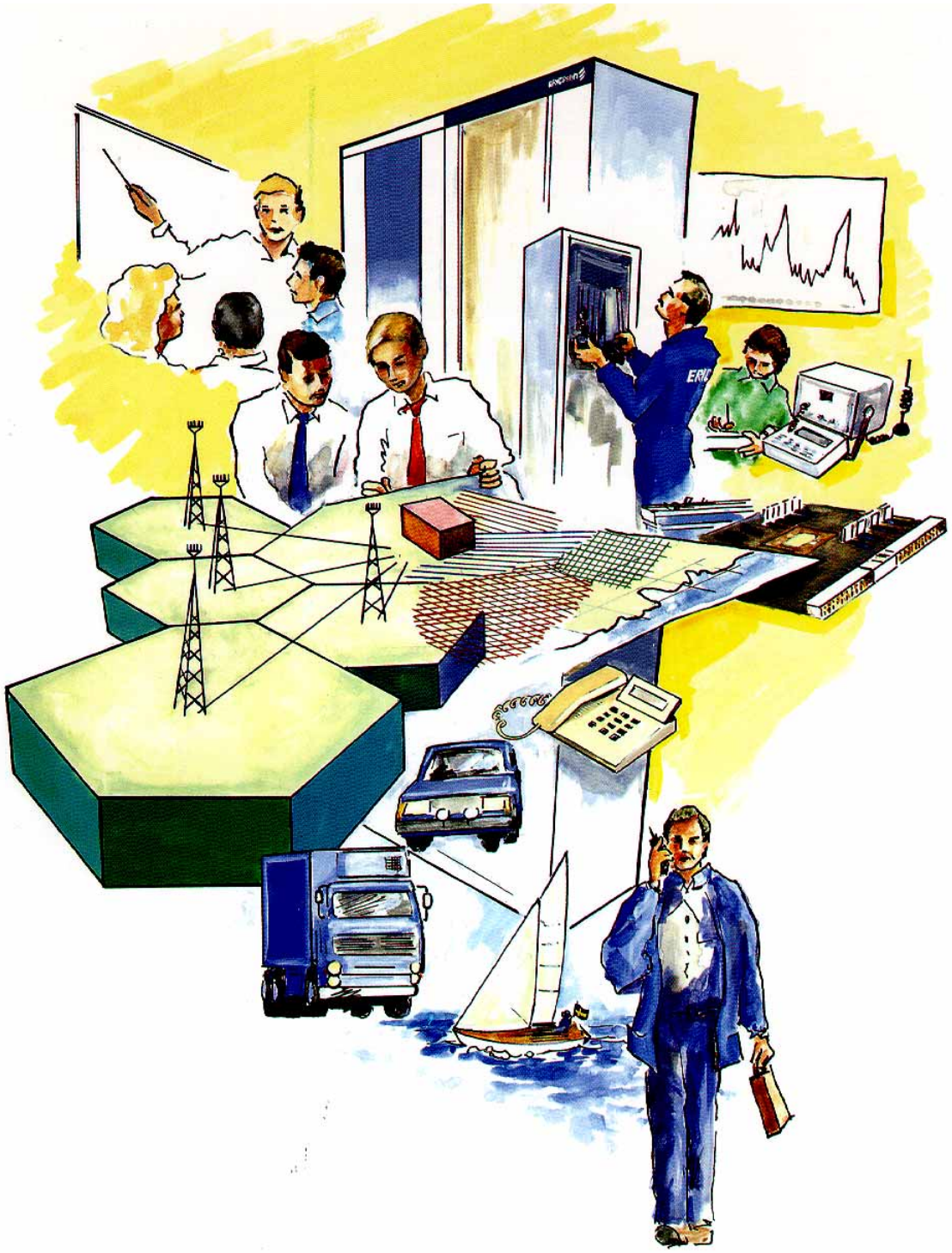

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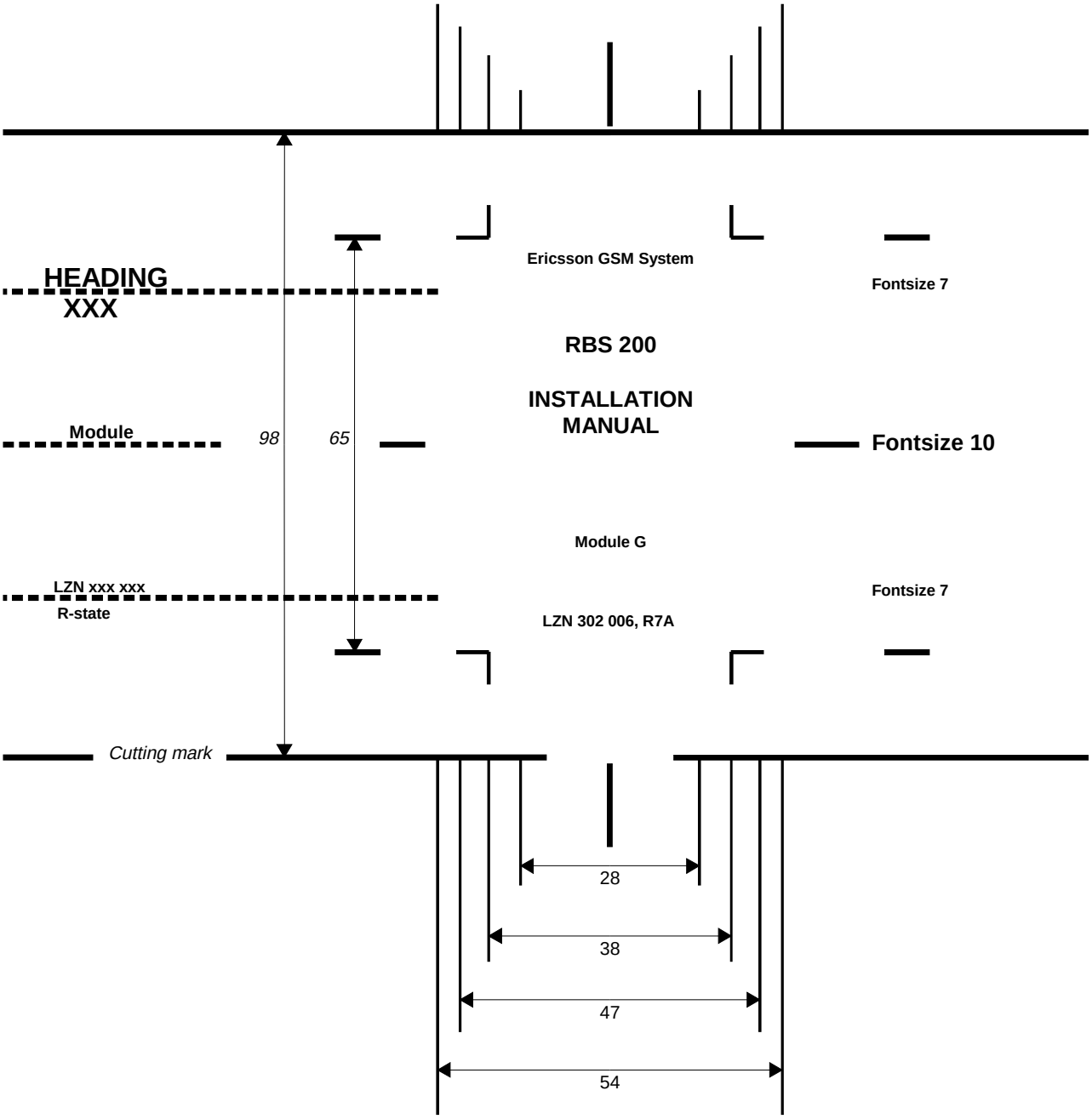
BINDER LABEL 1 (1)

| Uppgjord (även faktaansvarig om annan) - *Prepared (also subject responsible if other)* | | Nr - *No.* | | |
|---|---|---|---|---|
| ERA/LRN/Z | | 2/001 59-LZN 302 006 Uen | | |
| Dokansv/Godkänd - *Doc respons/Approved* | Kontr - *Checked* | Datum - *Date* | Rev | File |
| ERA/LRN/Z | | 1999-09-20 | B | |



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*CAPTION LIST*

| Document No. | |
|---|---|
| 001 53-LZN 302 006 | |
| Date | Rev |
| 99-09-20 | G |

**Ericsson GSM System**
**version R4, R5, R6 and R7**

# RBS 200

## INSTALLATION MANUAL

**Module G**

**LZN 302 006 R7A**


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| Uppgjord — *Prepared* | Faktaansvarig — *Subject responsible* | Nr — *No.* | |
|---|---|---|---|
| ERA/LRN/ZG | | 1/001 51-LZN 302 006 Uen | |
| Dokansv/Godk — *Doc respons/Approved* | Kontr — *Checked* | Datum — *Date* | Rev | File |
| ERA/LRN/ZIC (Per Eklund) | | 1999-09-30 | G | |

# CME 20 RBS 200 G, List of Documents

# 1 List of Documents

| Sect. | Document Name | Document/File Ref. Number |
|---|---|---|
| | Caption List | 001 53-LZN 302 006 Uen G |
| | List of Documents | 1/001 51-LZN 302 006 Uen G |
| **0** | **INTRODUCTION** | |
| | Introduction | 6/001 59-LZN 302 006 Uen B |
| | CE Conformity Declaration | 174 01-LZN 302 006 Uen B |
| | Trouble Report Instruction | 1/1553-COH 109 2014 Uen B |
| | Numbering of Ericsson Products and Documents | 1312-COH 109 2014 Uen A |
| **1** | **SAFETY** | |
| | List of Headings | 1/001 53-LZN 302 006 Uen B |
| **1.0** | **Safety** | |
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| **1.1** | **Label Locations** | |
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| **2** | **SITE INSTALLATION** | |
| | Site Installation | 153 31-COH 109 2015/11 Uen A |
| **3** | **RADIO CABINET** | |
| | List of Headings | 3/001 53-LZN 302 006 Uen D |

| Sect. | Document Name | Document/File Ref. Number |
|---|---|---|
| **3.0** | **General Cabinet Information** | |
| | General Cabinet Information | 1/1531-COH 109 2015/11 Uen B |
| **3.1** | **Master Cabinet BDE 201 162/-** | |
| | Master Cabinet BDE 201 162/- | 2/1531-COH 109 2015/11 Uen B |
| **3.2** | **Extension Cabinet BDE 201 162/-** | |
| | Extension Cabinet BDE 201 162/- | 3/1531-COH 109 2015/11 Uen B |
| **3.3** | **External Cabling** | |
| | External Cabling | 4/1531-COH 109 2015/11 Uen B |
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| **3.5** | **Co-siting** | |
| | Co-siting | 5/1531-COH 109 2015/11 Uen A |
| **3.6** | **Connection of TRI** | |
| | List of Headings | 36/001 53-LZN 302 006 Uen B |
| **3.6.0** | **TRI Magazine BFL 119 71/1** | |
| | TRI Magazine BFL 119 71/1 | 6/1531-COH 109 2015/11 Uen A |
| **3.6.1** | **Connection of a Second TRI** | |
| | Connection of a Second TRI | 1531-BFD 747 504 Uen B |
| **3.7** | **Installation Strapping Instructions** | |
| | Installation Strapping Instructions | 7/1531-COH 109 2015/11 Uen A |
| **3.8** | **RBS 200-TRXT Installation** | |
| | RBS 200-TRXT Installation | 8/1531-COH 109 2015/11 Uen A |
| **3.9** | **RBS 200 Installation Instructions** | |
| | RBS 200 Installation Instructions | 9/1531-COH 109 2015/11 Uen A |

| Sect. | Document Name | Document/File Ref. Number |
|---|---|---|
| **4** | **POWER SUPPLY INSTALLATION AND COMMISSIONING** | |
| | List of Headings | 4/001 53-LZN 302 006 Uen B |
| **4.0** | **Power Supply 230V AC** | |
| | List of Headings | 40/001 53-LZN 302 006 Uen B |
| **4.0.0** | **Power Supply 230V AC, General** | |
| | Power Supply 230V AC, General | 1/1550-COH 109 2015/1 Uen A |
| | Appendices: | |
| | see Reference page | 2/001 59-LZN 302 006 Uen A |
| **4.0.1** | **Power Supply 230V AC, Installation** | |
| | Power Supply 230V AC, Installation | 1/1531-COH 109 2015/1 Uen A |
| **4.0.2** | **Power Supply 230V AC, Battery Stand** | |
| | Power Supply 230V AC, Battery Stand | 2/1531-COH 109 2015/1 Uen A |
| **4.0.3** | **Power Supply 230V AC, Commissioning** | |
| | Power Supply 230V AC, Commissioning | 1/1537-COH 109 2015/1 Uen A |
| **4.1** | **Power Supply -48V DC** | |
| | List of Headings | 41/001 53-LZN 302 006 Uen B |
| **4.1.0** | **Power Supply -48V DC, General** | |
| | Power Supply -48V DC, General | 2/1550-COH 109 2015/1 Uen A |
| | Appendix: | |
| | see Reference page | 3/001 59-LZN 302 006 Uen A |
| **4.1.1** | **Power Supply -48V DC, Installation** | |
| | Power Supply -48V DC, Installation | 3/1531-COH 109 2015/1 Uen A |
| **4.1.2** | **Power Supply -48V DC, Commissioning** | |
| | Power Supply -48V DC, Commissioning | 2/1537-COH 109 2015/1 Uen A |
| **4.2** | **Power Supply +24V DC, Installation** | |
| | Power Supply +24V DC, Installation | 4/1531-COH 109 2015/1 Uen B |

| Sect. | Document Name | Document/File Ref. Number |
|---|---|---|
| **5** | **SUPPLEMENTARY INFORMATION** | |
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| **5.0** | **Material Specification** | |
| | Material Specification | 105 49-COH 109 2015/11 Uen B |
| **5.1** | **Lifting of Cabinet** | |
| | Lifting of Cabinet | 1204-COH 109 2015/1 Uen A |
| **6** | **GLOSSARY** | |
| | Glossary | 006 51-COH 109 2015 Uen B |
| **7** | **REVISION HISTORY** | |
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| | Revision History | 109 21-EN/LZB 119 1588/1-1 Uen D |
| | Revision History | 109 21-EN/LZB 119 1588/1-1 Uen C |
| | Revision History | 109 21-EN/LZB 119 1588/1-1 Uen B |

# Introduction

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| 1.2 | Audience | 2 |
| 1.3 | Scope of work | 2 |
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# 1 Introduction

## 1.1 Objectives

This manual contains directions for the practical installation of the base station and is a tool for customers wanting to install the base station themselves. The manual consists of one binder and each installation team requires its own G-module.

***The G-module is backward compatible***.

## 1.2 Audience

This manual is built up with the assumption that supervisors and installers have knowledge of the following:

- Radio techniques (basic, transmission),
- Antenna techniques (mounting technique),
- Telecommunication (speech/data transmission),
- Ericsson material (marking, handling).

## 1.3 Scope of work

Before starting the installation, check that:

- The site is ready for Installation (i.e. walls and ceilings painted, etc.)
- 230V AC mains power is permanently available.
- Air condition is functioning.

After the installation is finished, check that:

- All necessary mechanical items have been installed (i.e. cable ladders, etc.),
- All cabinets have been positioned according to drawings and fastened properly.
- All external signal and power cable sets have been run to the cabinets.
- All cabinet internal cable sets have been run.

## 1.4 Required references

- *General Installation Instructions*, LZN 302 49. It includes information about:

- Antenna feeders and jumpers
- Cable ladders
- Earthing principles
- Optical Fiber Connectoring Connectoring
- 75 Ohm Coaxial Cable Connectoring
- Recommended Tools

- Antenna configuration can be found in *Installation Engineering Manual*, LZN 302 011.
- Power Supply Appendices with wiring and circuit diagrams; 1/1073-BZZ 207 01 Ux; 2/1073-BZZ 207 01 Ux; 1911-BZZ 207 01 Ux and 1073-BZZ 207 10 Ux have been removed from the manual. See reference page in the chapter.

# CE Declaration of Conformity Valid for RBS 200

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**1 CE Declaration of Conformity Valid for RBS 200 2**

# 1 CE Declaration of Conformity Valid for RBS 200

P001344A

| | |
|---|---|
| Product type: | HRB 103 306 |
| Model number: | HRB 103 306 |
| | 1/HRB 103 020 (RBS 200 Hardware) |

The product specified above conforms to the following European and International standards:

| | |
|---|---|
| EN 60 215/IEC 215 | Safety requirements for Radio Transmission Equipment |
| EN 60 950/IEC 950 | Safety Information Technology Equipment including Electrical Business Equipment |
| pr ETS 300 342, June 1993 | Radio Equipment and Systems (RES); Electro-Magnetic Compatibility (EMC) for European digital cellular telecommunications system (GSM) mobile radio and ancillary equipment |

| Uppgjord — *Prepared* | Faktaansvarig — *Subject responsible* | Nr — *No.* | | |
|---|---|---|---|---|
| ERA/LZ/LI GUG | | 1/1553-COH 109 2014 Uen | | |
| Dokansv/Godk — *Doc respons/Approved* | Kontr — *Checked* | Datum — *Date* | Rev | File |
| ERA/LZ/TGC (ERABVN) | | 1998-03-12 | B | |

# Trouble Report Instruction

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**1 Trouble Report on Equipment or on this Manual 2**
1.1 Example of Filled-in Trouble Report 3
1.2 Trouble Report, Blank 4

# 1 Trouble Report on Equipment or on this Manual

A trouble report should be written when system components are not operating as expected or when disturbances occur repeatedly. It should not be written for occasional hardware failures. A trouble report should also be written when a fault is found in this manual. Any comments on this manual can be submitted in a similar way.

When writing a trouble report, always include as much information as possible. Write the trouble report as soon as possible, preferably at the RBS site. The next pages contain an example of a filled-in trouble report and a blank trouble report.

The trouble report should be sent to the nearest FSC for resolution and registration in the Ericsson trouble report system MHS (Modification Handling System). The FSC should forward the trouble report via the node MHO ERA BTS.

## 1.1 Example of Filled-in Trouble Report

# Trouble Report

| | |
|---|---|
| Company: *World-Wide Telecom* | Date: *27 April 1995* |
| Issued by: *Jane Doe* | Phone no: *+01 419 555 1212* |
| Address *501 Montgomery Avenue Mansfield, Ohio USA* | Memo id: *JDOE@WWT.OHIO.US* |
| | Telefax no: *+01 419 555 1212* |
| | |

| | | |
|---|---|---|
| Heading: *TRXC (TRU) is reporting wrong fault code* | | |
| Product number or Document number: *KRC 131 47/01* | | R-state *R 1A* |
| Site name: *Hillfield, Ohio* | Site id: *EOA 043* | Site status: *Operation* |
| Trouble symptoms: *TRXC is reporting a fault code after CPU reset.* | | |
| Trouble Description: *After you have pressed the CPU reset the TRU starts to send fault reports constantly. The code is:*<br><br>*Internal Fault Class 1A fault no. 33*<br><br>*This fault code cannot be found in the fault list.* | | |
| Comments: *The TRU fault indicator is not lit.* | | |

03_0179B

*Figure 1 Example of filled-in trouble report*

## 1.2 Trouble Report, Blank

# Trouble Report

| | |
|---|---|
| Company: | Date: |
| Issued by: | Phone no: |
| Address | Memo id: |
| | Telefax no: |
| | |

| | | |
|---|---|---|
| Heading: | | |
| Product number or Document number: | | R-state |
| Site name: | Site id: | Site status: |
| Trouble symptoms: | | |
| Trouble Description: | | |
| Comments: | | |

02_0179B

*Figure 2 Trouble report, blank*

# Numbering of Ericsson Products and Documents

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| 1.3 | The structure of a document number | 3 |
| 1.4 | Product and document versions | 4 |
| 1.5 | Document Survey - The Key to Documentation | 5 |

# 1 Numbering of Ericsson Products and Documents

Ericsson products and documents are clearly and uniquely identified by a product or document number.

This section is intended to provide basic information about the construction and use of the Ericsson numbering system.

For more information, see reference below.

## 1.1 Product numbering

Products are numbered with a product number (ABC number) which, in its basic form, consists of *three letters* followed by a *digit group*. This number is called the "product number".

The letter group divides products into classes according to use, construction or other essential attributes.

The digit group divides the classes into types, which are further subdivided by means of sequence numbers.

### 1.1.1 The structure of a product number

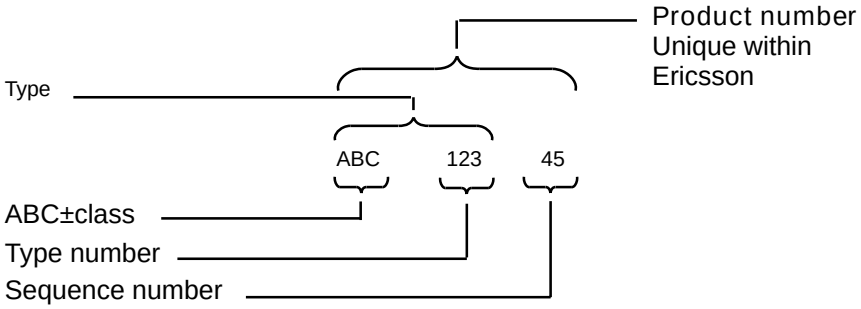


*Figure 1*

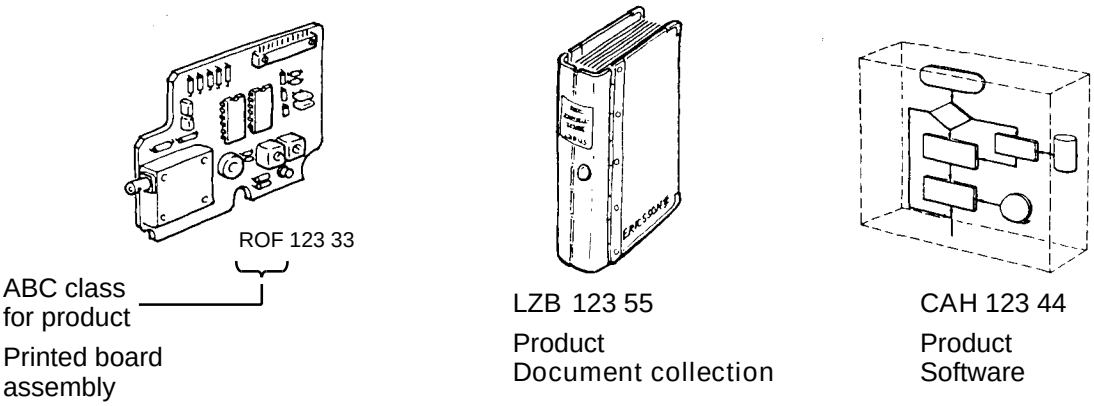


*Figure 2 Product numbers*

## 1.2 Document numbering

Documents are numbered using the decimal class system. A document number consists of a *decimal class* and an *individual number*.

The decimal class consists of 4 or 5 digits which classify the contents of the document into a sphere of activity and subject categories.

The individual number is either an product number used to link documents with products, or a sequence number, which is used for documents of a general nature.

## 1.3 The structure of a document number

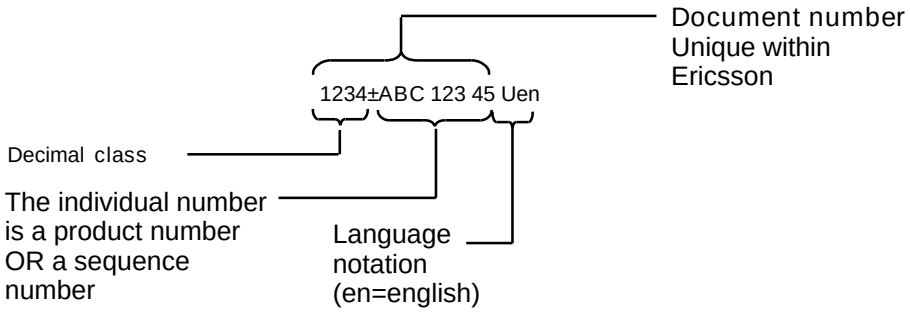


*Figure 3*

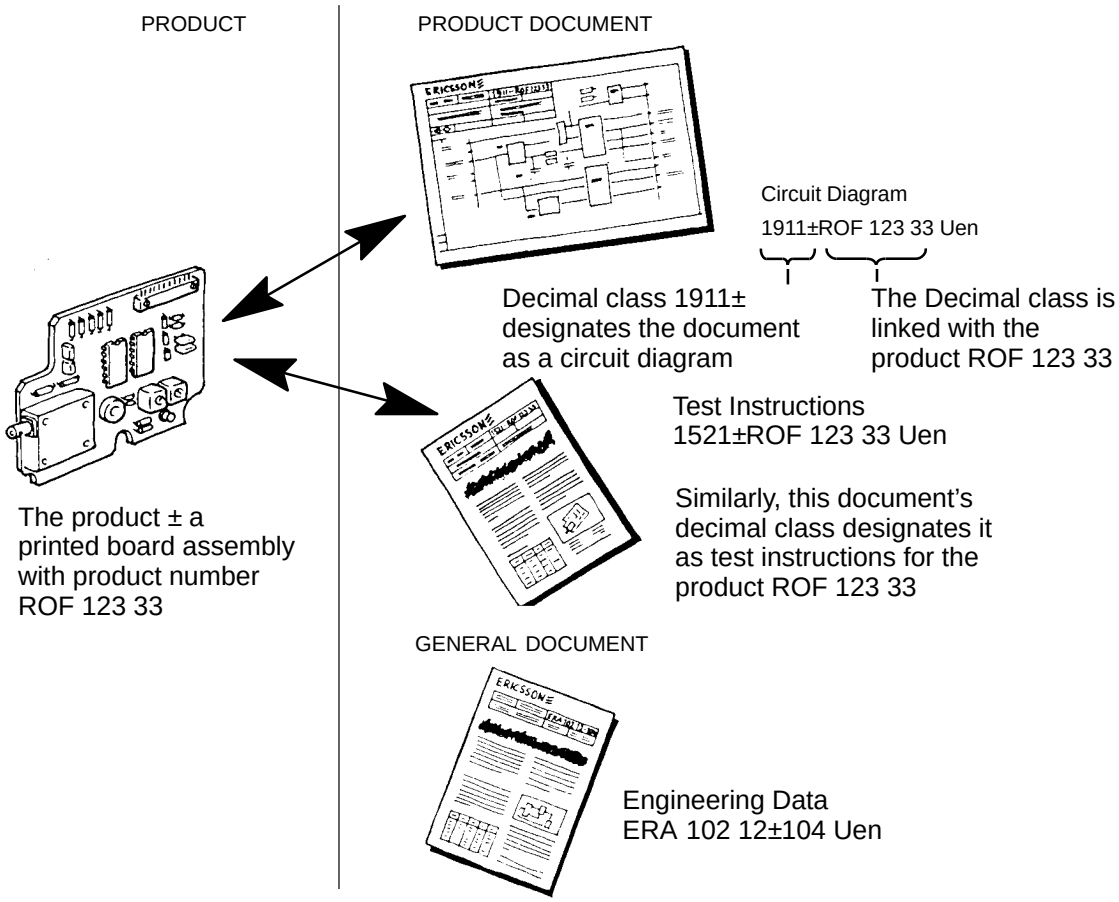


*Figure 4 Document numbering*

## 1.4 Product and document versions

When a product is changed, for example by the introduction of improvements, simplifications, correction of errors etc., the product number is retained, but a new version of the same product is created.

