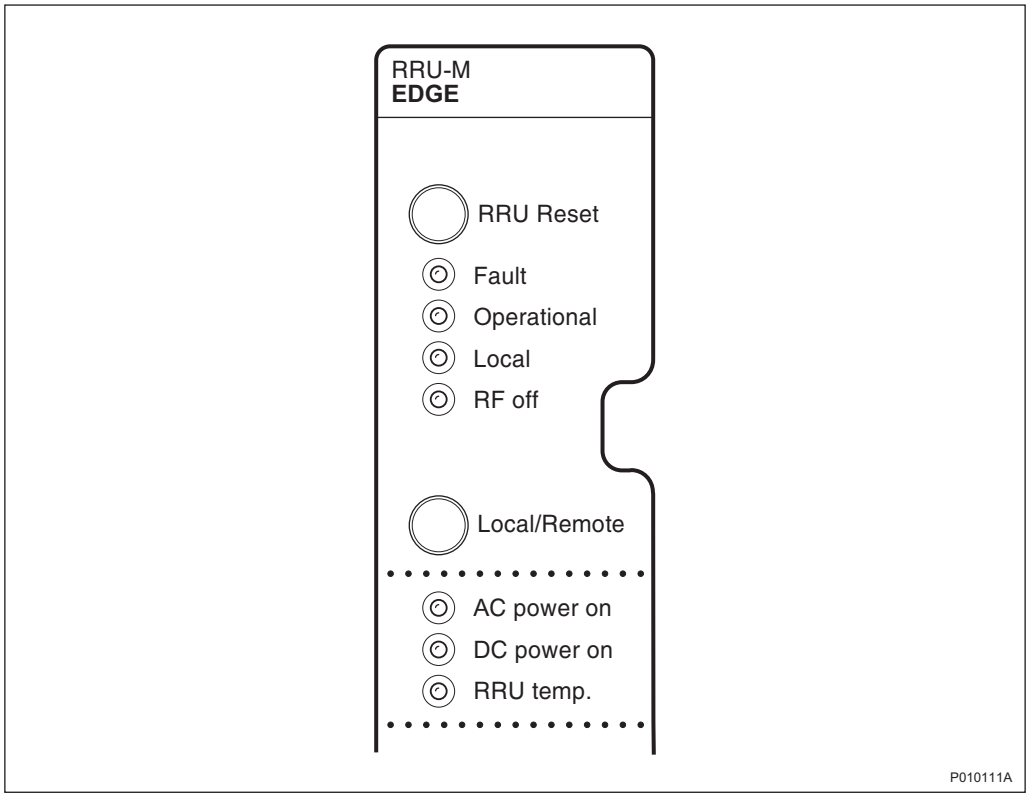

Figure 12 RRU interface panel

IXU

The table below describes buttons found on the IXU.

Table 18 IXU buttons

Button	Description
IXU Reset	Resets the IXU and all subunits.
Local/Remote	Changes mode between local and remote.

The table below describes the IXU indicators, and their meaning when the indicator is on.

Table 19 IXU indicators

Indicator	Colour	Description
Fault	Red	Fault detected on the IXU.
Operational	Green	IXU is operational.
Local	Yellow	IXU is in local mode.
RBS fault	Yellow	RBS fault detected.
External alarm	Yellow	One or several external alarms active in the RBS.
EOM bus fault	Yellow	*(Not used.)*
AC power on	Green	AC power supply within operational range.
DC power on	Green	DC power supply within operational range.
IXU temp.	Yellow	IXU internal temperature is out of range.
Transmission OK: Port A	Green	Transmission is OK – layer 1.
Transmission OK: Port B	Green	Transmission is OK – layer 1.
Transmission OK: Port C	Green	Transmission is OK – layer 1.
Transmission OK: Port D	Green	Transmission is OK – layer 1.

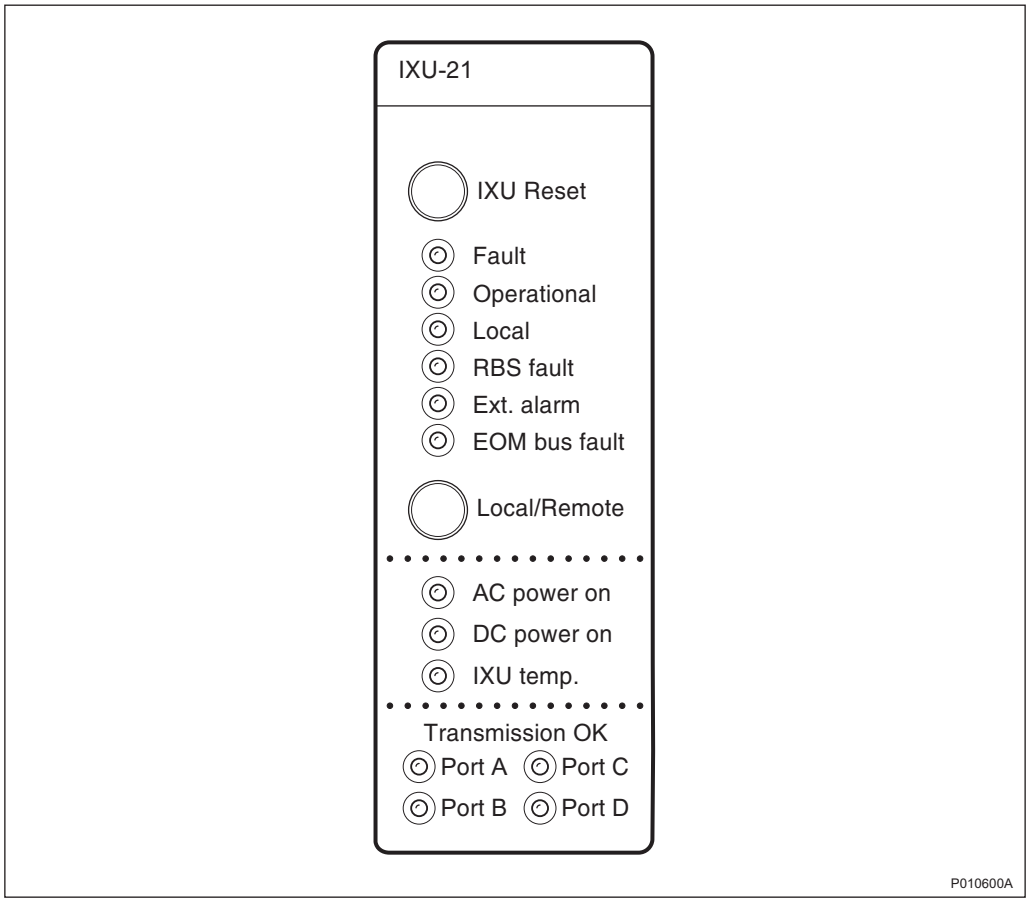

Figure 13 IXU interface panel

MBU

The table below describes switches found on the MBU.

Table 20 MBU switches

Switch	Description
AC on/off	AC power on or off to the RBS
DC on/off	DC power on or off to the RBS
RRU on/off	AC/DC Power on/off to the RRU

7 Power System

This section provides information on the power system of the RBS 2308.

The main characteristics of the RBS 2308 power supply are:

- Either alternating current (AC) or direct current (DC), –48 V DC, may be used
- AC Mains voltage range 100 – 127 V AC
- External Power and Battery Cabinet (PBC) may be used

7.1 Power Supply

The RBS may be operated on AC or DC power.

AC Mains Supply Voltage

Single-phase AC is used, voltage range 100 – 127 V AC. Both 50 Hz and 60 Hz nominal frequencies may be used.