We must be able to identify these versions of a product so that we know which version has been supplied to a specific customer. This is particularly important with regard to maintenance and spare parts.

It is equally important to be able to quickly decide if a newer version of a product can directly replace an earlier version, or not.

To distinguish between different versions of a product, they are given an *R-state* marking.

Similarly, different versions of a document are given a *Rev-state* marking. This means that we can always refer specifically to a certain document or product version.

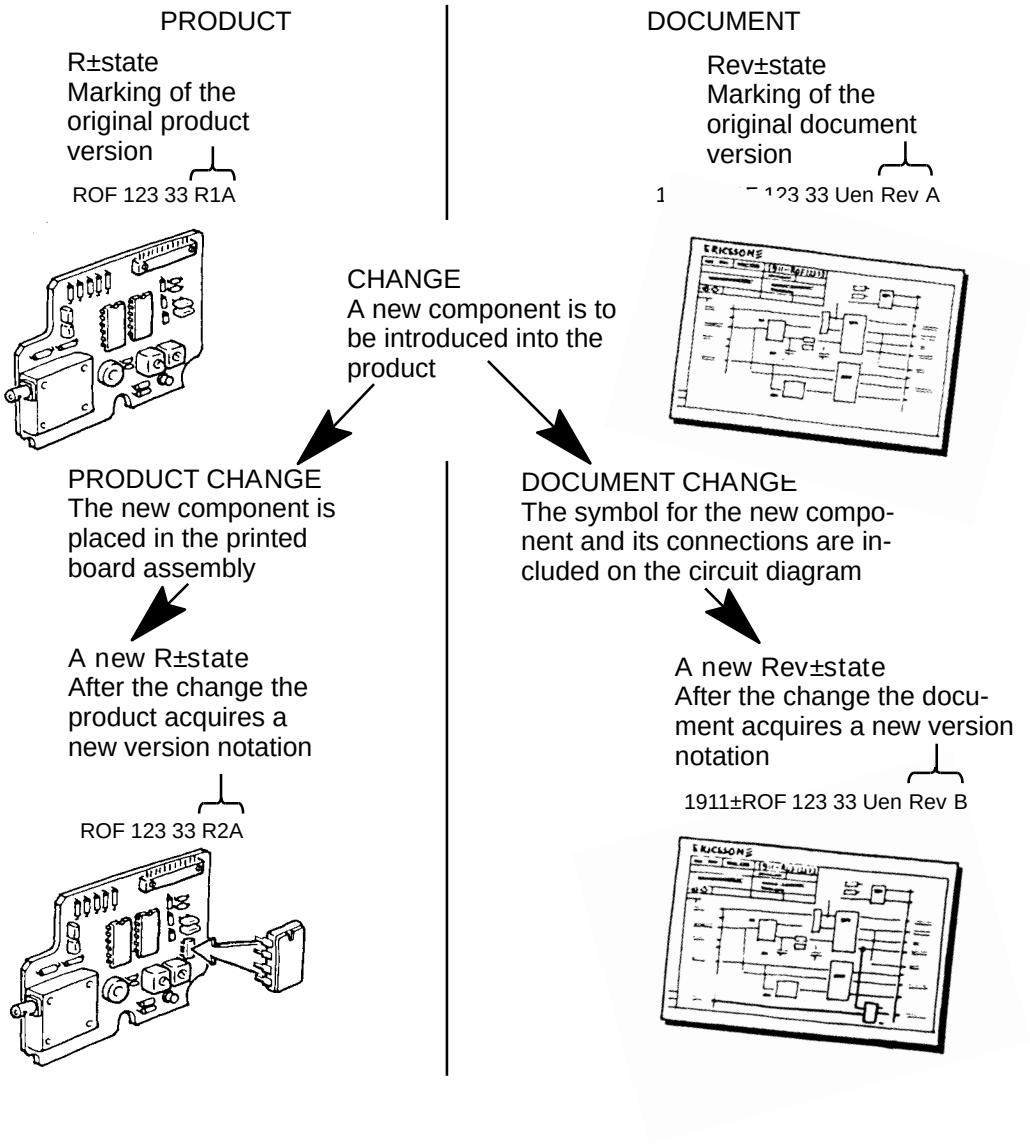


*Figure 5 Product and document versions*

## 1.5 Document Survey - The Key to Documentation

A *document survey* is a highly effective aid in keeping track of all the documents that describe a specific product. A document survey serves two purposes:

- it is a register of all the documents prepared for the product
- it shows the document revision states (Rev-state) for the various versions (R-state) of the product.

The document survey is tied to the product at most levels of the product structure.

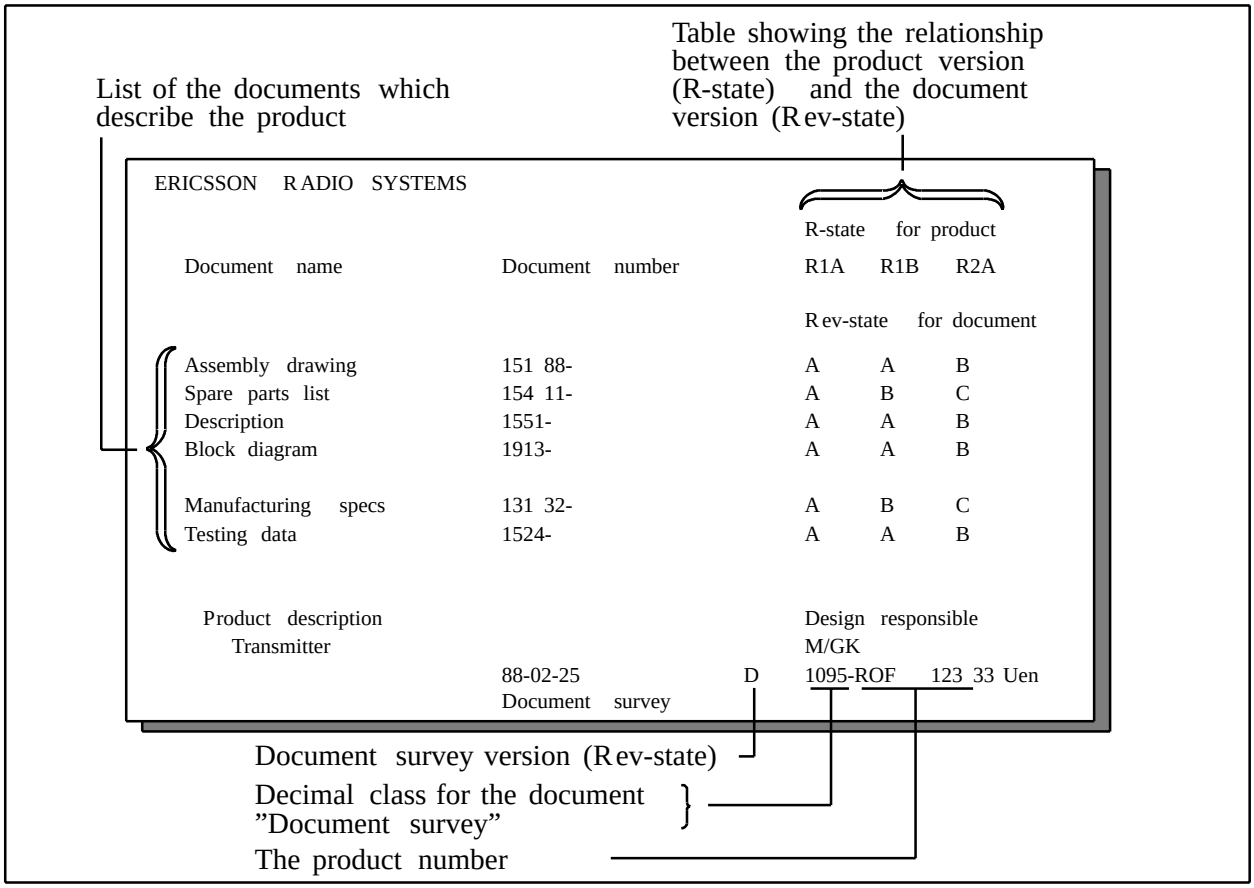


*Figure 6 Document survey*

### 1.5.1 For more information

For more information regarding Ericsson product and documentation numbering, please contact the office below:

Telefonaktiebolaget LM Ericsson: Telephone: +4687195011

Corporate Core Unit IM/IT

TV/LME/R

SE-126 25 Stockholm, SWEDEN

ERICSSON

*CAPTION LIST*

| Document No. | |
|---|---|
| 1/001 53-LZN 302 006 | |
| Date | Rev |
| 99-09-20 | B |

# Safety

RBS 200
Installation Manual


| | |
|---|---|
| Safety | 0 |
| Label Location | 1 |
| | 2 |
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# Safety

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| 1.3 | Electricity related Hazards | 7 |
| 1.4 | Batteries | 10 |
| 1.5 | Antenna related Hazards | 12 |
| 1.6 | Other Hazards | 13 |

# 1 Safety

This document contains some essential safety instructions.

## 1.1 General

This chapter shows the system used for presenting safety instructions.

**Note** Reduce risks of accidents by studying all instructions carefully beforestarting work.

If questions arise regarding the safety instructions, contact the supervisor or the local Ericsson company.

Where local regulations exist, these are to be followed. The safety information in this manual is a supplement to local regulations.

It is the responsibility of the local project manager to make certain that local regulations are known.

### 1.1.1 Warnings

Symbols are used to indicate hazardous activities. The warnings are preceeded by the common hazard symbol.

The following three warning levels used, in descending order of urgency, are:

**DANGER**

Danger means that an accident may occur if safety precautions are neglected. This type of accident is likely to be fatal to human beings.

## WARNING

Warning means that an accident may occur if safety precautions are neglected. This type of accident may be fatal or seriously injure human beings. It may also damage the product.

## CAUTION

Caution means that an accident may occur if safety precautions are neglected. This type of accident may injure human beings or damage the product.

The following special symbols are used to indicate the risk of radio frequency radiation and electricity-related hazards:

Radio frequency radiation

*Figure 1*

Electrical hazard

*Figure 2*

Warnings are used throughout this manual to alert the reader to special instructions concerning a particular task or operation that may be hazardous if performed incorrectly or carelessly. Therefore, read the instructions carefully.

Strict compliance with the special instructions while performing a task is the best way of preventing accidents.

### 1.1.2 Notes

Notes are used to call the reader's attention to key points that might otherwise be overlooked.

## 1.2 Beryllium Oxide (BeO)

**WARNING**

Beryllium oxide is a toxic chemical found in transistors and other components. Do not in any way interfere with transistors or other components. The material is highly toxic if inhaled or absorbed through the skin.

### 1.2.1 Hazard!

If Beryllium Oxide dust created by chafing filing or breakage is inhaled, a single exposure, lasting only seconds, can cause injury to skin or mucous membranes severe enough to endanger life or cause permanent injury. Particles penetrating the skin through wounds or abrasions are liable to cause chronic ulcerations.

### 1.2.2 Symptoms of poisoning

Symptoms of Beryllium poisoning are respiratory troubles or cyanosis (grey-blue discolouration of the skin) which may develop within a week, or after a period of several years.

### 1.2.3 First aid

1. Wash the area thoroughly if it is suspected that Beryllium Oxide has been in contact with the skin or entered the skin through cuts or abrations.

2. Treat with normal first aid methods followed by a medical inspection.

### 1.2.4 Medical treatment

A suspected inhalation of Beryllium Oxide should be treated immediately by a doctor at a hospital.

### 1.2.5 Components containing Beryllium Oxide

Do not store washers loose. Do not file or machine them in any way. Do not heat except when clamped in heat sink application.

### 1.2.6 Power transistors, diodes and thyristors

**WARNING**

Do not carry components loose in a pocket, bag or container where they ma break and disintegrate into dust. Do not apply excessive heat during soldering (normal soldering is quite safe). Do not break open components for inspection or in any way tamper with them.

Power transistors, diodes and thyristors, are clearly marked in the manufacturers packing, and identified by the attached information.

- Store components in their original packing and do not mix them with other components.
- Beryllium Oxide is encapsulated and components are safe to handle for normal replacement purposes.
- Use care when replacing defective components to ensure that they do not become mechanically damaged.

### 1.2.7 Heat sink washers

**Note** Not all heat sink washers contain Beryllia. When new, heat sinks containing Beryllia are packed individually.

**WARNING**

Do not store washers loose. Do not file or machine them in any way.Do not heat except when clamped in heat sink application.

- Handle with gloves or cloth when removing them from the package and putting them into place in the equipment.

### 1.2.8 Cathode ray tubes (CRTs) and ceramic applications

**WARNING**

Do not handle broken glass with bare fingers. Do not blow on exposed surfaces due to danger of Beryllium inhalation.

Ceramic cylinders or formers, identified by the blue colouration or black lines, are safe to handle provided they are not damaged. If they are damaged, take precautions as with other components containing Beryllia.

### 1.2.9 Disposal

1. Wrap defective and/or broken components individually and identify them clearly on the outside of the wrapping "BROKEN BERYLLIA COMPONENT."

2. Dispose of defective and/or broken Beryllia components in special containers.

**WARNING**

Defective and/or broken components containing Beryllia MUST NOT BE SENT THROUGH THE MAIL Return to the nearest depot BY HAND.

## 1.3 Electricity related Hazards

### 1.3.1 High Voltage

**DANGER**

High voltage is used in the operation of this equipment. Direct contact with mains power can be fatal, but also indirect contact via damp items.

- The AC installation must be carried out according to local regulations and by an authorized electrician.
- Remove wrist watch, rings, bracelets, etc. before working with electricity.
- Switch OFF the power if the cabinet is damp inside.
- Prevent dampness from entering equipment while working under bad weather conditions.

### 1.3.2 Faulty Electric Tools

**WARNING**

Do not repair a faulty electric tool yourself. Hand it over to the supervisor in exchange for a functioning tool.

### 1.3.3 Drilling

**WARNING**

Do not drill holes in the Radio Base Station. The drill bit may come into contact with live wires.

**Note** Always use insulated, protective gloves, such as LYB 1032, whendrilling in walls, ceilings or other places where live wires may behidden.

**Note** Always use eye protectors (goggles) such as 25072 (goggles found in the Common Tool Kit LTT 601 044/1) when drilling in walls, ceilings or other objects where flying chips and dust may get into eyes.

### 1.3.4 Thunderstorms

**DANGER**

Do not work with electrical installations or in antenna towers during thunderstorms.

Thunderstorms create strong electrical fields. For that reason, it is essential that the equipment is properly earthed.

### 1.3.5 Electrostatic Discharge, ESD

**CAUTION**

Sensitive components such as Integrated Circuits (ICs), may be damaged by discharges of static electricity.

Electrical charges are acquired in all situations when a body is moving; rubbing against clothes, moving against a chair, shoes rubbing against the floor, handling ordinary plastics and so on.

### 1.3.6 Handling PCB assemblies and IC components

To avoid damage to components mounted on printed board assemblies, always use an approved antistatic bracelet such as the Ericsson wrist strapLYB 250 01/14 . The ESD wrist strap must be connected to earth.

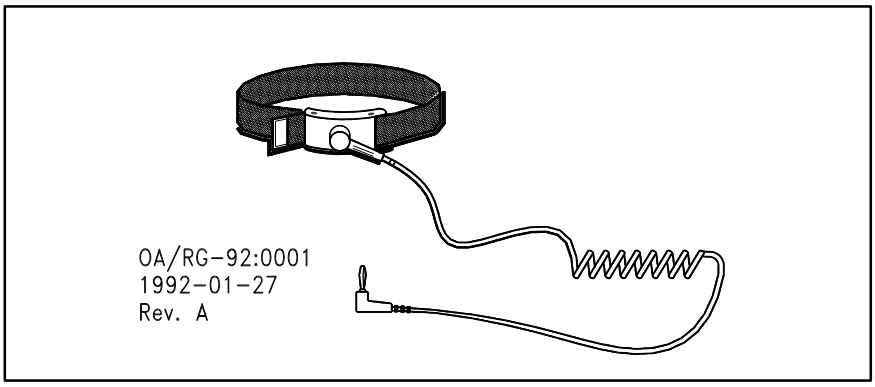


*Figure 3 ESD wrist strap LYB 25001/14.*

### 1.3.7 Storing and transporting PCB assemblies and IC components

Use the original packaging. If this is not available, use a conductive material or special IC carrier that either short circuits all leads or isolates them from external contact.

**DANGER**

⚠

To avoid potentially fatal short circuits through the body to earth, the strap connection must include a resistor of at least 2 Mohms. Test the wrist strap regularly.

## 1.4 Batteries

**CAUTION**

⚠

Improperly handled batteries can be hazardous. Special care must be taken to prevent short-circuiting batteries, or loss of electrolyte. The electrolyte contains potentially hazardous materials.

### 1.4.1 General precautions

When working with batteries:

- Remove wrist watches, rings, bracelets, etc.
- Use insulated tools
- Make sure that eye wash facilities, or portable eye wash equipment, is available prior to starting work.

Use all required Personal Protective Equipment (PPE) such as:

- Rubber gloves and aprons.
- Eye protection (either goggles or face shield as locally required).

### 1.4.2 Short-circuiting of batteries

**CAUTION**

Short-circuits can cause injury or damage. Although the battery voltage may be low, the released power can be extremely high.

It is necessary to ensure that no metal object, such as a tool, short-circuits the batteries. If necessary, disconnect or remove the batteries before starting work.

### 1.4.3 Explosive gases

Batteries give off explosive gases. All areas housing batteries must be adequately ventilated and protected from fire.

### 1.4.4 Overheated Batteries

**CAUTION**

Excessive heat can cause battery casings to become soft and begin warping, causing acid to escape.

If the internal cabinet temperature exceeds + 60° C (140° F), take the following precautions:

1. Check that the batteries have not leaked.

2. If the batteries have leaked, see next section, Hazardous Waste Material From Leaks.

### 1.4.5 Hazardous Waste Material From Leaks

Ensure that there are sufficient quantities of absorbents or neutralizing materials available on site in case of a hazardous material spill. The absorbents or neutralizing materials must be suitable for the hazardous materials involved.

*Table 1 Typical neutralizers*

| Typical neutralizers | |
|---|---|
| Baking soda /Bicarbonate of soda) | NaHCo3 |
| Sal soda | Na2CO3IOH2O |
| Soda ash | Na2CO3 |

Consult the battery manufacturers specifications or contact the manufacturer for specific details of absorbents and neutralizing materials. Refer to local safety regulations for specific materials required to contain and clean up hazardous waste materials.

## 1.5 Antenna related Hazards

### 1.5.1 Working in masts or towers

**WARNING**

Some working areas involve the risk of severe accidents caused by falling objects.

When working in a mast or a tower, the following precautions must be taken:

- Safety belt and helmet must be used.
- Adequate protective clothing is essential in cold weather.
- All lifting devices must be tested and approved.
- Personnel working in a masts or towers rmust have a medical certificate for such work.

- During work on masts or towers, all personnel in the area must wear helmets.
- Rope off hazardous areas to prevent public access.

### 1.5.2 Radio Frequency Radiation

**CAUTION**

Radio Frequency (RF) radiation from antennas may be hazardous to your health.

Coordinate with all mast users to switch OFF the transmitters before working with or near the antennas.

## 1.6 Other Hazards

### 1.6.1 Handling heavy goods

**WARNING**

Read the Safety chapter regarding handling of heavy goods.

- Use only tested and approved lifting devices. They are to be used only by trained personnel.
- Always check that all parts of the lifting devices are intact.
- Give clear and consistent command signals, for example:
- lifting
- lowering
- stopping

- Make sure that there is never an angle of more than 90 degrees between the straps at the point where they are attached to the lifting hook.

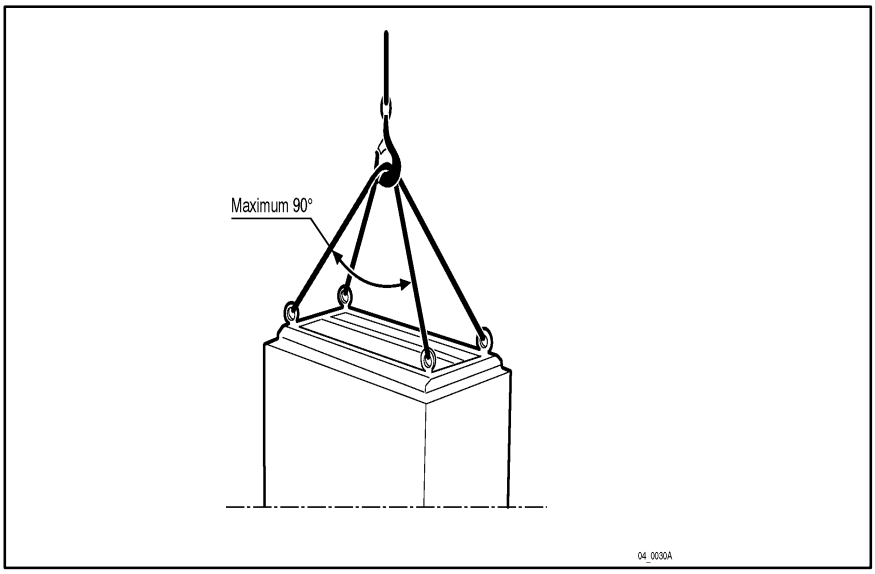


*Figure 4*

- Too large an angle between the lifting straps increases the strain on them and may cause them to snap. Overloading or improper use of lifting devices in other ways, may have catastrophic consequences.
- Never walk under hoisted loads.
- Follow local regulations for safety clothing and safety equipment for hoisting and moving goods.
- Secure the cabinets as they have a high center of gravity and may tip over and injure personnel.

### 1.6.2 Fire

**WARNING**

When working on a radio base station, cable ducts, channels and access holes may have to be opened, thereby interfering with the fire sectioning of the building, allowing a fire to spread to neighbouring rooms.

1. Close cable ducts and fire doors (if applicable) as soon as possible.
2. After the cables have been installed, seal the cable ducts according to the building regulations.
3. Minimize the amount of stored inflammable materials on the site .
4. Avoid storing empty packing materials on the site.

- To extinguish electrical fires, use powder or Carbon Dioxide (CO2) type fire extinguishers.

| Uppgjord — *Prepared* | Faktaansvarig — *Subject responsible* | Nr — *No.* | | |
|---|---|---|---|---|
| ERA/LZ/LI GUG | | 1551-COH 109 2014/1 Uen | | |
| Dokansv/Godk — *Doc respons/Approved* | Kontr — *Checked* | Datum — *Date* | Rev | File |
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# Label Locations

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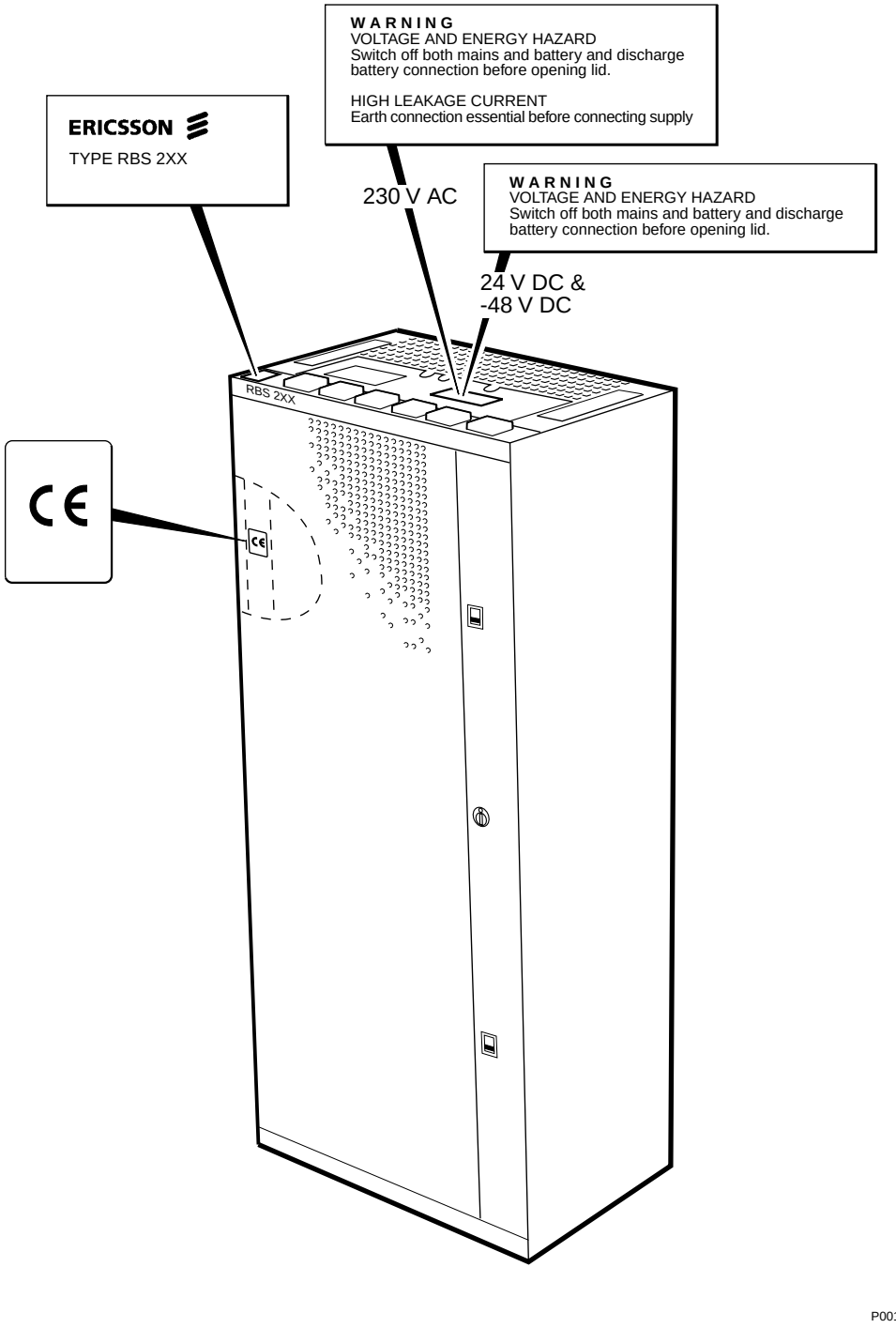


*Figure 1 Label locations*

For more detailed label information, see the F-module.

# Site Installation

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# 1 Introduction

These installation guidelines give general information concerning installation of a Radio Base Station (RBS) with associated equipment.

Equipment is selected mainly during the system design phase, and these guidelines show how to select the installation method based on the system design and local conditions.

These guidelines give information to personnel who plan, install and design various mounting hardware and select installation material.

**Note** *Where local regulations exist, they are to be followed. The guidelines given in this document can be used as a supplement to the local regulations.*

*It is the responsibility of the project manager to make certain that local regulations are fulfilled.*

## 2 Space requirements

An RBS 200 installation comprises a number of cabinets and auxiliary equipment such as air conditioners, mains panel, main distribution frame, transmission systems and battery stands. See the site installation example, figure 1.

The cabinets hold the radio equipment and back-up power system and have the following dimensions in mm:

*Table 1*

| | **Height** | **Width** | **Depth** |
|---|---|---|---|
| Radio cabinet | 1970 | 602 | 400 |
| Battery Stand, 29 Ah | 1500 | 350 | 375 |
| Battery Stand, 134 Ah | 1967 | 650 | 375 |
| Battery Stand, 187 Ah | 1967 | 950 | 375 |

The radio cabinets can be placed either in a row or back-to-back.

Certain minimum distances must be considered when planning the room layout. This is to allow for a convenient working environment during installation and maintenance activities.

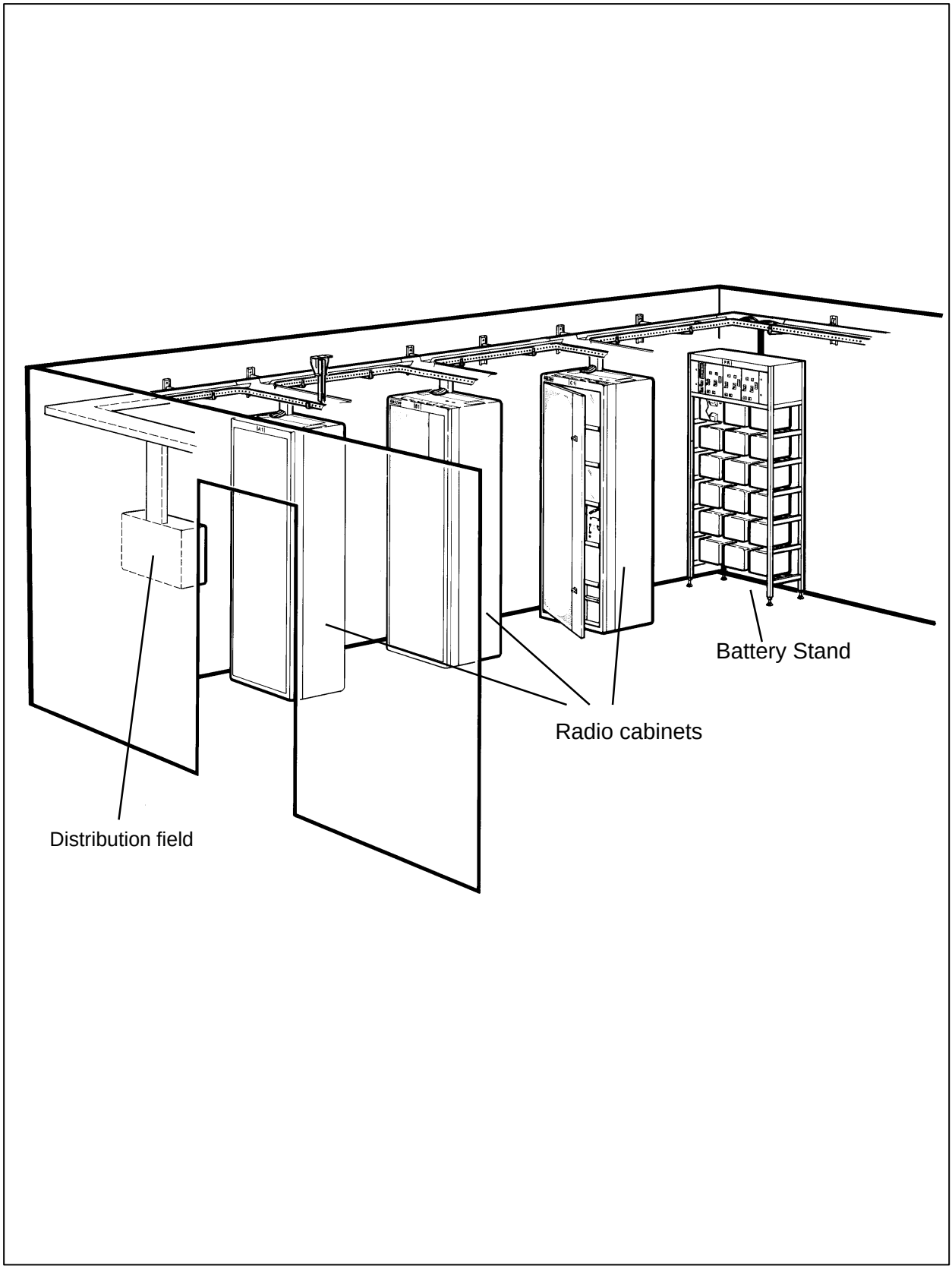


*Figure 1 Site installation example*

## 2.1 Transceiver group cabinets

Cabinets in the same transceiver group must always be placed beside each other as shown in figure 2 and figure 3.

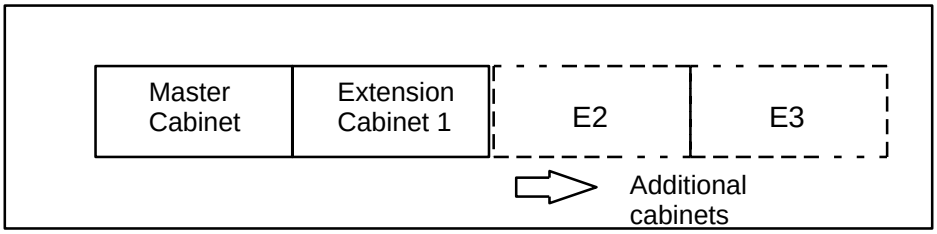


*Figure 2 Omni site, one transceiver group*

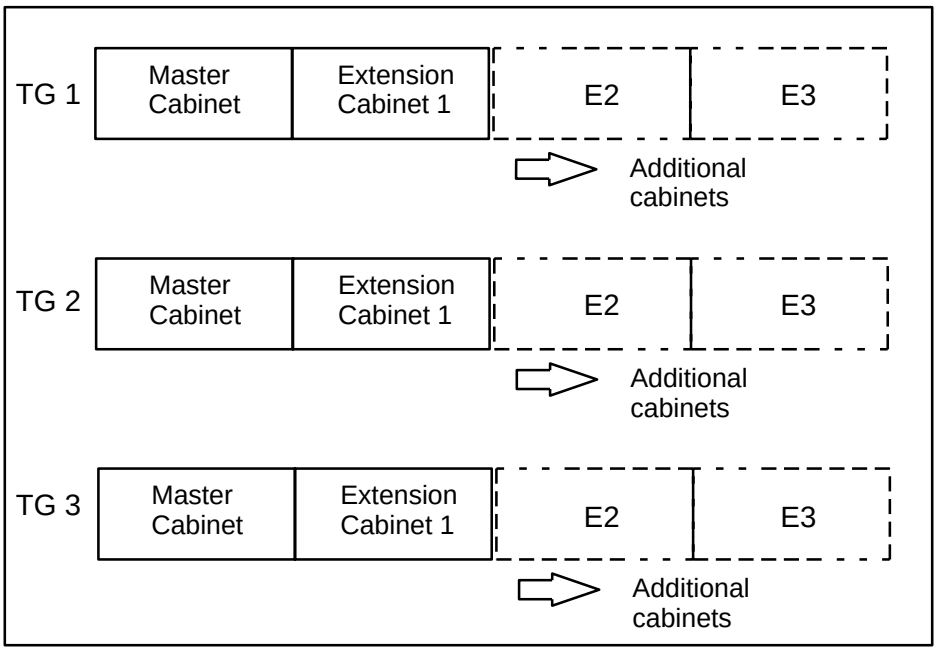


*Figure 3 Sector site, three transceiver groups*

## 2.2 Distance to walls and/or corners

When the cabinet is placed along a wall or in a corner, a minimum distance of 10-50 mm must be provided between the sides of the cabinet and the walls as shown in figure 4.

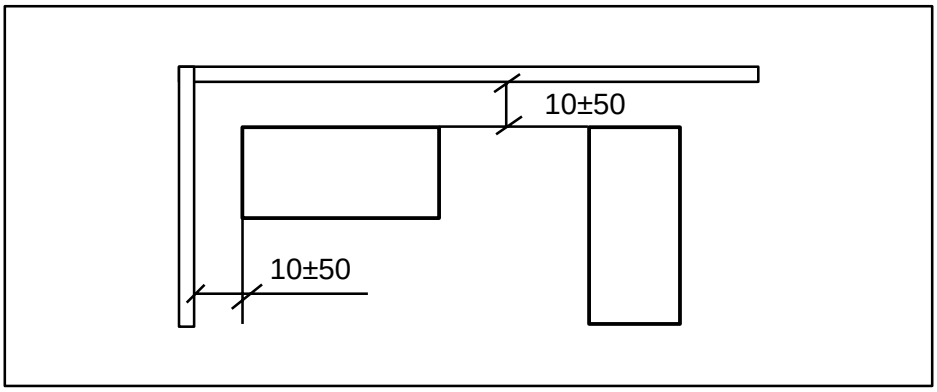


*Figure 4 Distance to walls and corners*

## 2.3 Double row arrangement

At sector sites where a double row arrangement is used, a minimum distance of 1000 mm must be provided between cabinet rows. The same applies when the cabinet front is facing a wall, see figure 5.

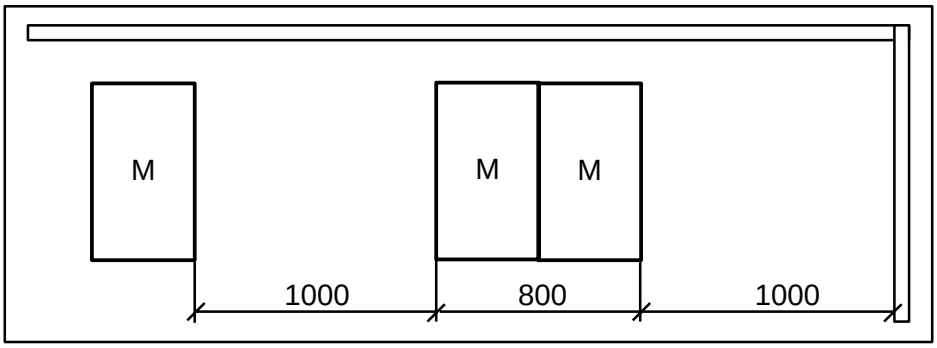


*Figure 5 Distance for a double row arrangement*

M=Master Cabinet

## 2.4 Reserved space

To facilitate cabinet expansion at a later date, space must be reserved for this purpose.

Layout with cabinets belonging to different transceiver groups, located beside each other, must therefore not be used. Furthermore, an additional distance of at least 800 mm has to be considered to allow for passage, see figure 6.

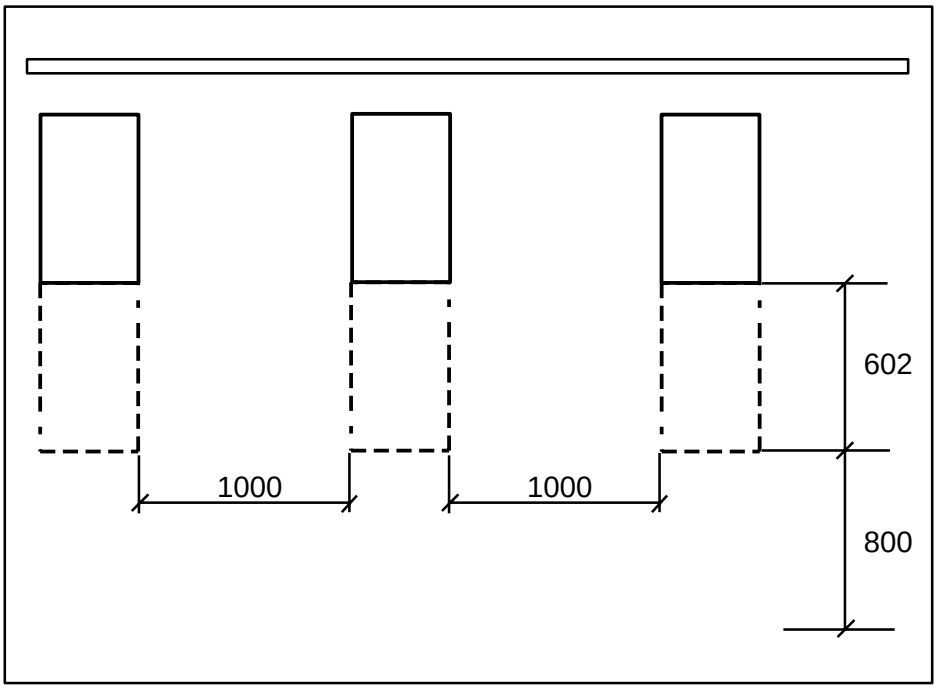


*Figure 6 Expansion principle*

## 2.5 Battery Stand

Each Battery Stand contains batteries and fuses for a maximum of three radio cabinets. The Battery Stand shall be located no more than 15 m from the radio cabinets to minimize the voltage drop in the distribution cables. The Battery Stand is preferably located near the mains panel.

Additional Battery Stands are located beside the first unit. Otherwise, the same rules apply as for the radio cabinet.

## 2.6 Ceiling height

The minimum required ceiling height of the equipment room is 2.5 m.

It is important that a free space of at least 200 mm is provided above the cabinet to allow the cooling air to evacuate at the top of the cabinet. See figure 7.

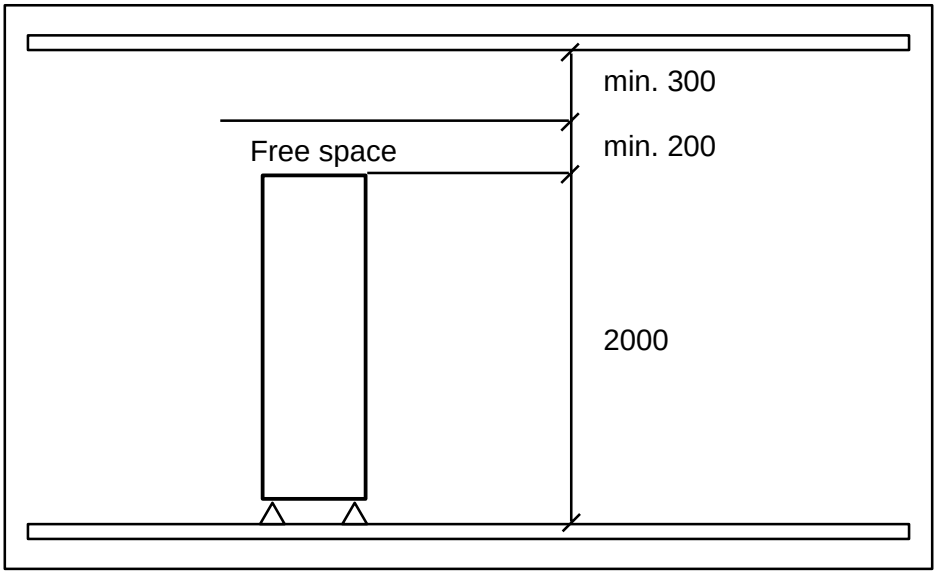


*Figure 7 Free space requirements*

## 2.7 Mounting height of cable ladders

The minimum mounting height of cable ladders is 2200 mm leaving at least 300 mm for access to cable runways.

# 3 Floor, walls

The floor shall be level. The slope must not exceed ±3 mm/2 m in order to allow the adjustable cabinet feet to take up the irregularities.

If a conductive floor is used, the cabinet feet must be isolated from the floor. Raised floors are not required, as all cable entries are located at the top of the cabinet.

Walls shall be provided with a dust free coating and be able to withstand the weight and pressure of the cable ladders.

## 3.1 Calculation of floor load

**CAUTION**

Have a civil works contractor check and calculate the loading capacity of the mounting surface.

When calculating the floor load, use the following as a guideline.

The average floor load is the total load per floor space expressed in $kg/m^2$.

Floor space is defined as the total base area of the cabinets including aisle space. Floor space for the cabinets will be evident from figure 8.

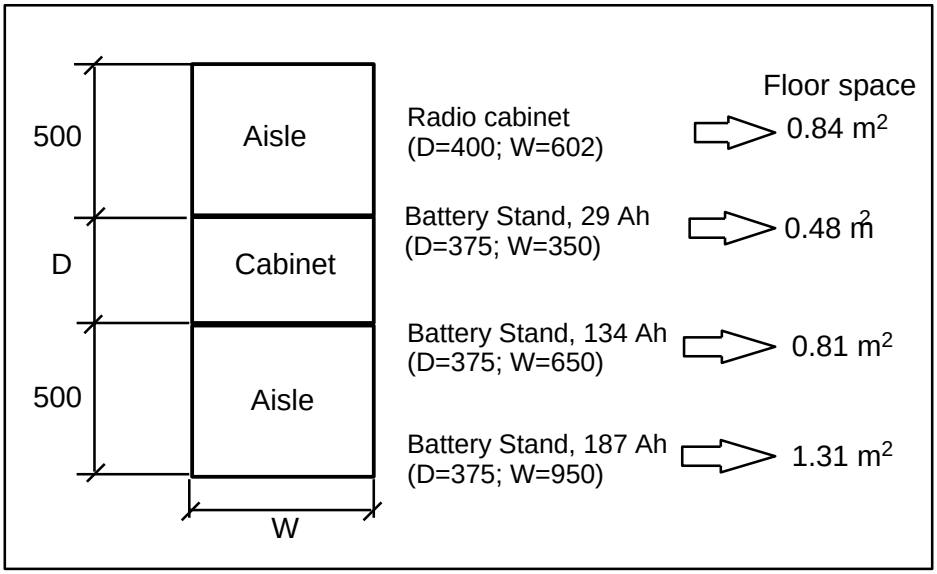


*Figure 8 Cabinet floor spaces*

The maximum weight of the cabinets/stands is:

| | |
|---|---|
| Radio cabinet: | 250 kg |
| Battery stand, 29 Ah: | 150 kg |
| Battery stand, 134 Ah: | 400 kg |
| Battery stand, 187 Ah: | 560 kg |

Maximum floor load for each type of cabinet/stand will then be:

| | |
|---|---|
| Radio cabinet: | 250/0.84 = 298 kg/$m^2$ |
| Battery stand, 29 Ah: | 150/0.48 = 313 kg/$m^2$ |
| Battery stand, 134 Ah: | 400/0.89 = 450 kg/$m^2$ |
| Battery stand, 187 Ah: | 560/1.31 = 428 kg/$m^2$ |

# 4 Doors, windows

The equipment room (site) shall be provided with a lockable door, wide enough to allow passing equipment through without dismantling.

The equipment also has lockable doors. Doors shall be locked during normal operation to prevent any voltage and energy accidents.

If the equipment room has windows, it is recommended that these are provided with blinds to avoid subjecting the equipment to direct sunlight.

# 5 Environment, ventilation

The equipment generates considerable heat, typically 1300 W per radio cabinet. To keep the temperature within specified limits an air conditioning system is required.

When dimensioning the air conditioning system the full capacity of the system shall be used as the design parameter.

It is recommended that a redundant air conditioning system be installed to provide a high reliability and availability of cooling air.

# 6 Electrical installation

**DANGER**

High voltage (more than 200V) is used in the operation of this equipment. Direct contact with mains power can be fatal, and indirect contact via damp items may also be fatal.

**Note** *The AC installation must be carried out by an authorised electrician.*

The electrical installation comprises a 380/220 V mains panel with all wiring for lighting, air conditioning, alarm system, service outlets, rectifiers etc., as well as for an earth collection bar.

## 6.1 Disconnection devices

The mains panel shall be provided with one certified 16 A disconnection device per rectifier (PSU) including spare units for future expansions, as well as suitable circuit breakers for the other utilities.

The disconnecting devices shall be properly marked, each disconnecting device giving adequate instructions for the removal of all power from the unit.

## 6.2 Rating plates and Warning labels

Rating plates are applied on the cabinet roof top specifying the power supply: voltage level/type, current intensity and AC frequency.

On the IDM lid there are Warning labels urging that both mains and battery voltages are disconnected before then lid is opened.

## 6.3 Earth collection bar

The earth collection bar shall be connected to an earth electrode system according to IEC 1024-1.

ERICSSON

*CAPTION LIST*

| Document No. | |
|---|---|
| 3/001 53-LZN 302 006 | |
| Date | Rev |
| 99-09-20 | D |

# Radio Cabinet

RBS 200
Installation Manual


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# General Cabinet Information

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# 1 General Cabinet Information

## 1.1 Delivery Strategy

The cabinet can be delivered from factory in several equipped configurations under the product number BDE 201 162/–.

In some of these configurations the basic end configuration is designed (with reference to combiner type, magazine installed in the cabinet, etc).

## 1.2 Mechanical Data

The mechanical layout of the cabinet for 19" magazines used for the RBS 200 system is shown in figure 1.

Measurements:

- height: 1970 mm
- depth: 400 mm
- width: 602 mm

Weights:

- partly equipped at delivery: <120 kg
- fully equipped after installation: <250 kg

All cabinet units are designed for front connection. The cabinets can therefore be installed with the rear side against a wall or back to back.