Table 21 Power parameters

Parameter	**50 Hz Nominal Frequency**	**60 Hz Nominal Frequency**
Nominal voltage	100 – 127 V AC	100 – 127 V AC
Operating voltage	90 – 140 V AC	90 – 140 V AC
Operating frequency	45 – 55 Hz	55 – 65 Hz
Maximum inrush current	50 A for 10 ms (typical duration)	60 A for 10 ms (typical duration)
Short circuit current	< 5 kA	< 5 kA

The following fuses are recommended for AC mains power supply.

Table 22 Mains fuses recommendation

Cabinet Orientation	**Recommended Fuse Rating, AC Supply**
Vertical	16 A
Horizontal(1)	20 A

(1) Horizontal mounting requires forced air flow over the RBSs cooling fins.

DC Power Supply

The RBS 2308 can be operated on -48 V DC (-40.5 to -57.0 V DC) supply.

The following fuses are recommended for DC power supply.

Table 23 DC supply fuses recommendation

Cabinet Orientation	Recommended Fuse Rating, DC Supply
Vertical	20 A
Horizontal(1)	25 A

(1) Horizontal mounting requires forced air flow over the RBSs cooling fins.

7.2 Battery Back-up

The RBS 2308 supports an external Power and Battey Cabinet (PBC). External alarms can be used to detect loss of DC power.

For more information about the PBC, *see:*

PBC Product Description EN/LZT 720 0252

7.3 Output Power

The RBS can supply the MINI-LINK or LMU with power according to the table below:

Table 24 Output power characteristics

Voltage range	-48 V DC
Connector type	Terminals 2 x maximum 2.5 mm^2
Cable gland capacity	6 – 10 mm diameter (Quantity:1)

7.4 Power Consumption

The power consumed by the RBS 2308 in both normal operation and with heating is given in the table below.

Table 25 Power consumption, basic cabinet

Operational condition	Power consumption, AC supply	Power consumption, DC supply
Normal operation (no heating)	360 VA	320 VA
Start-up of heating	3200 VA	n/a(1)
Continual heating	1000 VA	n/a

(1) Heater is fed by AC power. No heating with DC power supply.

Power can also be supplied by the RBS 2308 to various external equipment, for example an LMU. The additional power consumed in supplying external equipment is given in the table below.

Table 26 Additional power consumption for various options

Option	Additional Power Consumption
Optional fan unit	25 VA
External MINI-LINK	38 VA
External LMU	52 VA

8 Transmission

The RBS 2308 supports the T1 transmission standard. Characteristics of the T1 standard are:

- 1.5 Mbit
- 100 Ω
- B8ZS line code

Multidrop

Up to ten RBSs can be cascaded using multidrop.

RBS 2308 is equipped with multidrop bypass relays. RBSs connected downstream to a faulty RBS 2308 will therefore still receive transmission.

9 External Alarms

The RBS 2308 supports a maximum of 4 external alarms, located on the IXU.

10 Standards, Regulations and Dependability

In this section a brief overview of standards, type approval and electromagnetic compatibility are stated.

10.1 Safety Standards

In accordance to the market requirements, the RBS 2308 complies with the following product safety standards:

- 73/23/EEC Low voltage directive
- IP 55 according to IEC 60529
- EN 60950 / IEC 60950
- EN 60215 / IEC 60215
- UL 1950, harmonised with CSA 22.2 No. 950
- Enclosure type 3R class according to UL 50 and CSA 22.2 No. 94

10.2 Other Standards and Regulations

Marking

The product is marked with signs to show compliance with product safety standards.

Type Approval Standards

The RBS 2308 complies with the North America market requirements regarding radio performance. The product has the FCC sign to show compliance to the legal requirements.

Electromagnetic Compatibility (EMC)

The RBS 2308 complies with the North America market requirements regarding EMC. The product has the FCC sign to show compliance to the legal requirements.

Dependability

The RBS 2308 is designed for a technical lifetime of 20 years (24–hour operation) at an average ambient temperature of +25°C.

11 Vandal Resistance

The RBS 2308 fulfils Ericsson’s requirements for vandal resistance.

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