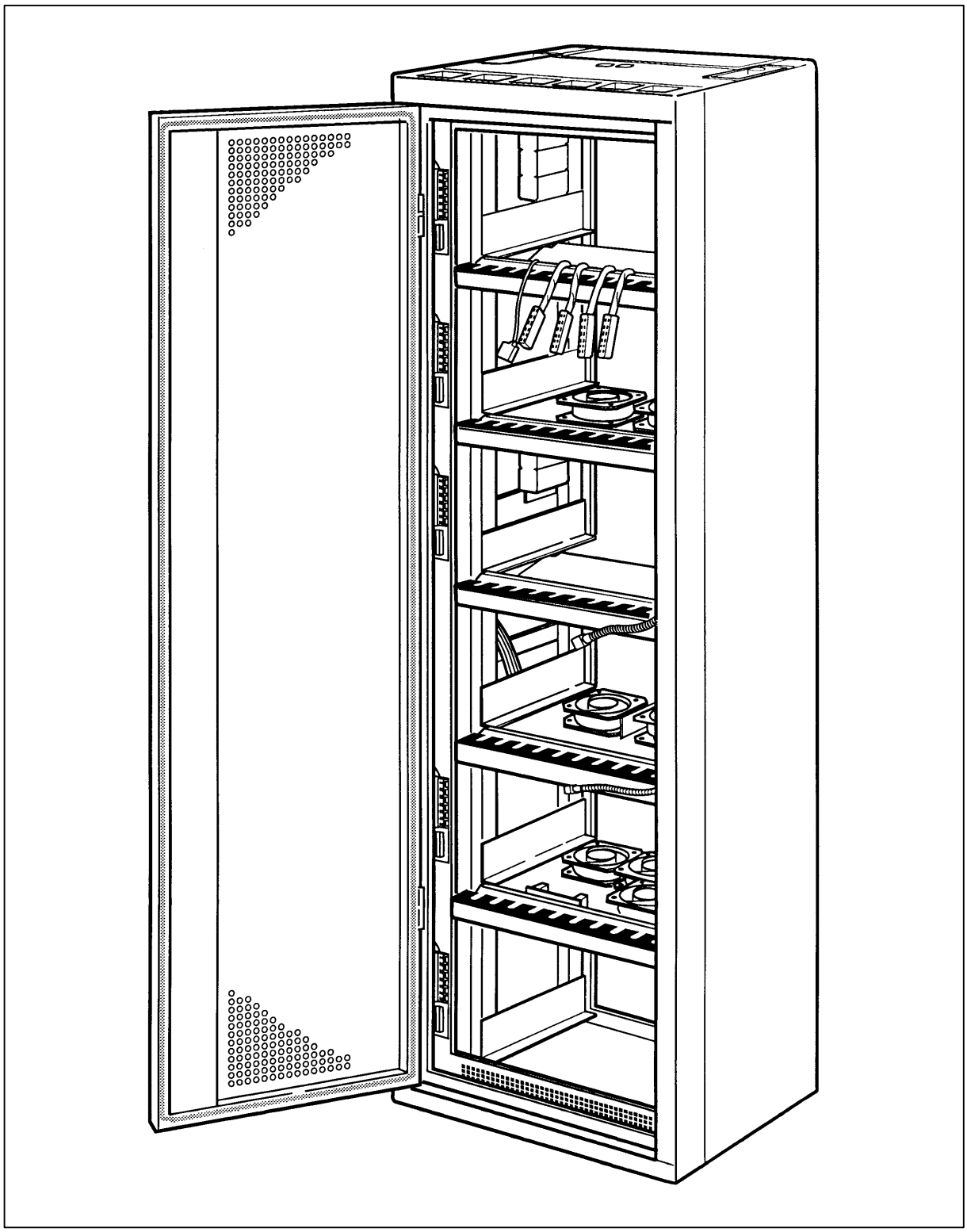


*Figure 1 RBS 200 cabinet mechanical layout*

# 2 Cabinet Installation

## 2.1 Scope of Work

This instruction covers:

- Installation of cabinet
- Equipping the magazines

## 2.2 Prerequisites

Before the installation begins, check that:

- painting of ceilings and walls, floor and site electrical installations has been done according to site preparation documents.
- cable ladders have been installed according to the specific site room layout.
- the connection to earth is correct, in accordance with IEC 1024-1.

## 2.3 Tools

For list of tools, see General Installation Instructions.

*General Installation Instructions LZN 302 49*

## 2.4 Unpacking

The material is delivered to site in a number of crates. The radio cabinet(s) is delivered partly equipped in a separate crate, weighing approximately 120 kg and should be unpacked by two persons.

1. Before opening the crates, check the delivery documents to make sure that the correct material has been delivered.

**WARNING**

There is a danger of the assembly toppling over, which could cause injury to personnel or damage to the equipment.

2. Remove the lid and raise the crate on its end to facilitate unpacking.

3. Report immediately any transport damaged material for replacement or repair.

## 2.5 Cabinet Fastening

There are two versions of the cabinet floor, the older version with four fastening holes and the newer version with three fastening holes.

1. Make a drill template according to figure 2 or figure 3 below.

2. Use the template to mark the location of the fastening holes for the cabinets, according to floor plan.

**WARNING**

When drilling, the drill may come into contact with live wires. It is prohibited to drill holes in the Base Station.

**Note** Always use insulated protective gloves, such as the LYB 1032, when drilling in walls, ceilings, floors or other objects where live wires might be hidden.

**Note** Always use eye protectors (goggles) such as 25072 when drilling in walls, ceilings, floors or other objects where flying chips and dust may get into eyes.

3. Drill the fastening holes; use a 12 mm concrete drill bit for concrete and a 4.5 mm high speed steel drill bit for wooden floor.

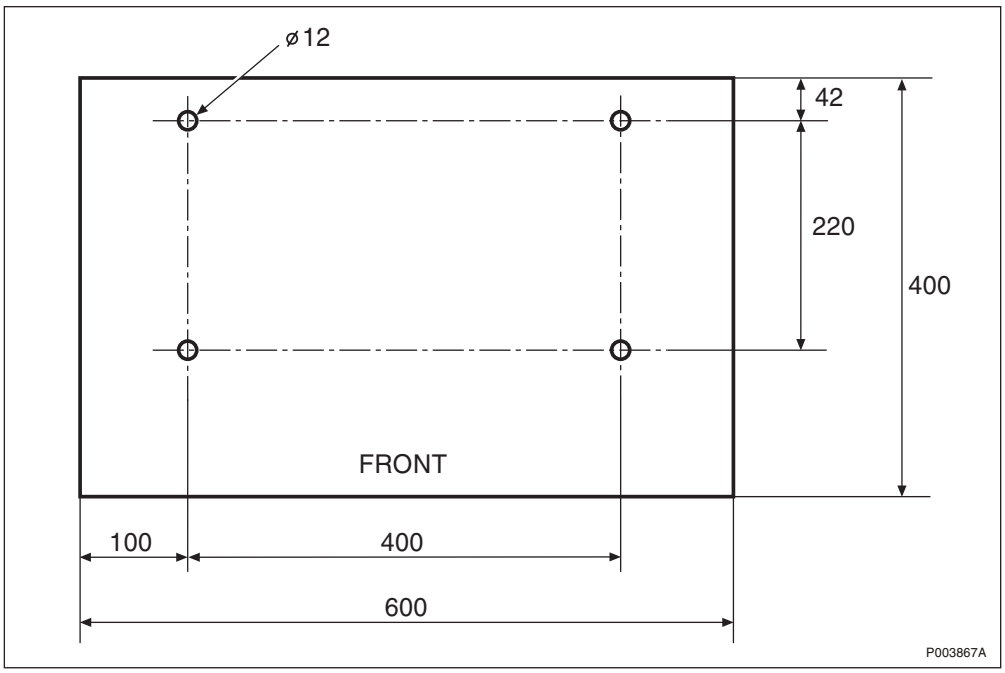



*Figure 2 Drill template drawing, 4-hole version*

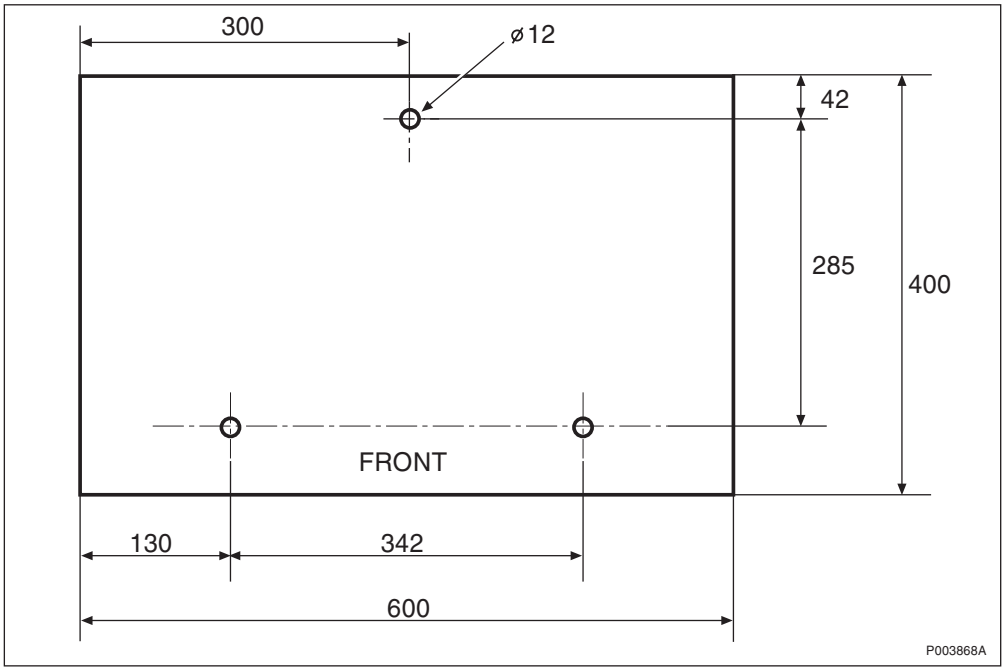



*Figure 3 Drill template drawing, 3-hole version*

4. In the case of a 3-hole cabinet floor, mount a retaining washer and spacer (included in NTM 201 293/1) in the rear floor hole as shown in figure 4.

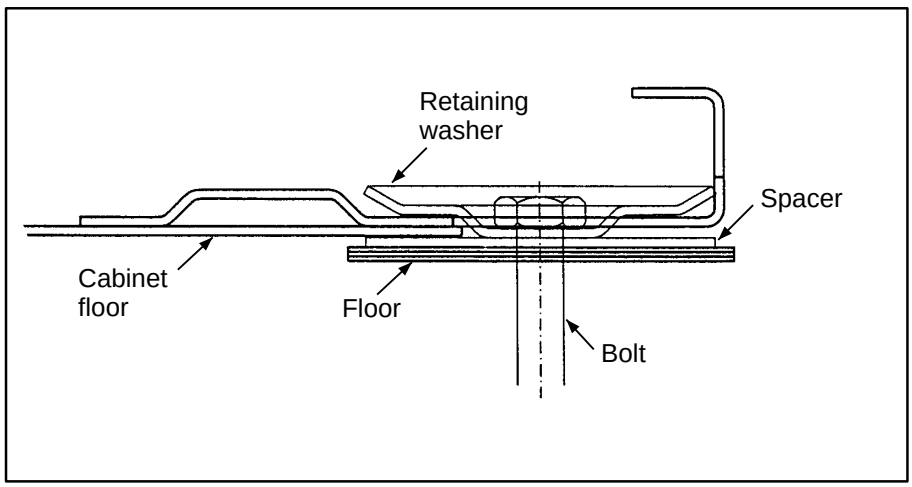



*Figure 4 Mounting the spacer and retaining washer to the floor*

5. The cabinet is delivered with the adjustable feet turned to their innermost positions. Turn the feet a little, just to make sure that they are not stuck. Final adjustment of the feet is made when the cabinet is placed in its correct position.

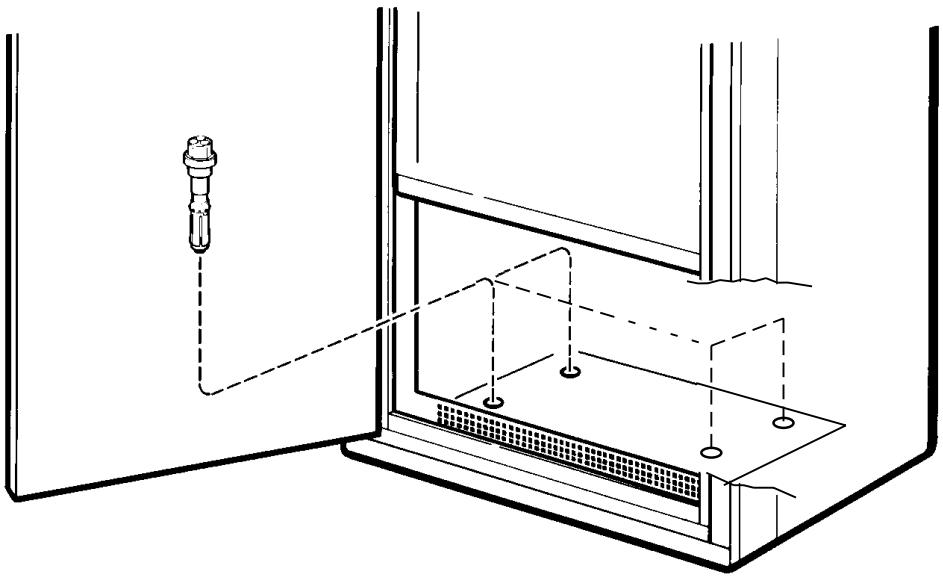
In case of a 3-hole cabinet floor, use the two adjustable feet in front.

6. In the case of a 4-hole cabinet floor, unscrew the 4 screws which hold the TM/PSU magazine when installed and remove it carefully.

7. In the case of a 4-hole cabinet floor, align the cabinet holes with the floor holes and make final adjustments of the feet until the cabinet is vertical.

8. In the case of a 3-hole cabinet floor, push the cabinet so that the slot at the rear of the floor fits inbetween the spacer on the floor and the retaining washer. Make sure that the cabinet cannot fall forwards and that the cabinet holes are aligned with the two floor holes. Adjust the cabinet with the two front feet.

Older version with 4 holes and 4 bolts



Newer version with 3 holes and 3 bolts

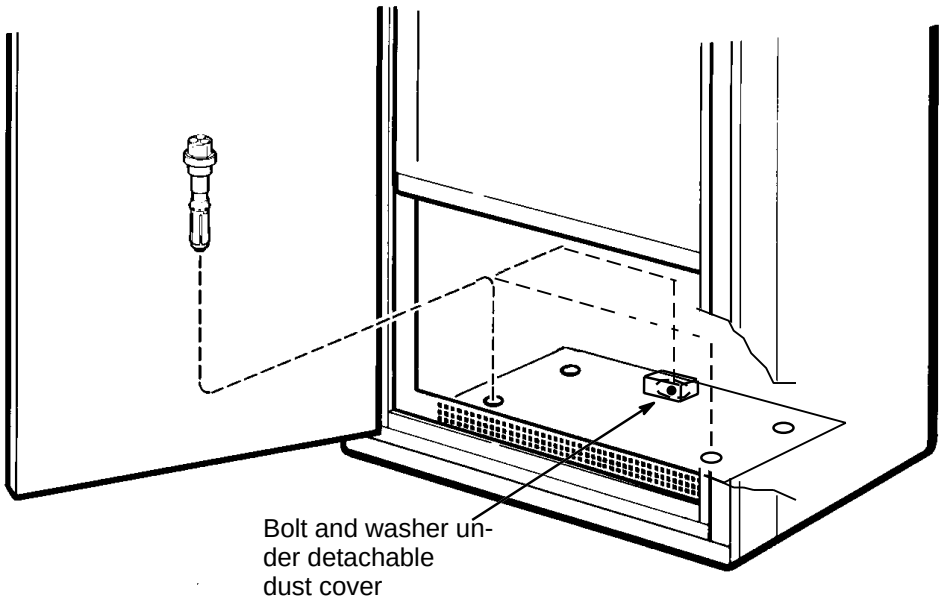



*Figure 5 Securing the cabinet to floor*

9. Secure the cabinet(s) to the floor with 4 or 2 bolts with washers as shown in figure 5.

10. Install a suspension bar using an angle bracket from the top of the cabinet(s) to the cable ladder or to the wall. See figure 6.

Suspension bar and angle bracket are included in mounting setNTM201 201/4.

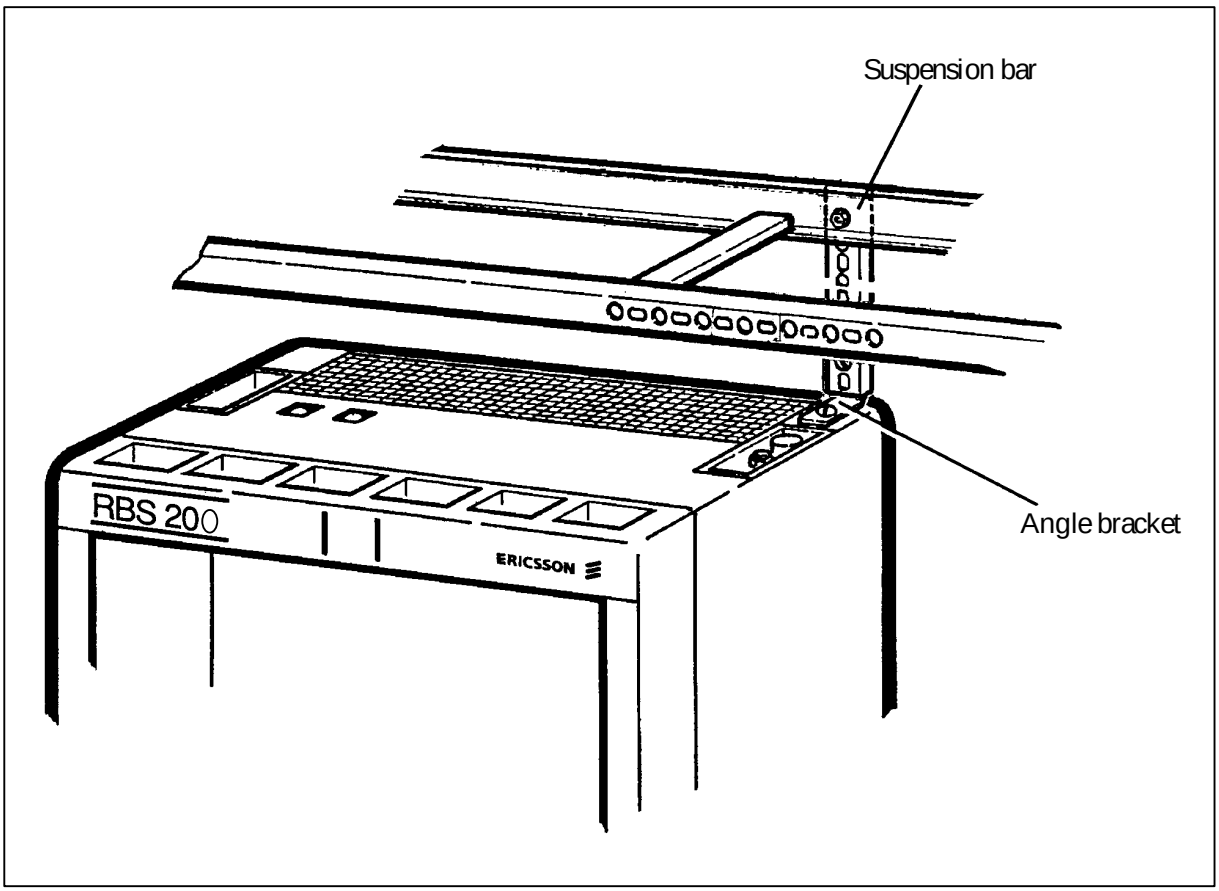



*Figure 6 Fastening the cabinet to a ladder*

## 2.6 Cabinet Door

The cabinet door is provided with Dust Filter 106 7637/17.

### 2.6.1 Door Removal

To remove the cabinet door proceed as follows:

1. Open the door.

2. Press the upper spring loaded pivot to its lower position with a screw driver as shown in figure 7.

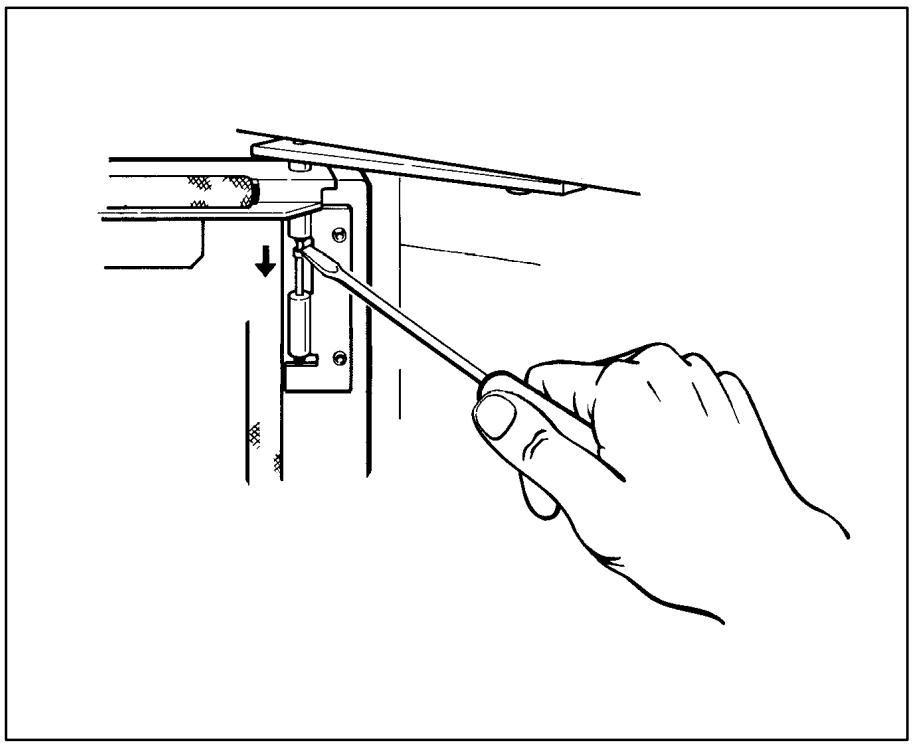


*Figure 7 Pressing the spring loaded pivot to its lower position*

3. Pull the door away from the upper hinge and lift it up to release the pivot from the lower hinge.

### 2.6.2 Right Hand Door Mounting

The door is left hand hinged on delivery. To shift to right-hand hinge proceed as follows:

1. Remove the door as previously described.
2. Turn the door upside down.
3. Position the lower pivot in the cabinet right-hand hinge.
4. Press down the upper springloaded pivot by using a screw driver as shown in figure 7.
5. Release the upper pivot into position in the-right hand hinge.

### 2.6.3 Door Lock

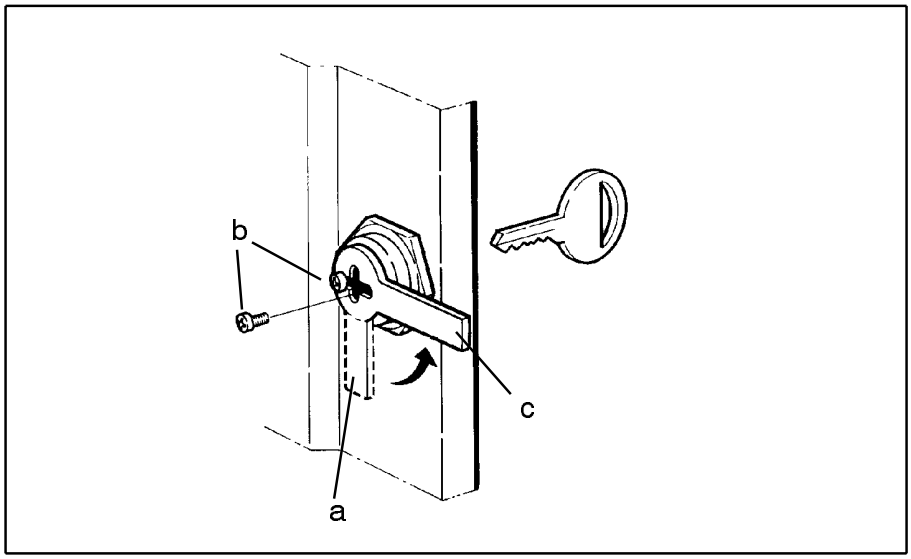



*Figure 8 Activating the door lock*

The key can only be removed from the door lock in a locked position.

To allow the door to be unlocked and without a key in the lock during transportation and installation, the locking plate has been factory mounted 90 degrees, a) in figure 8, from its normal locked position, c). To "activate" the lock, proceed as follows:

1. Unscrew the two screws, b), which hold the locking plate.

2. Turn the locking plate 90 degrees counterclockwise to pos. c), and remount it with the screws, b).

3. Remove the plastic bag with keys taped on the inside of the door and check that it is possible to lock the door and to remove the key from the lock.

# 3 Cabinet Designation System

## 3.1 Designation of Hardware Positions

To facilitate locating hardware units during installation and maintenance, the RBS 200 cabinet is divided into a coordinate system, see figure 9.

### 3.1.1 Cabinet Height Vertical Division

Division into levels 00 to 12, starting at the top.

### 3.1.2 Equipment Shelf Horizontal Division

Division left to right from 01 to 84.

TRI magazine: Division left to right from 00 to 160.

### 3.1.3 Vertical Cable Shafts

For equipment located in the vertical cable shafts on either side of the equipment shelves, designations left (L) and right (R) are used.

### 3.1.4 Location Designation Format

**Hardware**

A hardware position in the cabinet is designated by a parameter in the following format:

**VV/HH** where:

| | |
|---|---|
| VV= Vertcal level | 00 - 12 |
| HH = Horizontal position | 01 - 84 or 00 - 160 in case of TRI magazine |

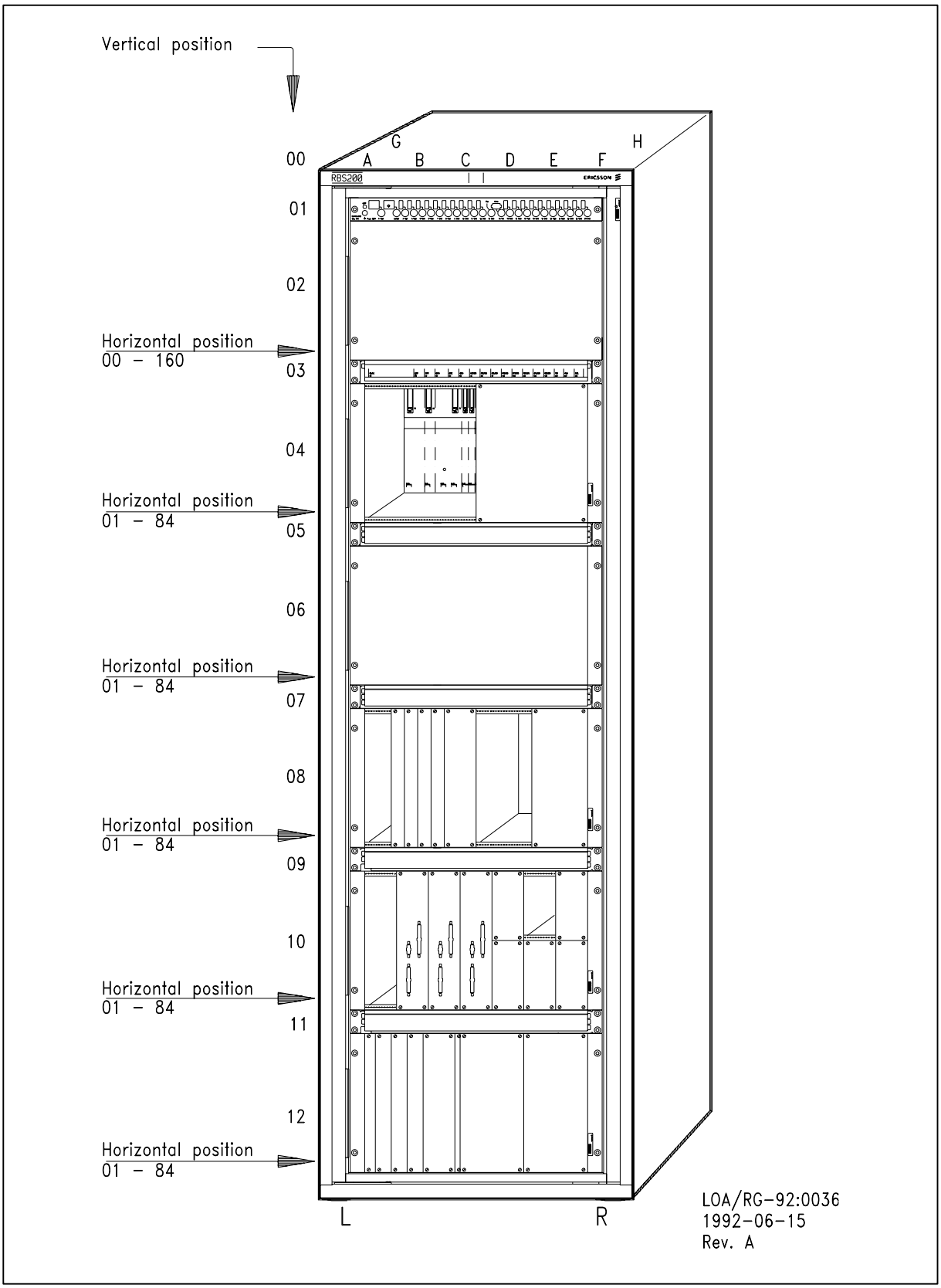



*Figure 9 Cabinet hardware positions*

**Printed Circuit Boards (PCB)**

Principle for locating a PCB coordinate parameter in a magazine is shown in figure 10.

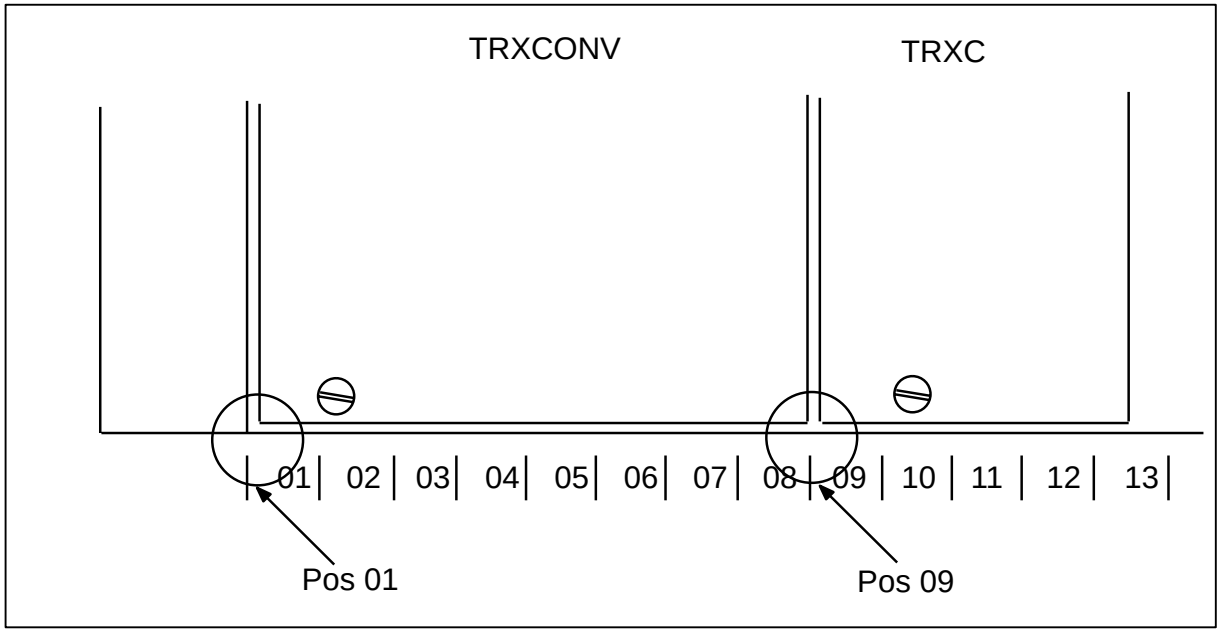



*Figure 10 Principle for locating PCB coordinate parameter in a magazine*

The figure shows part of a TRXD magazine with the printed circuit boards TRXCONV and TRXC.

Assuming that the TRXD magazine is located at vertical level 04, VV in the format **VV/HH** is 04.

The horizontal position HH is given as the leftmost position that the board occupies.

Parameters for each board will then be:

| | |
|---|---|
| TRXCONV | 04/01 |
| TRXC | 04/09 |

## 3.2 Designation of Internal Cabling

### 3.2.1 All Magazines except the TRI

Once the physical position in the cabinet is determined, the connection points for each cable must be defined.

This is done by adding a second parameter to the hardware position. The two parameters are separated by an asterisk, resulting in the following format:

**VV/HH*CC** where:

CC = cable connection point parameter

Parameter CC is in most cases given in plain text, corresponding to the marking on the front of the circuit board. For connection to the O&M Bus/TIB connector on the TRXC board shown in figure 10, the complete parameter is:

04/09*O&M,TIB

### 3.2.2 The TRI Magazine

Here the parameter CC is defined in a different way, due to the lack of written information on the board fronts.

In this case the magazine is subdivided into two vertical levels, designated A and B. Each level corresponds to a front connector on the circuit boards, which in turn is further divided into four connector positions as shown in figure 11.

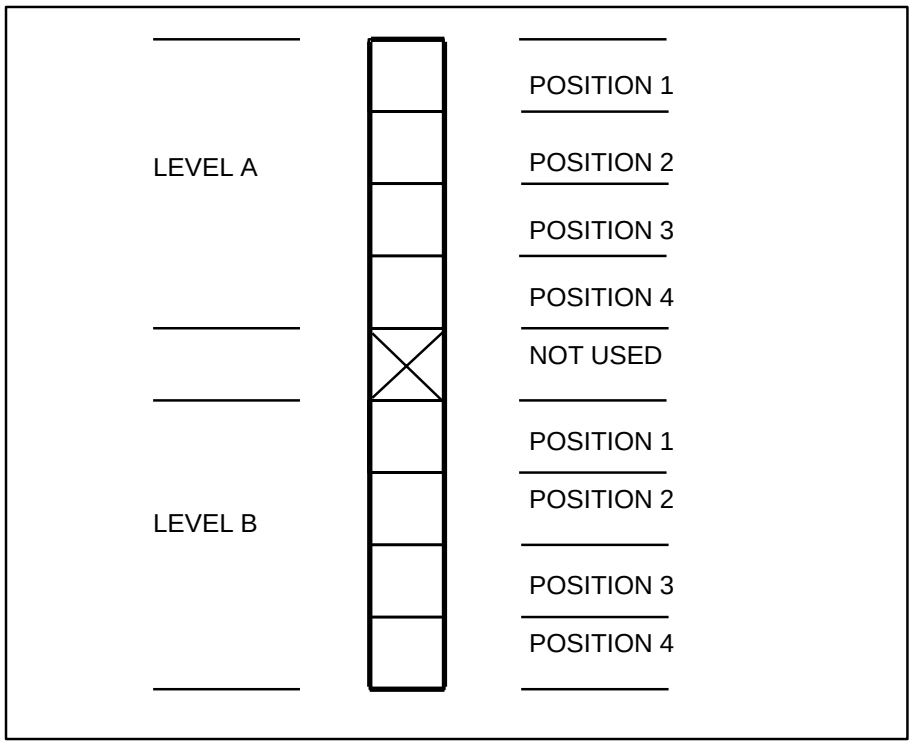



*Figure 11 Board front connector designations in the TRI magazine*

Assuming that the circuit board in figure 11 is located in the horizontal position HH = 60 of the TRI magazine (VV = 02), and a cable is to beconnected to Level B position 1, the complete designation is:

02/60B*1

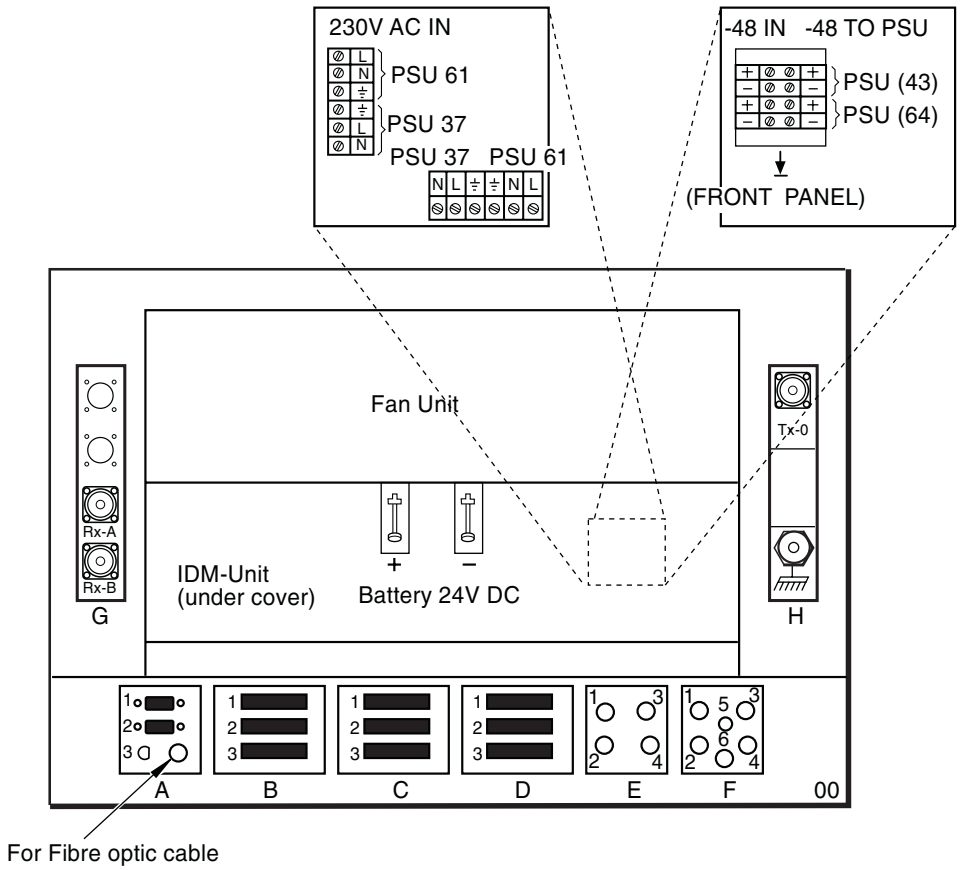
## 3.3 Cabinet Identity and Connection Point Parameters

As TRI signals are distributed between cabinets, information concerning the cabinet identity needs to be specified. By adding the cabinet identity (ZZ) to the hardware and connection point parameters, a set of parameters with the following format is obtained:

ZZ*VV/HH*CC, where ZZ = Cabinet identity A1, B1 or C1.

## 3.4 Designation of Cabinet Connection Field

All cabling to/from the TRI, Filter units and Power supply is done via the connection field located on top of each cabinet. The connection field has 8 sets of cable connectors designated A to H. See figure 12.




| | | | | |
|---|---|---|---|---|
| A1 = TG SYNC (ESB) | C1 = LIB BUS CAB. A1 | *) | E1 = PCM INPUT 1 | 120 ohm |
| A2 = TG SYNC (ESB) | C2 = LIB BUS CAB. B1 (A2) | | E2 = PCM OUTPUT 1 | 120 ohm |
| A3 = RF out | C3 = LIB BUS CAB. C1 (A3) | | E3 = PCM INPUT 2 | 120 ohm |
| B1 = EXTERNAL ALARM | D1 = LIB BUS CAB. A2 (A4) | | E4 = PCM OUTPUT 2 | 120 ohm |
| B2 = EXTERNAL ALARM | D2 = LIB BUS CAB. B2 | **) | F1 = PCM INPUT 1 | 75 ohm |
| B3 = LIB TRXD 1-4 | D3 = LIB BUS CAB. C2 | | F2 = PCM OUTPUT 1 | 75 ohm |
| | | | F3 = PCM INPUT 2 | 75 ohm |
| | | | F4 = PCM OUTPUT 2 | 75 ohm |
| | | | F5 = PCM INPUT 3 | 75 ohm |
| | | | F6 = PCM OUTPUT 3 | 75 ohm |

*) if more than 2 ETB cards,
2 contact boxes E (SVK 107 2436/1) are needed.

**) if more than 3 ETB cards,
2 contact boxes F (SVK 107 2435/1) are needed.

P005505A

*Figure 12 Maximal disposition of connection field on top of cabinet*

# 4 Cabinet Standard Units

## 4.1 Internal Distribution Module, IDM

The IDM unit is always mounted in the cabinet, pos. 01.

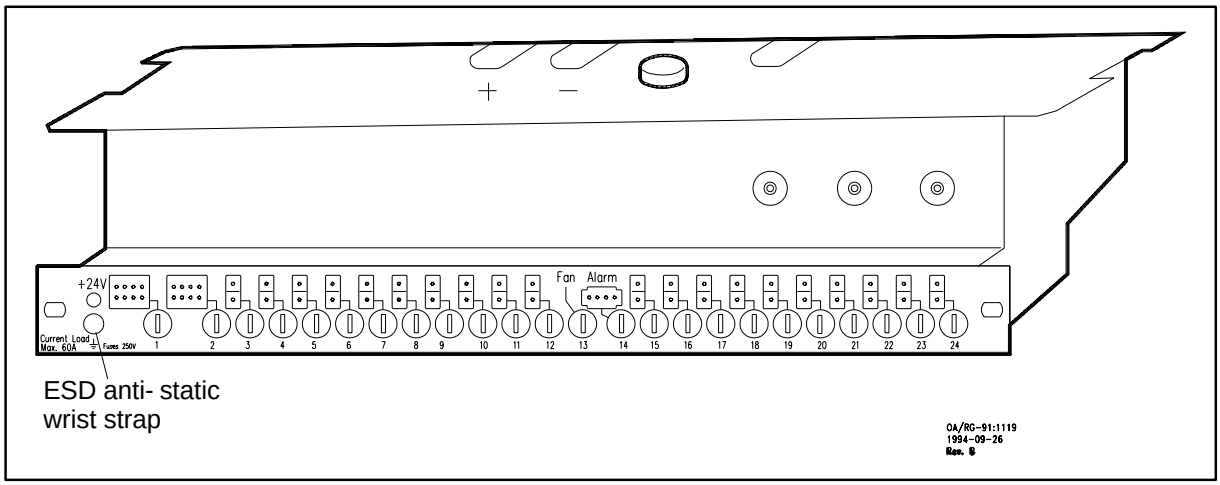



*Figure 13 The IDM unit*

The IDM unit contains:

- A Connection field for:

  External power, 230V AC, -48V DC, +24V DC

  Battery power from the top of the cabinet, pos. 00

- A Distribution field in pos. 01, which distributes +24V DC to units and fans via 24, 10-16A glass tube fuses.

- Earthing point for electrostatic discharge, ESD. For connection of e.g. anti-static wrist strap LYB 25 001/14, shown in figure 14 below.

- Control board of fans in pos. 00 for supervision via alarm connections in pos. 01 J*14.

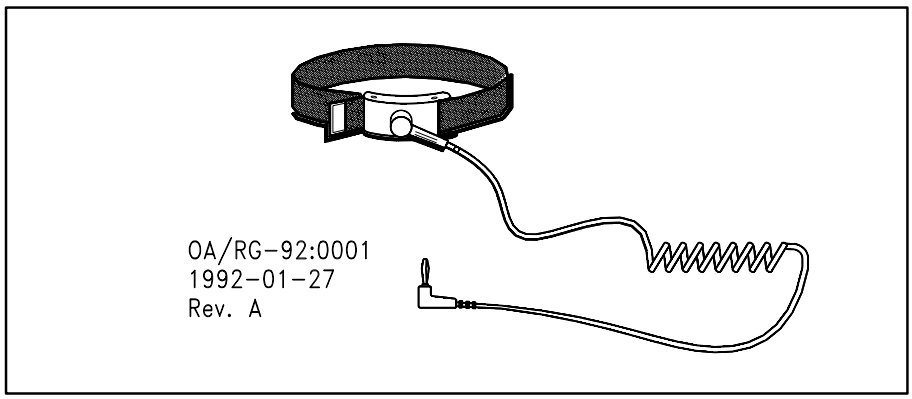



*Figure 14 ESD wrist strap LYB 25 001/14*

## 4.2 Cabinet Bus

The CCB boards ROA 119 8535/3 are the connection field for vertical and horizontal bus cable plugs. See figure 15.

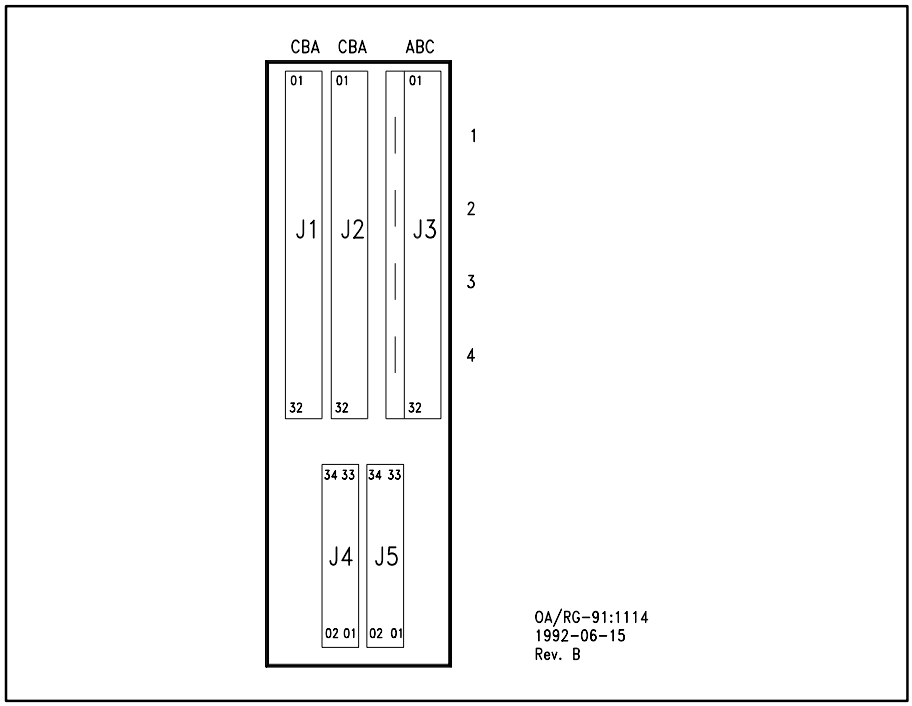



*Figure 15 A CCB board ROA 119 8535/3*

CCB boards with vertical bus cables and plugs are factory installed according to table 1 and figure 16.

*Table 1*

| Fig. 16 Item | Product Number | Description | | Pcs | Note |
|---|---|---|---|---|---|
| **a** | RPM 513 352/1 | Conn. cable | CCB-CCB | 3 | 1) |
| **b** | RPM 513 352/2 | Conn. cable | CCB-CCB | 1 | 1) |
| **c** | RPM 513 393/1 | Conn. cable | O&M/TIB | 1-2 | 1) , 2) |
| **d** | RNV 991 2005/1 | Str. Plug | TXBUS | 14 | 1) |
| **e** | RNV 403 215/1 | Str. Plug Top | CCB | 1 | 1) |
| **f** | RNV 403 215/2 | Str. Plug Low | CCB | 1 | 1) |
| **g** | ROA 119 8535/3 | Board | CCB | 5 | 1) |
| **h** | RPM 513 394/1 | Conn. cable | OM/TIB-TRXC | 2-3 | 2) |
| **i** | RPM 513 395/1 | Conn. cable | OM/TIB-RTX | 1 | |
| **k** | RPM 513 391/1 | Conn. cable | TX/BUS-TRXC | 1 | |
| **l** | RPM 513 390/1 | Conn. cable | TX/BUS-TRXC | 1 | |
| **m** | RPM 513 392/1 | Conn. cable | TX/BUS-RTX | 1 | |

1) Factory installed

2) 2 pcs if extension cabinet is installed

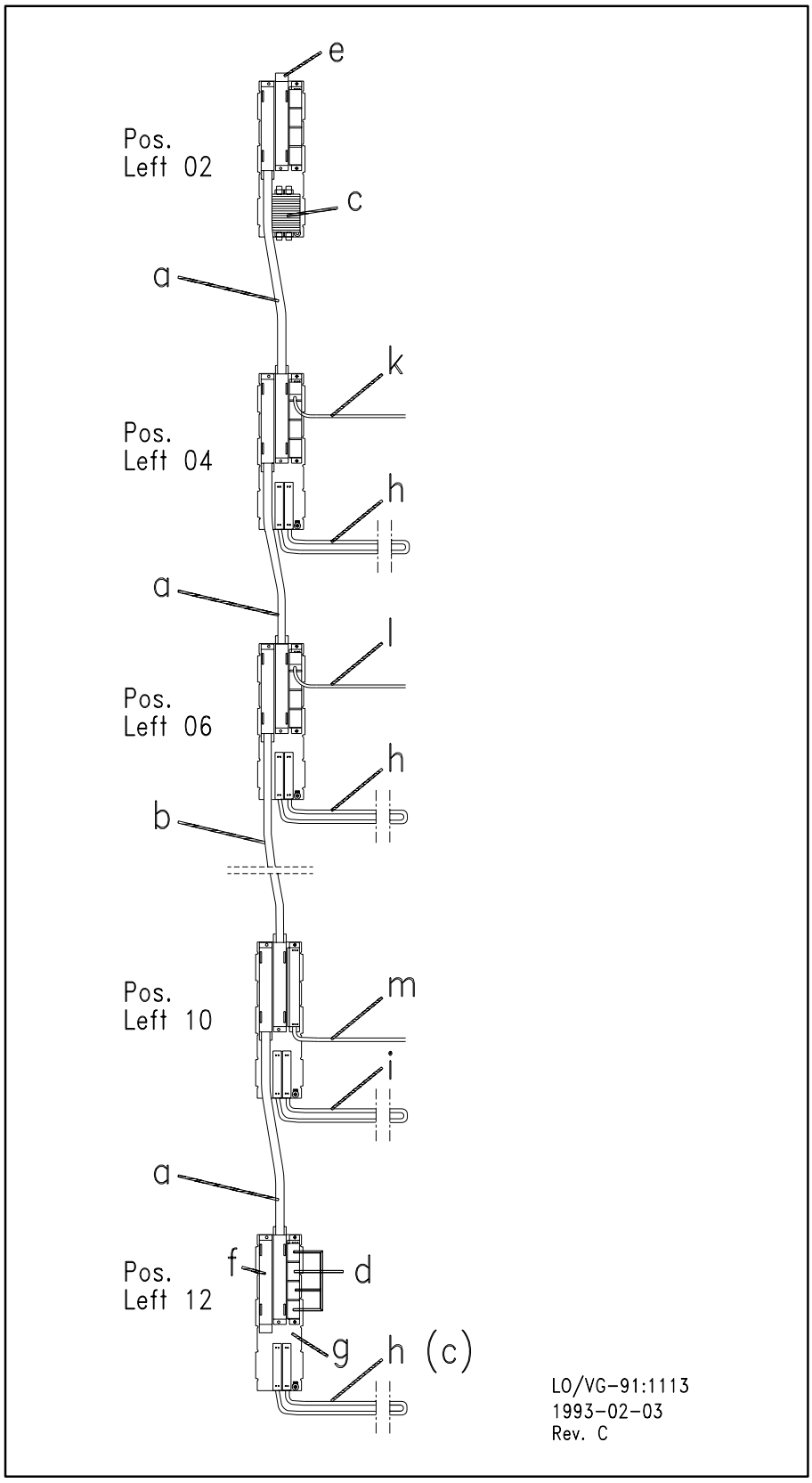



*Figure 16 CCB connection cables and plugs*

## 4.3 Filter Units RXBP

Filter units are located on the left hand side of the cabinet, as seen from the front. Each filter unit is fastened with four screws.

Two filter units RXBP(A) and RXBP (B) are normally factory installed. Each filter unit includes an RXBP filter and a mounting plate.

When diversity is used and the filter units have to be installed on site:

- Remove shelves, magazines and fan units before installing the filter units.

Two types of filter units are available:

- Standard filter, KRF 101 18/01, frequency 890-915 MHz
- Extended filter, KRF 101 19/01, frequency 872-910 MHz

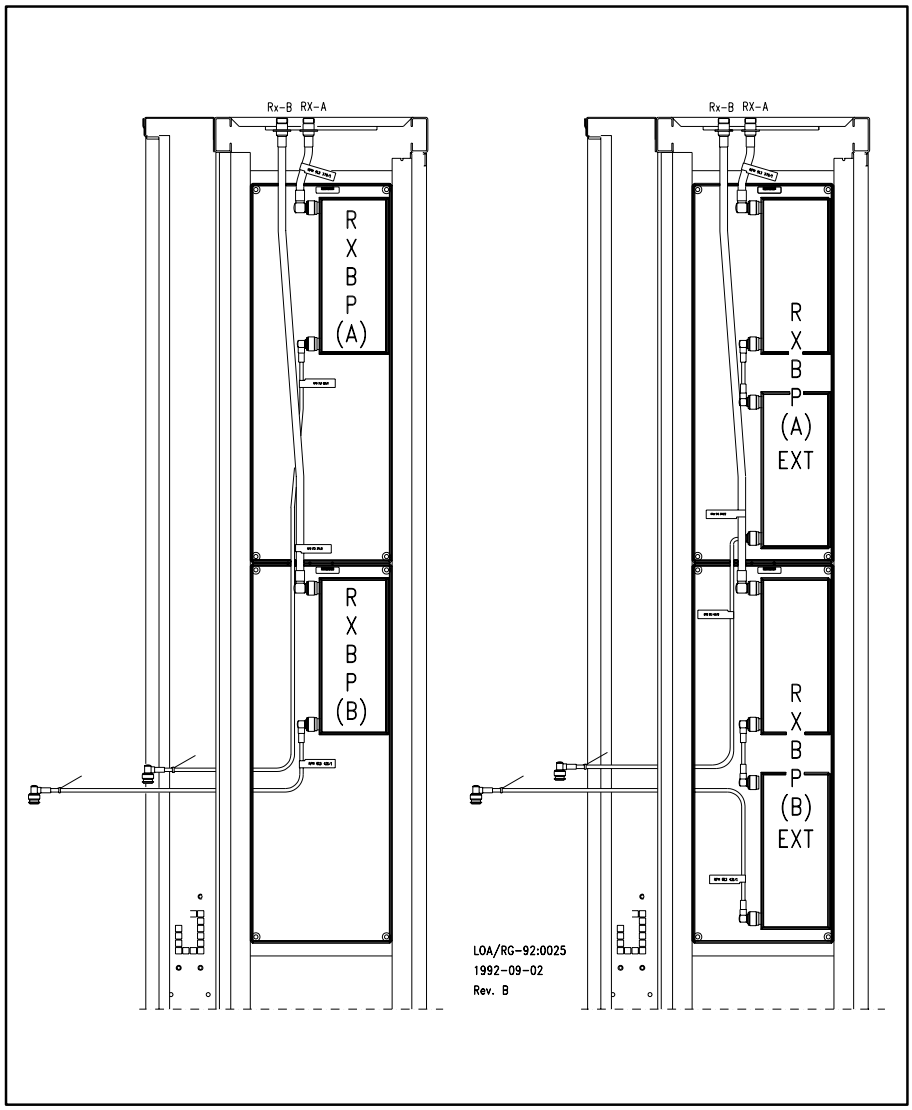



*Figure 17 Filter units RXBP, KRF 101 18/01 to the left and KRF 101 19/01 to the right*

## 4.4 Filter Unit TXBP

The filter unit is located on the right hand side of the cabinet, as seen from the front. The filter unit is fastened with four screws.

The filter unit TXBP is normally factory installed and includes a TXBP filter and a Measuring Coupling Unit (MCU) on a mounting plate.

- Remove shelves, magazines and fan units if work has to be done on the filter unit.

A 4-pole filter, KRF 101 16/01, is normally used for the filter combiners.

For hybrid combiners, a 6-pole filter KRF 201 089/1 is used.

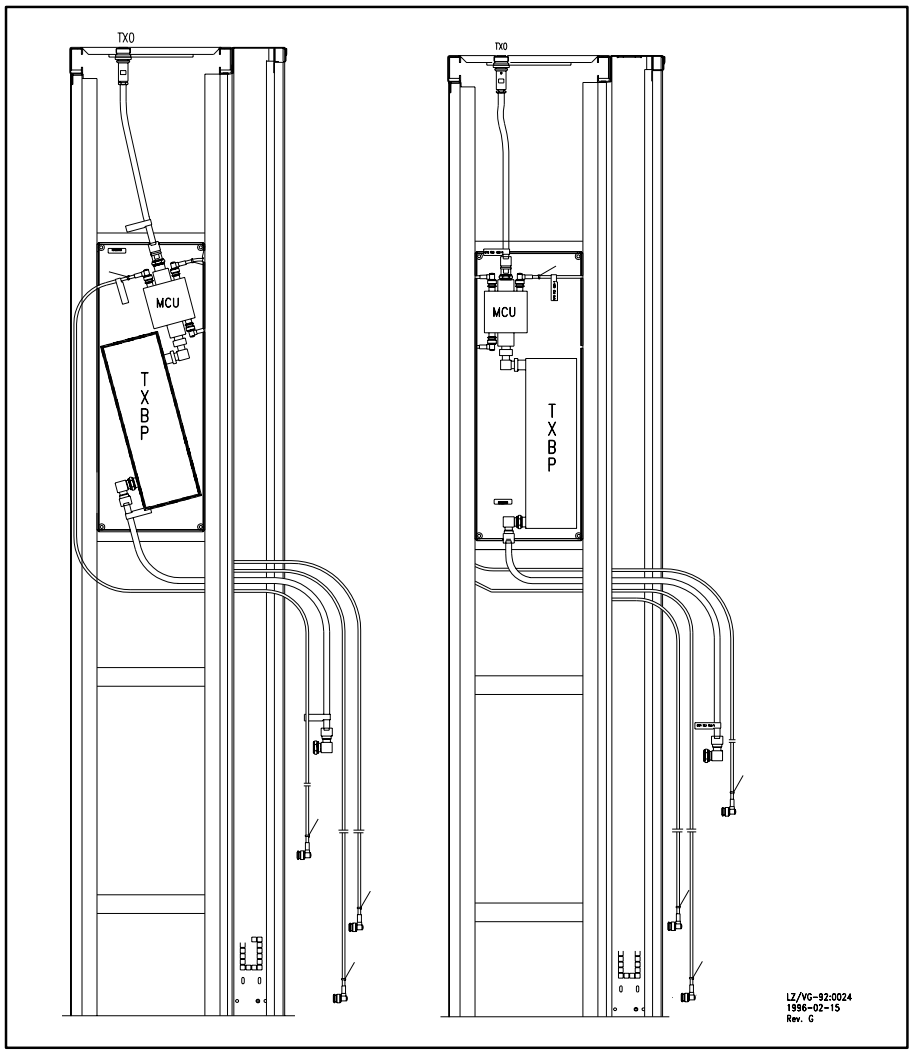



*Figure 18 Filter unit TXBP, KRF 101 16/01 to the left and KRF 201 089/1 to the righ*

## 4.5 Fan Units

The cabinet contains four fan units with two types of fans. See table 2 and figure 20. The fan units are factory installed.

*Table 2*

| Pos | Fan Unit | Pcs | Fan Type | Pcs |
|---|---|---|---|---|
| 00 | BKV 301 229/1 | 1 | BKV 301 216/10 | 4 |
| 05 | BKV 301 232/1 | 1 | BKV 310 216/11 | 2 |

| | | | | |
|---|---|---|---|---|
| 09 | BKV 301 230/1 | 1 | BKV 301 216/11 | 2 |
| 11 | BKV 301 231/1 | 1 | BKV 301 216/11 | 4 |

### 4.5.1 Fan Control Unit, FCU ROA 119 3065/1 and Fan Control Unit Super, FCUS KER 131 101/1

Fan Control Unit (FCU) or Fan Control Unit Super (FCUS) for the fans in pos. 00 is placed in the IDM module, while the FCUs for the other fans are mounted in each fan unit.

**Fan Control Unit Super, FCUS KER 131 101/1**

All cabinets produced after the turn of the year 94-95 will have a FCUS mounted in the IDM unit in pos. 01. Remaining fan units are not affected.

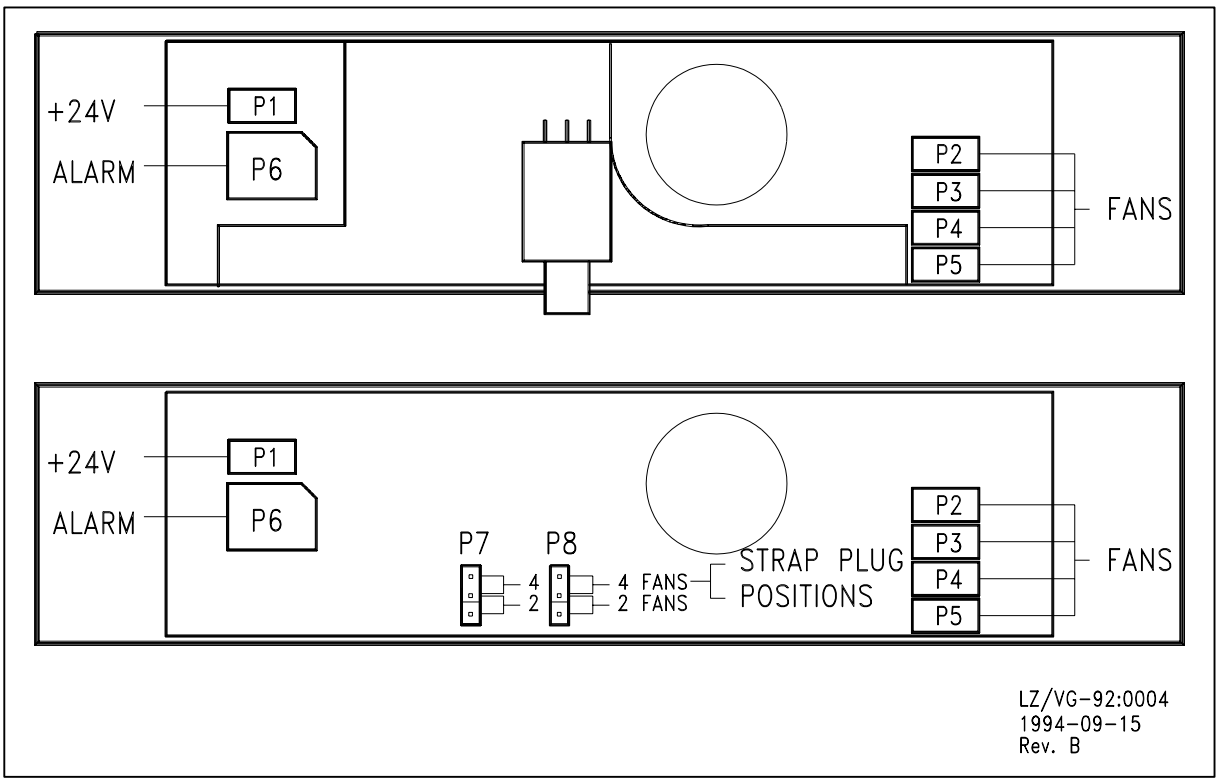



*Figure 19 FCUS for four fans, upper, and FCU for two or four fans*

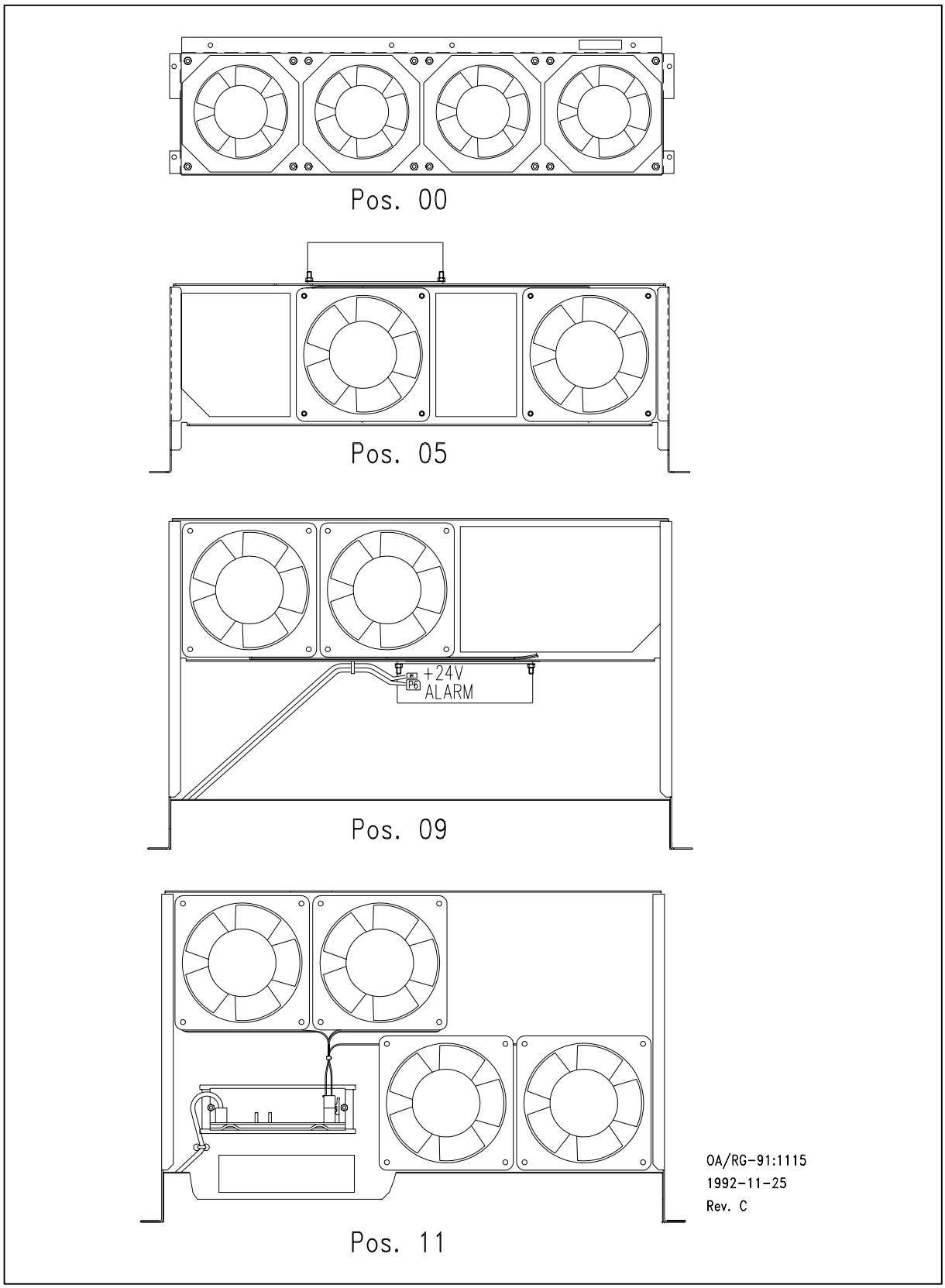



*Figure 20 Fan units*

# 5 Equipping Magazines with PCBs and Units

**CAUTION**

Sensitive components such as Integrated Circuits (ICs), may be damaged by discharges of static electricity. Static electricity is generated when materials are rubbed together.

**Note** Use Ericsson anti-static wrist strap LYB 25 001/14.

The magazines are pre-installed in the cabinet, with the exception of the TRI magazine. The units have to be plugged in during installation.

## 5.1 TRXD Magazine BFL 119 71/3 (with SPP Boards)

The magazine is designed for mounting two complete sets of circuit boards for TRXD function.

The magazine can be installed in the cabinet, pos. 04 and 06. Equip the magazine as shown in table 3 and figure 21.

*Table 3 Summary of circuit boards and units (from the different packages) needed for this magazine:*

| Product Number | Designation | Quantity | | Note |
|---|---|---|---|---|
| | | 1 TRX | 2 TRXs | |
| BMR 960 005/1 | TRX converter | 1 | 2 | |
| ROF 366 142/2 | TRXC unit | 1 | 2 | |
| KRA 111 01/03 | Receiver, RRX | 1 | 2 | |
| ROF 366 141/- | Signal processor, SPP | 8 | 16 | |
| SDK 107 60/42 | Dummy front | 1 | - | 1) |

1) Not included in the TRX delivery package.

Screws 80/SBA 331 030/1006 are used for mounting units in the magazine.

The TRXD magazine vertical positions in the cabinet:

- position 04 for TRXD/RRX 1 and 2

- position 06 for TRXD/RRX 3 and 4

Mount dummy front SDK 107 61/06 on unequipped magazine positions.

If antenna diversity is not used, equip RXB positions with 50 ohm terminators ZRB 107 0107/001.

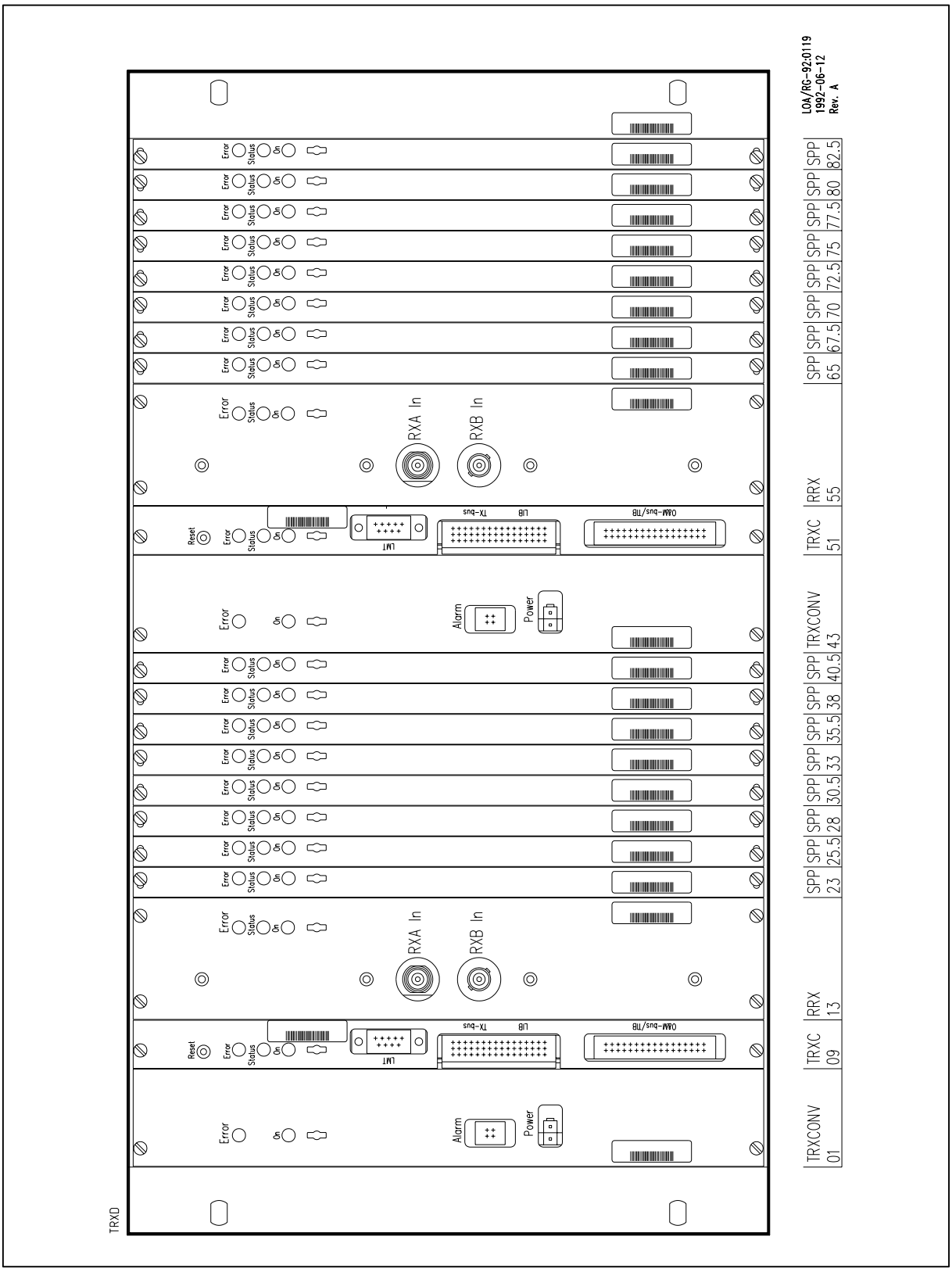



*Figure 21 The TRXD magazine equipped with SPP boards*

## 5.2 TRXD Magazine BFL 119 71/3 (with SPU, SPU+/SPE, SPU++ Boards)

The magazine is designed for mounting two complete sets of circuit boards for TRXD function.

The magazine can be installed in the cabinet, pos. 04 and 06. The magazine shall be equipped as shown in table 4 and figure 22.

*Table 4 Summary of circuit boards and units (from the different packages) needed for this magazine:*

| Product Number | Designation | Quantity | |
|---|---|---|---|
| | | 1 TRX | 2 TRXs |
| BMR 960 005/1 | TRX converter | 1 | 2 |
| ROF 366 142/2 | TRXC unit | 1 | 2 |
| KRA 111 01/03 | Receiver, RRX | 1 | 2 |
| ROF 366 284/- | Signal processor, SPU | 1 | 2 |
| SDK 107 60/16 | Dummy front | 1 | 2 |

Screws 80/SBA 331 030/1006 are used for mounting units in the magazine.

The TRXD magazine vertical positions in the cabinet:

- position 04 for TRXD/RRX 1 and 2
- position 06 for TRXD/RRX 3 and 4

Mount dummy front SDK 107 61/06 on unequipped magazine positions.

If antenna diversity is not used, equip RXB positions with 50 ohm terminators ZRB 107 0107/001.

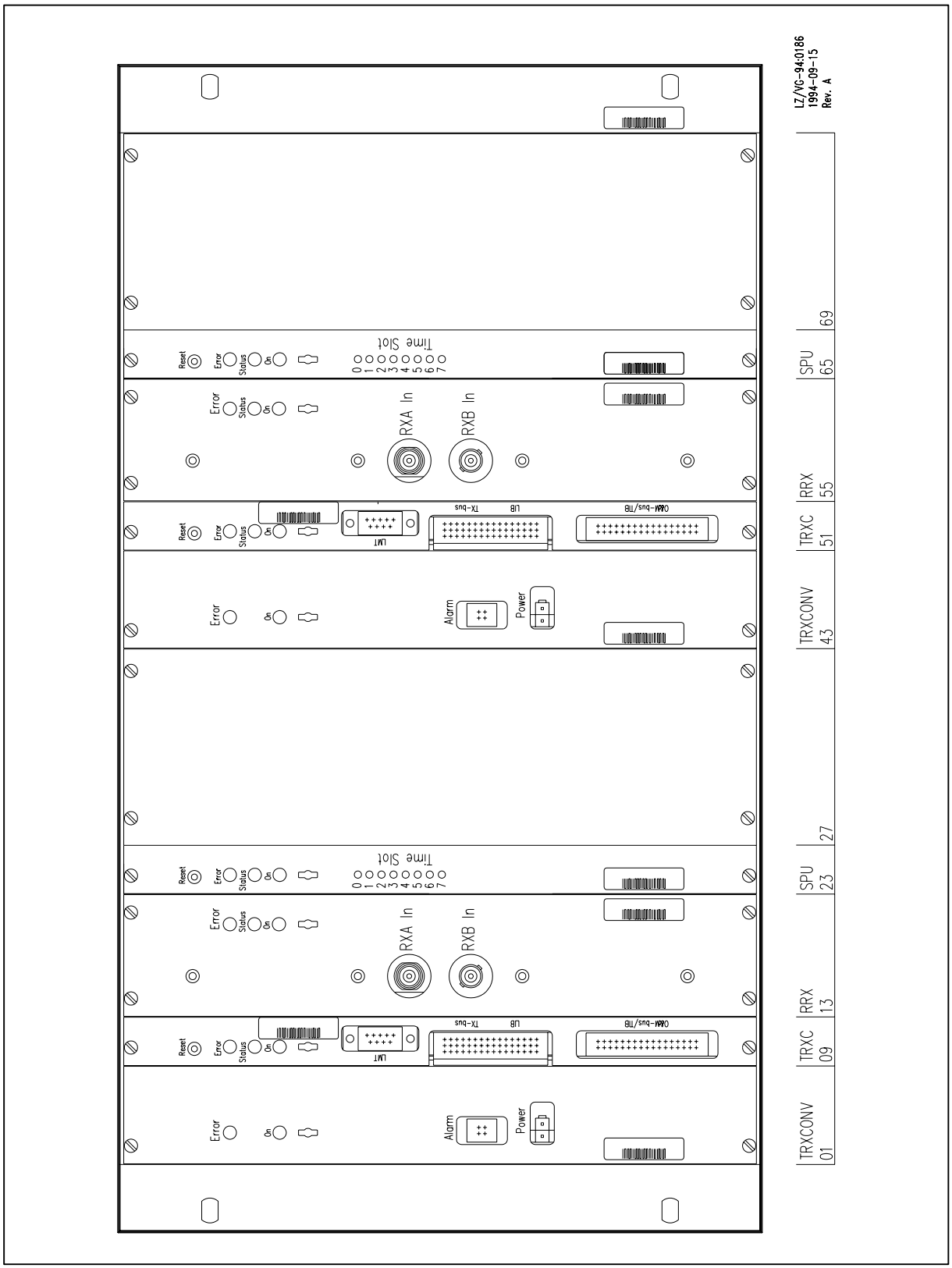



*Figure 22 TRXD magazine equipped with SPU boards*

## 5.3 H-COMB Magazine BFL 119 72/2

The Hybrid-Combiner magazine is designed for mounting Receiver multicouplers for up to four receivers with diversity and combiners for up to four transmitters.

The magazine can be equipped as shown in table 5.

*Table 5 Units to be included in the magazine*

| **Product Number** | **Designation** | **No. of TRXs** | |
|---|---|---|---|
| | | **1 or 2** | **3 or 4** |
| KRF 101 01/01 | Rec. Multicoupler RXDA | 1 (2) | 1 (2) [1)] |
| KRF 101 01/02 | Rec. Divider RXD | 1 (2) | 1 (2) [1)] |
| KRF 201 01/02 | H-Combiner 2 TRX | 1 | 2 |
| KRF 201 01/03 | H-Combiner 2+2 TRX | - | 1 |
| ROA 119 807/0150 | Power Control Unit, 230V | 1 | 1 [2)] |
| SDK 107 60/01 | Dummy front | 1 | 1 |
| SDK 107 60/05 | Dummy front RXD, PCU | 1 | 4 |
| SDK 107 60/16 | Dummy front H-Comb 2+2 TRX | 1 | - |
| SDK 107 60/21 | Dummy front H-Comb 2 TRX | 1 | - |

[1)] 2 x RXDA, 2 x RXD used with receiver diversity.

[2)] 1 PCU per site. In a sectorized site, dummy front SDK 107 60/5 is mounted in this position in cabinets B1 and C1 (only needed when 230V AC power supply is used).

Screws 80/SBA 331 030/1006 are used for mounting units in the magazine.

H-Combiner magazine to be installed in cabinet, vertical position 08.

Unconnected high level outputs HL2 - HL4 on RXDA positions 08/01 and 08/11, shall be equipped with 50 ohm terminators ZRB 107 0107/ 001, delivered with the units.

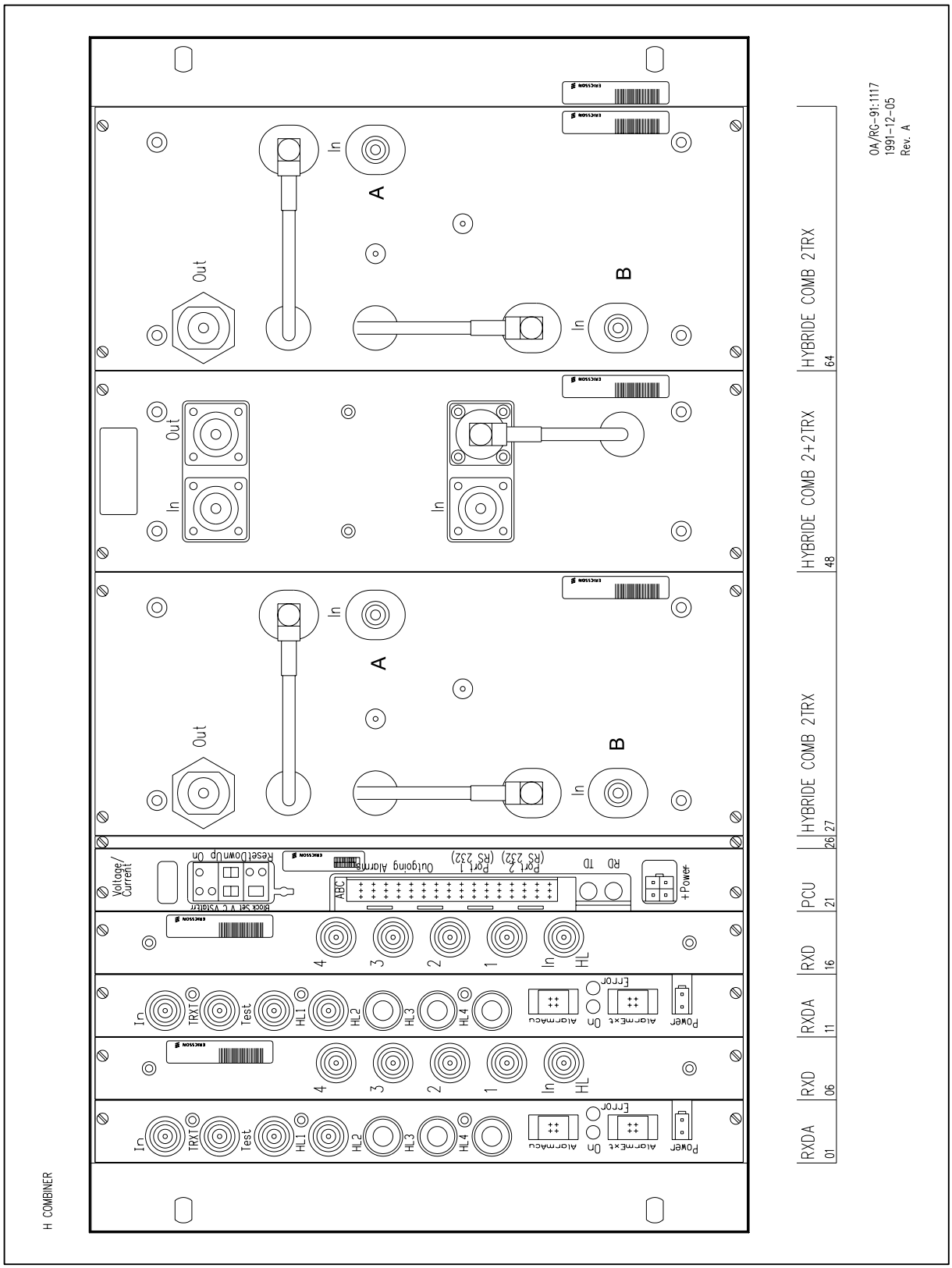



*Figure 23 H-COMB magazine equipped*

## 5.4 F-COMB Magazine BFL 119 72/3

The Filter-Combiner magazine is designed for mounting of Receiver multicouplers for up to 16 receivers with diversity, combiners and Transmitter divider for up to four transmitters.

The magazine can be equipped as shown in table 6.

*Table 6 Units included in the magazine*

| **Product No.** | **Designation** | **No. of TRXs** | |
|---|---|---|---|
| | | **1 or 2** | **3 or 4** |
| KRF 101 01/01 | Rec. Multicoupler RXDA | 1 (2) | 1 (2) [1] |
| KRF 101 01/02 | Rec. Divider RXD | 1 (2) | 1 (2) [1] |
| KRF 101 01/03 | Transm. Divider TXD | 1 | 1 |
| KRF 201 01/01 | F-Combiner 2 TX | 1 | 2 |
| ROA 119 807/0150 | Power Control Unit | 1 | - [2] |
| SDK 107 60/05 | Dummy front RXDA, RXD, PCU, TXD | - | - |
| SDK 107 60/12 | Dummy front | - | - |
| SDK 107 60/21 | Dummy front F-Comb | - | - |

[1] RXDA unit is only implemented in the first cabinet of each TG. 2 x RXDA, 2 x RXD used with receiver diversity.

[2] 1 PCU per site. In a sectorized site, dummy front SDK 107 60/5 is mounted in this position in cabinets B1 and C1, (only needed when 230V AC power supply is used).

Screws 80/SBA 331 030/1006 are used for mounting of the units in the magazine.

F-Combiner magazine to be installed in cabinet, vertical position 08.

Unconnected high level outputs HL2 - HL4 on RXDA positions 08/01 and 08/11, shall be equipped with 50 ohm terminators ZRB 107 0107/ 001, delivered with the units.

**Note** The two combiner units must be mounted according to figure 24.

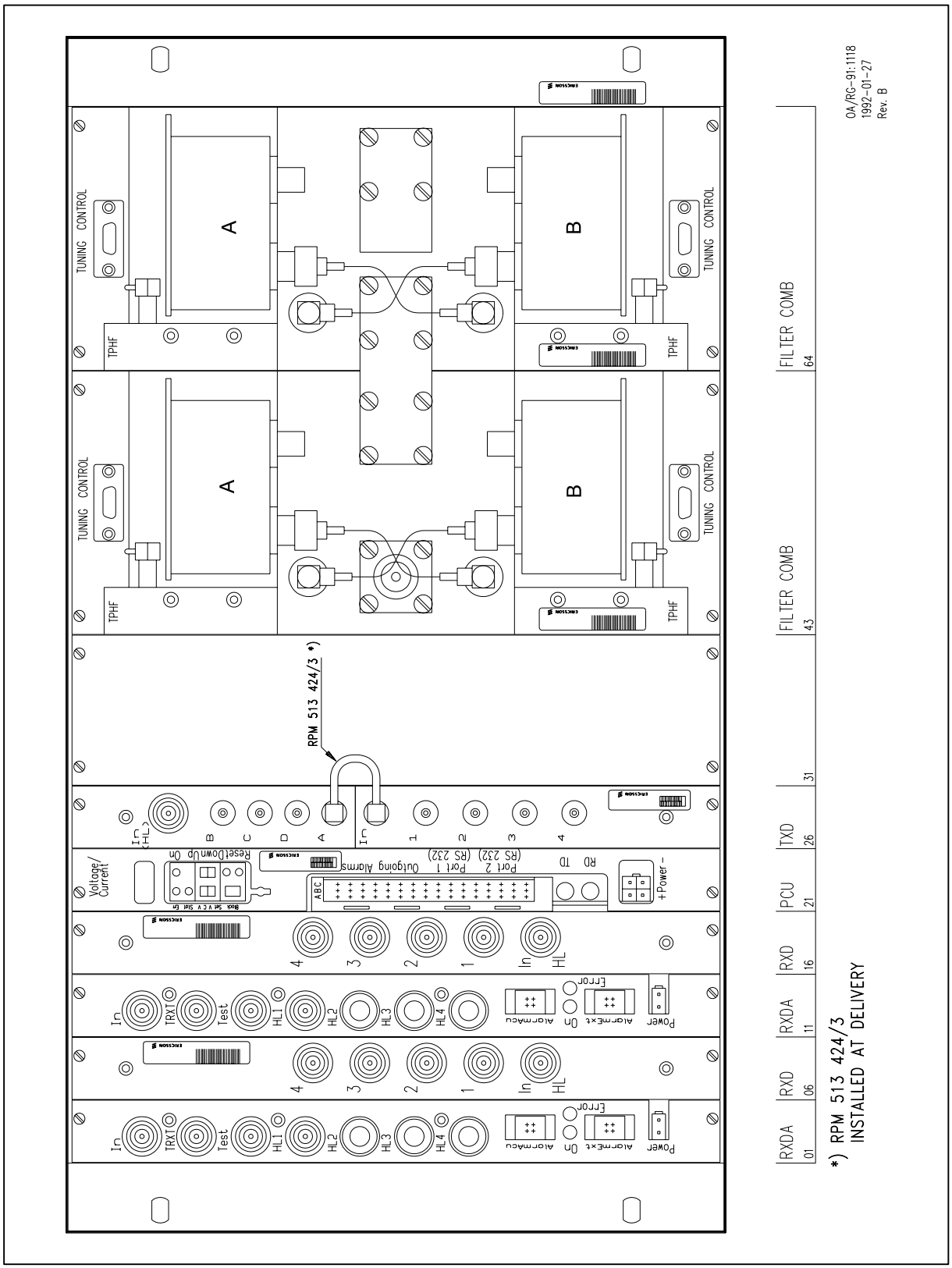



*Figure 24 F-COMB magazine equipped*

## 5.5 Adapter, End-Links and U-Links

The Adapter KRY 101 1352/1 and the End-link RPM 113 13/01 are mounted with four stainless steel screws, type MCS 4 x 16.

For the U-link KRY 101 1442/1, 8 screws type MCS 4 x 22 are used.

- Put in all the screws by hand, then hand tighten the screws.
- Using a torque wrench, tighten the screws crosswise to 1 Nm.

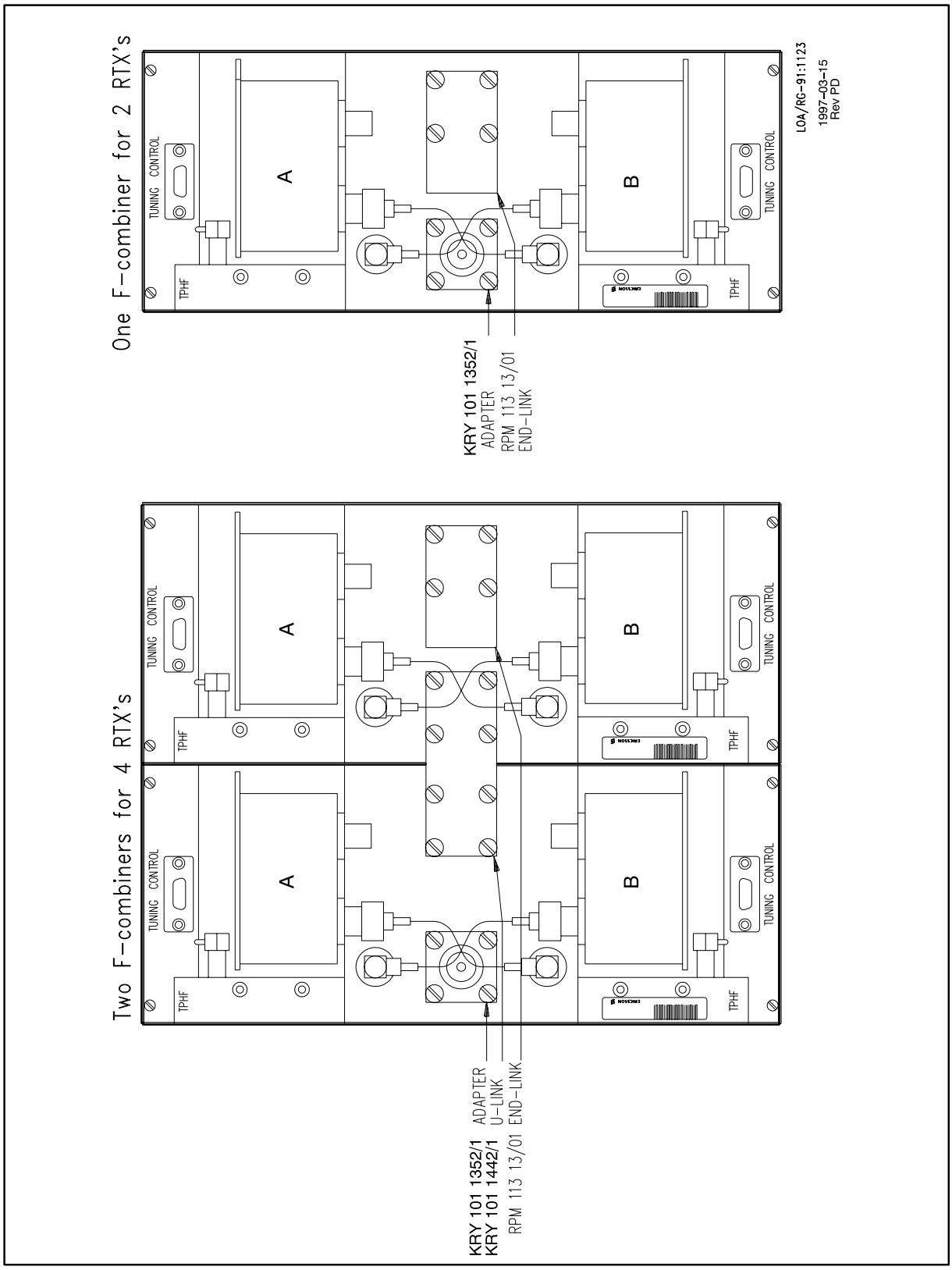



*Figure 25 Using adapter, End-links and U-links*

## 5.6 RTX Magazine BFL 119 71/5

The RTX magazine is designed for mounting of up to four transmitters with an output power of 45 W each.

The magazine is designed for mounting of the following units:

- Transmitter RTX 45 W
- Transceiver Tester TRXT M,A (Optional)
- Power Filter RTXPF alt. Power Booster RTXPB.

This magazine can be equipped in several configurations depending on function:

*Table 7 Units to be included in the magazine*

| **Product No.** | **Designation** | **No. of TRXs** | | | |
|---|---|---|---|---|---|
| | | **1** | **2** | **3** | **4** |
| KRB 111 01/02 | Transmitter RTX 45 W | 1 | 2 | 3 | 4 |
| KRF 101 13/01 | KRF Power Filter RTXPF | 1 | 2 | 3 | 4 |
| KRF 101 13/02 | Power Booster RTXPB [1)] | 1 | 2 | 3 | 4 |
| SDK 107 65/1 | Dummy front RTX | 3 | 2 | 1 | 0 |
| SDK 107 66/1 | Dummy front RTXPF | 5 | 4 | 3 | 2 |
| KRC 131 45/01 | Transc. Tester TRXT A [2)] | 1 | | | |
| KRC 131 46/01 | Transc. Tester TRXT M [2)] | 1 | | | |
| SXA 120 1827/1 | Dummy Front TRXT [2)] | 1 | | | |

[1)] Alternative to the Power Filter, RTXPF

[2)] Optional, only installed in the Master cabinet in each cell

Screws 80/SBA 331 030/1006 are used for mounting units in the magazine.

The RTX magazine shall be installed in the cabinet, vertical position 10.

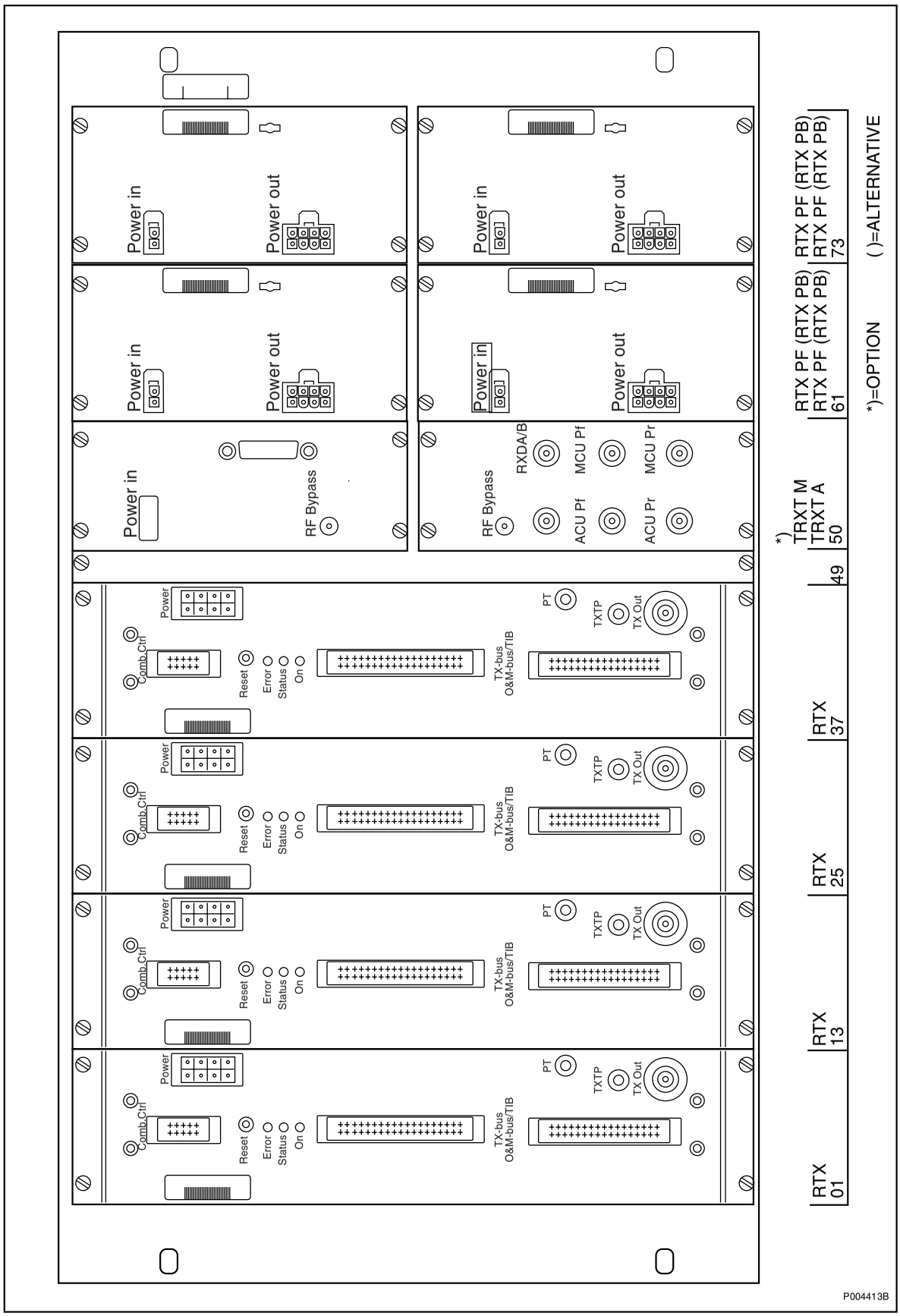



*Figure 26 The RTX magazine equipped*

## 5.7 TM/PSU Magazine BFL 119 73/1 (230 V AC)

The magazine is designed for mounting the following units:

- Timing Module Connection Board, TMCB
- Timing Unit, TU
- Alarm Collection Unit, ACU (optional)
- Power Supply Unit(s), PSU 230

This magazine can be equipped in several different configurations depending on how the magazine is to function.

The magazine can be equipped as shown in table 8.

*Table 8 Units to be included in the magazine*

| **Product No.** | **Designation** | **Qty** | **Note** |
|---|---|---|---|
| KRC 131 42/01 | Alarm Collection Unit, ACU | 1 | 1) 3) |
| ROF 366 144/1 | TM Connection Board, TMCB | 1 | 1) |
| ROF 366 143/2 | Timing Unit, TU | 3 | 1) |
| BML 435 002/1 | Power Supply Unit, PSU 230 V | 1 (2) | 2) |
| SDK 107 60/04 | Dummy front, TMCB | - | |
| SDK 107 60/02 | Dummy front | 1 | |
| SDK 107 60/06 | Dummy front, TU | - | |
| SDK 107 60/24 | Dummy front, PSU | - | |
| SDK 107 60/12 | Dummy front, ACU | 1 | |

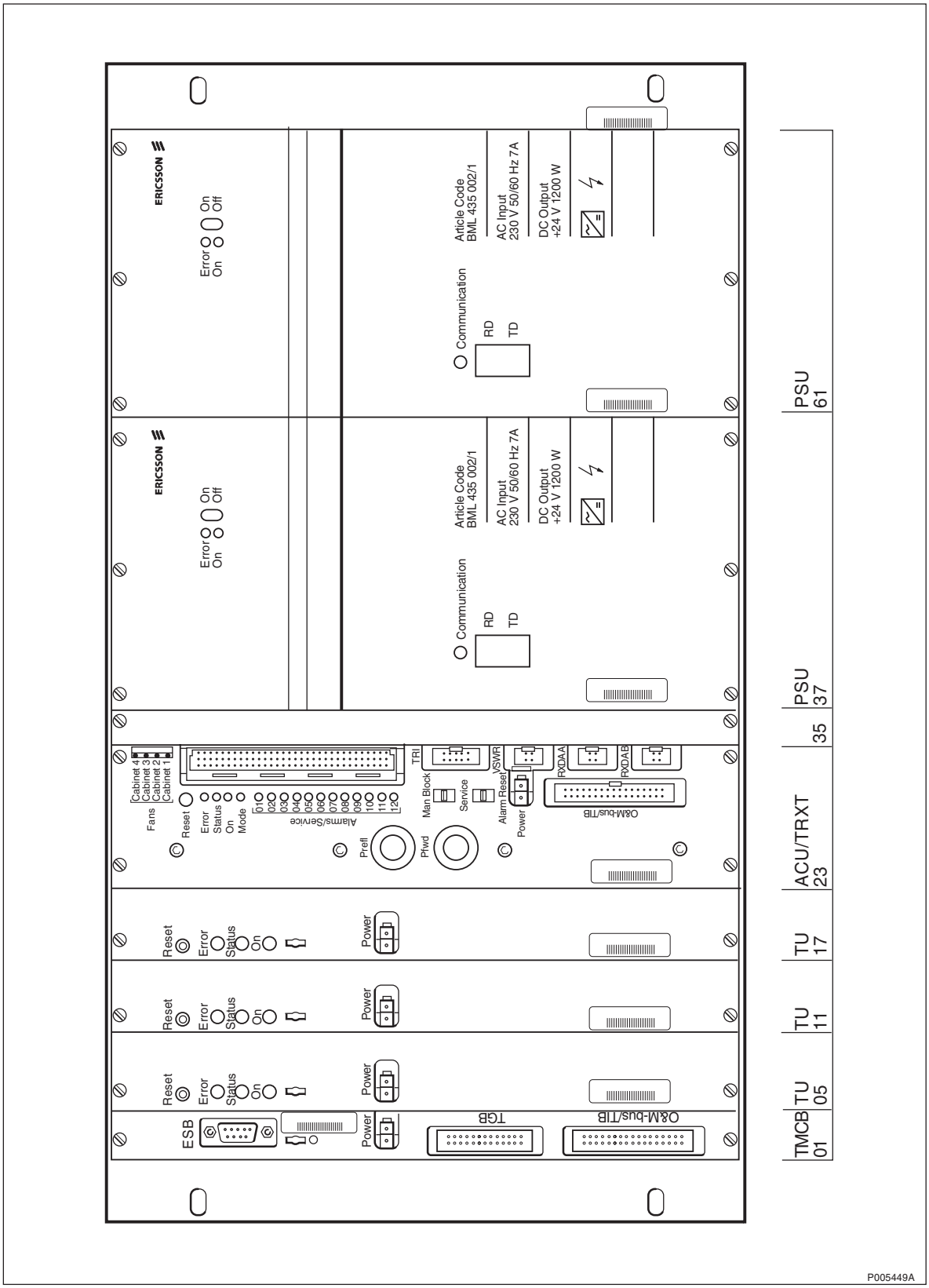
1) Only installed in the first cabinet in each cell.

2) Redundant PSU

3) Optional

Screws 80/SBA 331 030/1006 are used for mounting units in the magazine.

The TM/PSU magazine is to be installed in cabinet, vertical position 12.




P005449A

*Figure 27 TM/PSU magazine equipped (230 V AC)*

## 5.8 TM/PSU Magazine BFL 119 74/1 (-48 V DC)

The magazine is designed for mounting the following units:

- Timing Module Connection Board, TMCB
- Timing Unit, TU
- Alarm Collection Unit, ACU
- Power Supply Unit(s), PSU 48

This magazine can be equipped in several different configurations depending on the magazine function.

The TM/PSU magazine is either delivered installed or as a separate unit.

The magazine can be equipped as shown in table 9.

*Table 9 Units to be included in the magazine*

| **Product No.** | **Designation** | **No. of TM/PSUs** |
|---|---|---|
| KRC 131 42/01 | Alarm Collection Unit, ACU | 1 [1) 2)] |
| ROF 366 144/1 | TM Connection Board, TMCB | 1 [1)] |
| ROF 366 143/2 | Timing Unit, TU | 3 [1)] |
| BMR 960 009/1 | Power Supply Unit, PSU (-48 V DC) | 2 |
| SDK 107 60/04 | Dummy front, TMCB | - |
| SDK 107 70/01 | Dummy front | 1 |
| SDK 107 60/06 | Dummy front, TU | 1 |
| SDK 107 60/21 | Dummy front, PSU | - |
| SDK 107 60/12 | Dummy front, ACU | 1 |

[1)] Installed in the first cabinet in each cell.

[2)] Optional

Screws 80/SBA 331 030/1006 are used for mounting units in the magazine.

The TM/PSU magazine to be installed in the cabinet, vertical position 12.

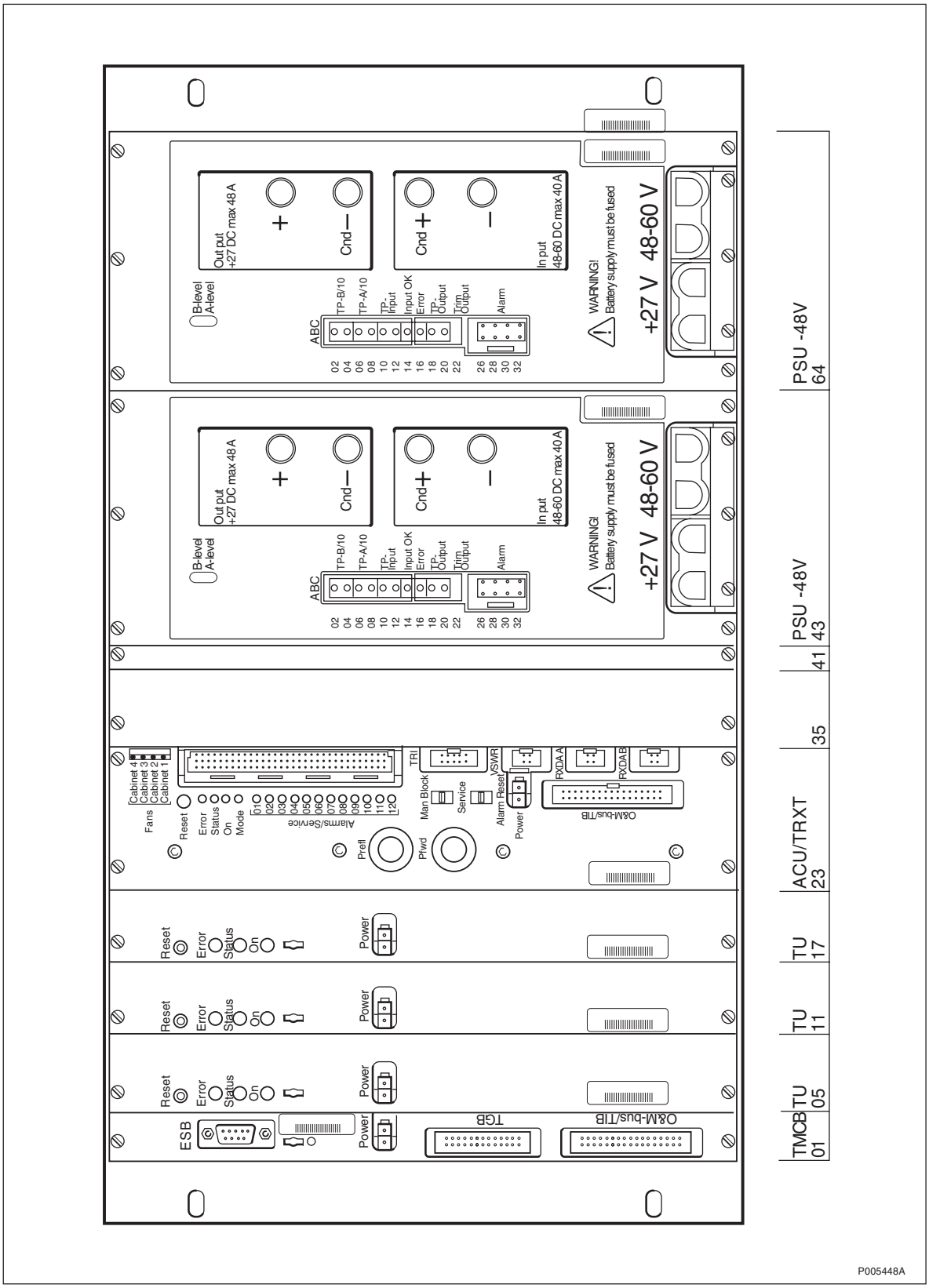



*Figure 28 TM/PSU magazine equipped (-48 V DC)*

## 5.9 TM Magazine BFL 119 76/1 (+24 V DC)

The magazine is designed for mounting the following units:

- Timing Module Connnection Board, TMCB
- Timing Unit, TU
- Alarm Collection Unit, ACU (optional)

The magazine can be equipped as shown in table table 10.

*Table 10 Units to be included in the magazine*

| **Product No.** | **Designation** | **Qty** |
|---|---|---|
| KRC 131 42/01 | Alarm Collection Unit, ACU | 1 [1) 2)] |
| ROF 366 144/1 | TM Connection Board, TMCB | 1 [1)] |
| ROF 366 143/2 | Timing Unit, TU | 3 [1)] |
| SDK 107 60/02 | Dummy front | 1 |
| SDK 107 60/04 | Dummy front, TMCB | - |
| SDK 107 60/06 | Dummy front, TU | - |
| SDK 107 60/12 | Dummy front, ACU | 1 |
| SDK 107 60/24 | Dummy front | 2 |

[1)] Only installed in the first cabinet in each cell.

[2)] Optional

Screws 80/SBA 331 030/1006 are used for mounting units in the magazine.

The TM magazine is used with +24 V DC power supply, and is then installed in the cabinet, vertical position 12.

No TM magazine is needed for the extension cabinet. Therefore, cover vertical position 12 with Dummy front SDK 107 61/06.

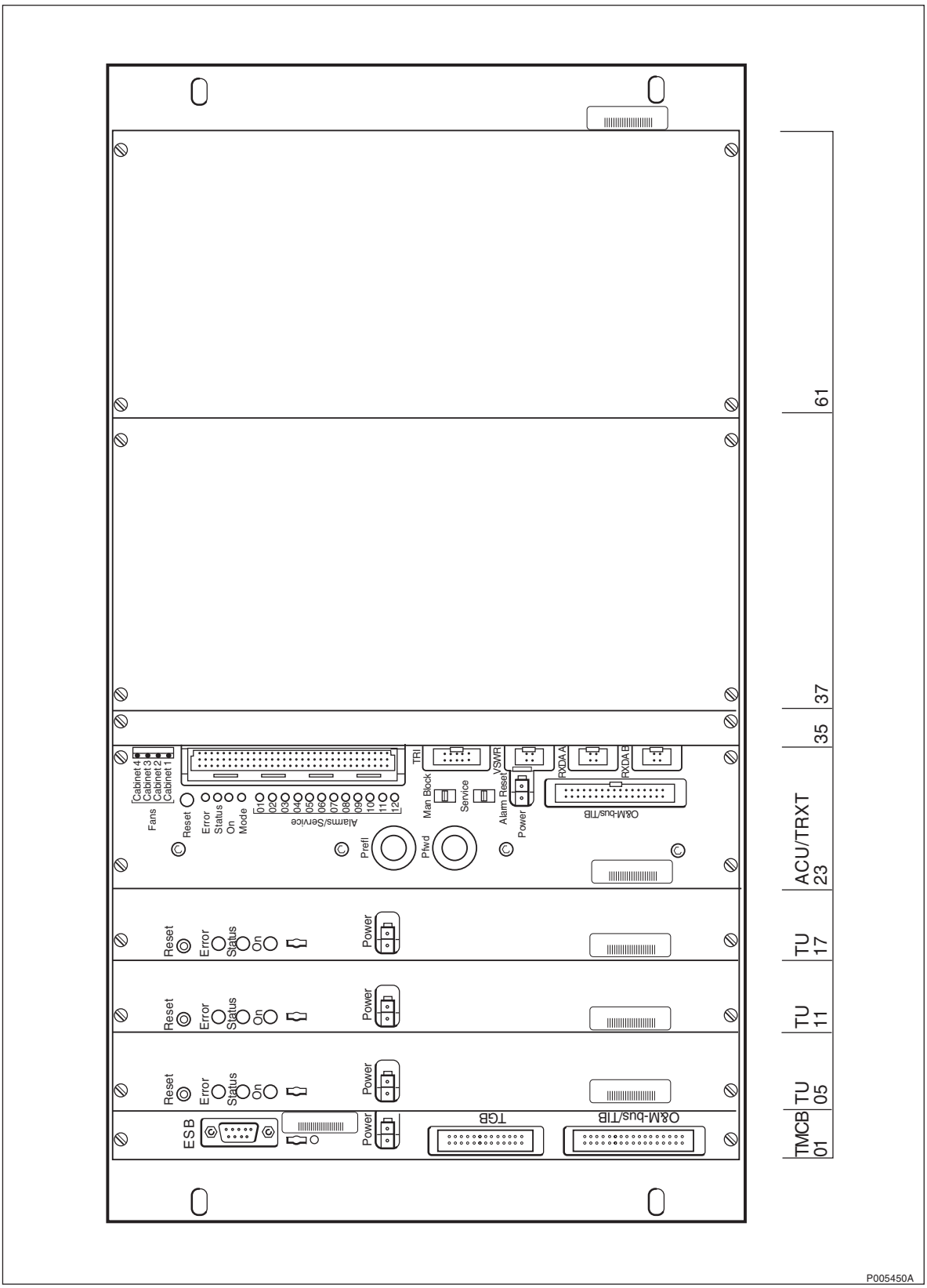



*Figure 29 TM magazine equipped (+24 V DC)*

## 5.10 TRI Magazine BFD 747 504/11

The magazine contains equipment for communication between the radio equipment on site and the Base Station Controller (BSC).

The TRI magazine is designed in conventional BYB mechanics with additional brackets and cover to fit the 19" cabinet mechanics.

The magazine is delivered as a completely mounted unit, equipped as shown in table 11 below. See also figure 30.

The TRI magazine is to be installed in cabinet, vertical position 02.

In cabinets where TRI is not installed, dummy front SDK 107 61/06 and connector bracket SXK 107 2691/1 for ACU and PSU cabling, is to be mounted.

*Table 11 Summary of units to be included in the magazine*

| **Product No.** | **Designation** | **Qty** |
|---|---|---|
| ROF 137 7904/1 | DC/DC converter | 1 |
| ROF 131 4445/2 | STRP board | 1 |
| ROF 131 995/7 | EMRP board | 1 |
| ROF 137 7846/1 | ETB board | 1 |
| ROF 137 7870/1 | RTT board | 1 |
| ROF 137 7856/2 | Time Switch TSW3 | 1 |
| ROF 131 4254/1 | V.24 interface | 1 |
| ROF 131 4255/1 | Alarm board EXALI | 1 |
| TSR 204 0201/500 | Bus cable | 2 [1)] |
| RNV 991 223/004 | Terminator strap | 2 |
| RNV 991 712/001 | Reset strap | 1 |
| RNV 321 0111 | Address strap | 1 |

[1)] In this configuration one is needed.

TRI can be configured in different ways. The STRP, ETB and RTT boards, as well as cables between the TRI and the cabinet connection field, must be ordered separately. See figure 12 in this sub-section and figure 5 in sub-section 3.1.

In a 3-sector site, more ETB and RTT boards will be needed.

Cables between TRI and cabinet connection field must be ordered separately.

**Note** TRI magazine BFD 747 504/11 replaces TRI magazine BFL 119 71/1 (BFD 747 504). See section 6.0.

### 5.11 TRI Magazine BFD 747 504/22

Equipped as BFD 747 504/11 but having two STRP, two ETB and two RTT boards.

Cables between TRI and cabinet connection field to be ordered separately.

### 5.12 TRI Magazine BFD 747 504/33

Equipped as BFD 747 504/11 but having two STRP, three ETB and three RTT boards.

Cables between TRI and cabinet connection field must be ordered separately.

### 5.13 TRI Magazine BFD 747 504/111

Equipped as BFD 747 504/11 but complemented with EMRPS board ROF 131 8217/1 for LAPD concentration. Cables between TRI and cabinet connection field must be ordered separately.

### 5.14 TRI Magazine BFD 747 504/122

Equipped as BFD 747 504/22 but complemented with EMRPS board ROF 131 8217/1 for LAPD concentration. Cables between TRI and cabinet connection field must be ordered separately.

### 5.15 TRI Magazine BFD 747 504/133

Equipped as BFD 747 504/33 but complemented with EMRPS board ROF 131 8217/1 for LAPD concentration. Cables between TRI and cabinet connection field must be ordered separately.

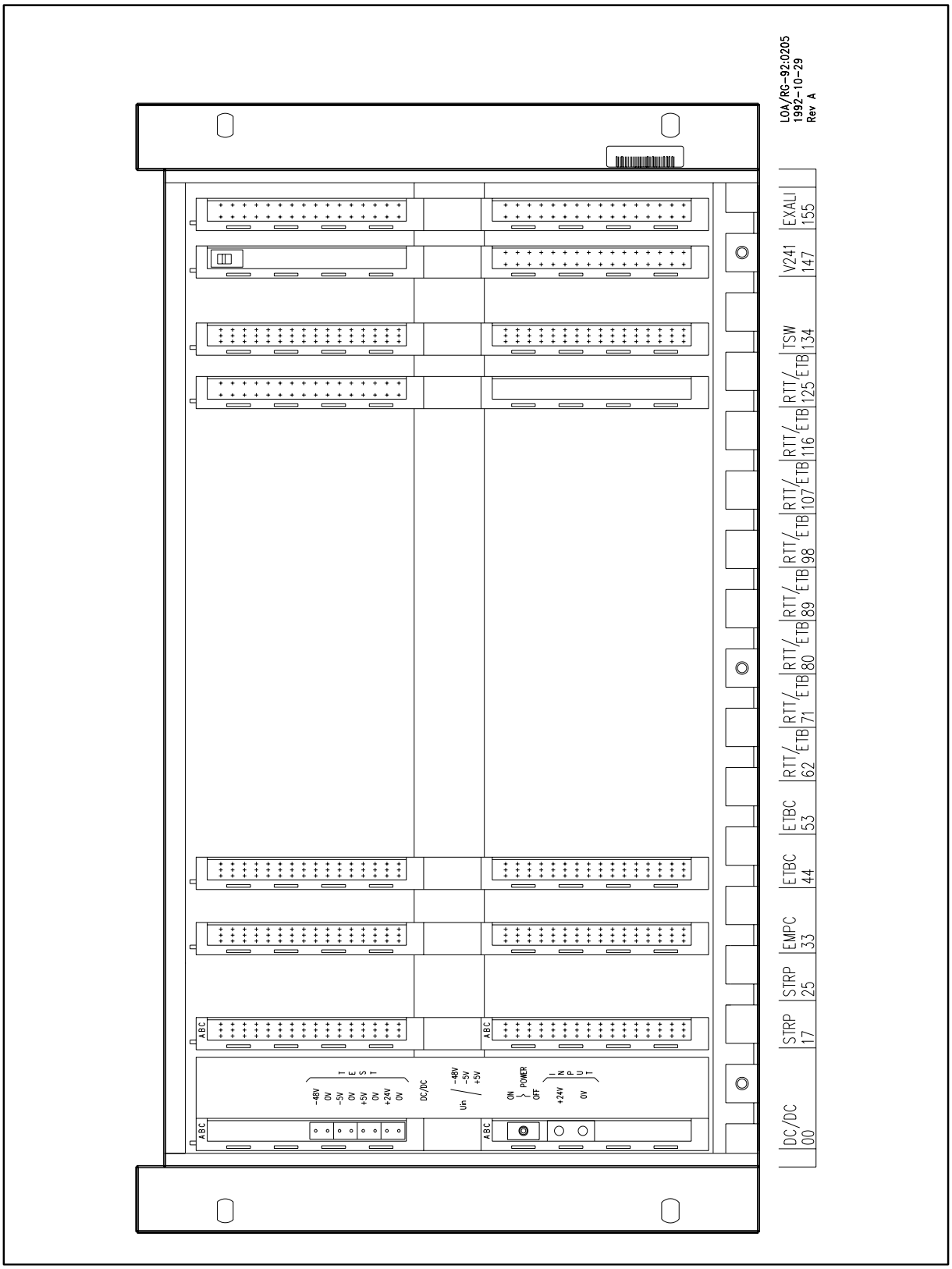



*Figure 30 TRI magazine equipped*

# 6 Internal Cabling

## 6.1 General

For all cabling, see the Internal cabling diagrams.

The cabling within cabinets may vary, depending on cabinet type and version.

## 6.2 Internal Cabling Definition

Internal cabling is all cabling within the cabinet and is defined as follows:

- +24 V DC distribution cabling from the IDM unit
- Cabinet bus cabling
- Signal cabling to cabinet connection field
- Alarm cabling
- RX cabling
- TX cabling

The cabinet is delivered with the internal cabling partly installed.

## 6.3 Power Supply Distribution Cabling

### 6.3.1 IDM - PSU - IDM

The cables differ if -48V DC or 230V AC is used.

**Note** A capacitor unit is needed when -48V DC is selected.

### 6.3.2 IDM Units

Internal +24V DC is distributed from the IDM to all installed units. Cables are independent of type of power source and input voltage.

## 6.4 Cabinet Bus Cabling

The Cable Connection Boards (CCBs), vertical cabinet bus cabling and the bus terminators are installed at delivery.

The CCB boards are mounted in the left cable shaft in the cabinet, one at each shelf position. Cabinet bus cabling distributes two separate buses:

- The TX bus, distributed via jack 3 on the CCB board

- The TIB/O&M bus, distributed via jack 4 and 5 on the CCB board.

## 6.5 Signal Cabling to Cabinet Connection Field on Cabinet Top

The signal cabling contains:

- Connection of Line Interface Buses (LIB) between TRXC units and RTT boards via the Connection field.
- Connection of 2 MB/s PCM lines, distributed by 75 ohm coaxial cable or by 120 ohm pair cable.
- Internal cabling in the Transceiver Remote Interface (TRI) magazine.
- Connection of alarm cables from power supply and ACU.

## 6.6 RX Cabling

The RX cabling from the RX input via the bandpass filter is pre-installed and has to be connected to the multicoupler system and the Radio Receiver (RRX) unit.

## 6.7 TX Cabling

The TX cabling from the TX outlet via the bandpass filter is installed and has to be connected to the combiner system and the RTX.

## 6.8 Alarm Cabling

Supervised objects include:

- Fans
- TX antenna (VSWR)
- RXDAs

The Alarm Collection Unit (ACU) collects alarms from fans, VSWR and RXDAs alarms.

**Note** ACU alarms in cell 2 and 3 have to be wired back to the TRI via the DF.

Fan alarms within the same cell but located in cabinets 2, 3 or 4, have to be wired back to ACU through the CIC board.

For further information, see External alarms in this document.

## 6.9 Cabinet Bus

The CCB boards ROA 119 8535/3 are the connection field for vertical and horizontal bus cable plugs. See figure 31 below.

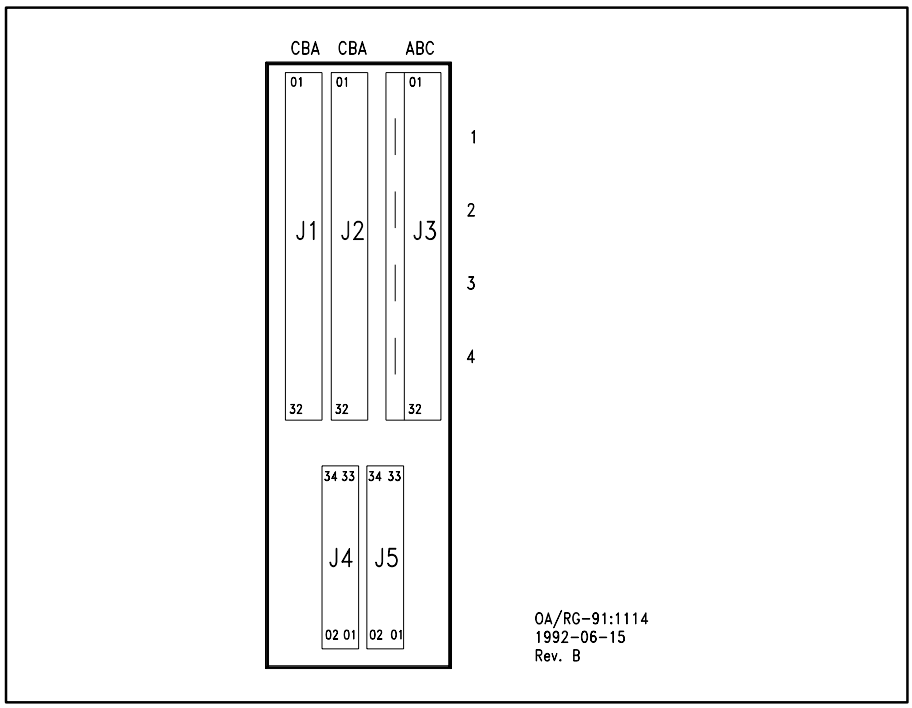



*Figure 31 A CCB board ROA 119 8535/3*

CCB boards with vertical bus cables and connectors are factory installed according to table 12 and figure 32.

*Table 12*

| Fig. 32, Item | Product No. | Description | Pcs | Note |
|---|---|---|---|---|
| a | RPM 513 352/1 | Conn. cable CCB-CCB | 3 | 1) |
| b | RPM 513 352/2 | Conn. cable CCB-CCB | 1 | 1) |
| c | RPM 513 393/1 | Conn. cable O&M/TIB | 1-2 | 2) |
| d | RNV 991 2005/1 | Str. Plug TXBUS | 14 | 1) |
| e | RNV 403 215/1 | Str. Plug Top CCB | 1 | 1) |
| f | RNV 403 215/2 | Str. Plug Low CCB | 1 | 1) |
| g | ROA 119 8535/3 | Board CCB | 5 | 1) |
| h | RPM 513 394/1 | Conn. cable OM/TIB-TRXC | 2-3 | 2) |
| i | RPM 513 395/1 | Conn. cable OM/TIB-RTX | 1 | |

| | | | | |
|---|---|---|---|---|
| k | RPM 513 391/1 | Conn. cable TX/BUS-TRXC | 1 | |
| l | RPM 513 390/1 | Conn. cable TX/BUS-TRXC | 1 | |
| m | RPM 513 392/1 | Conn. cable TX/BUS-RTX | 1 | |

[1] Factory installed

[2] 2 pcs with extension cabinet

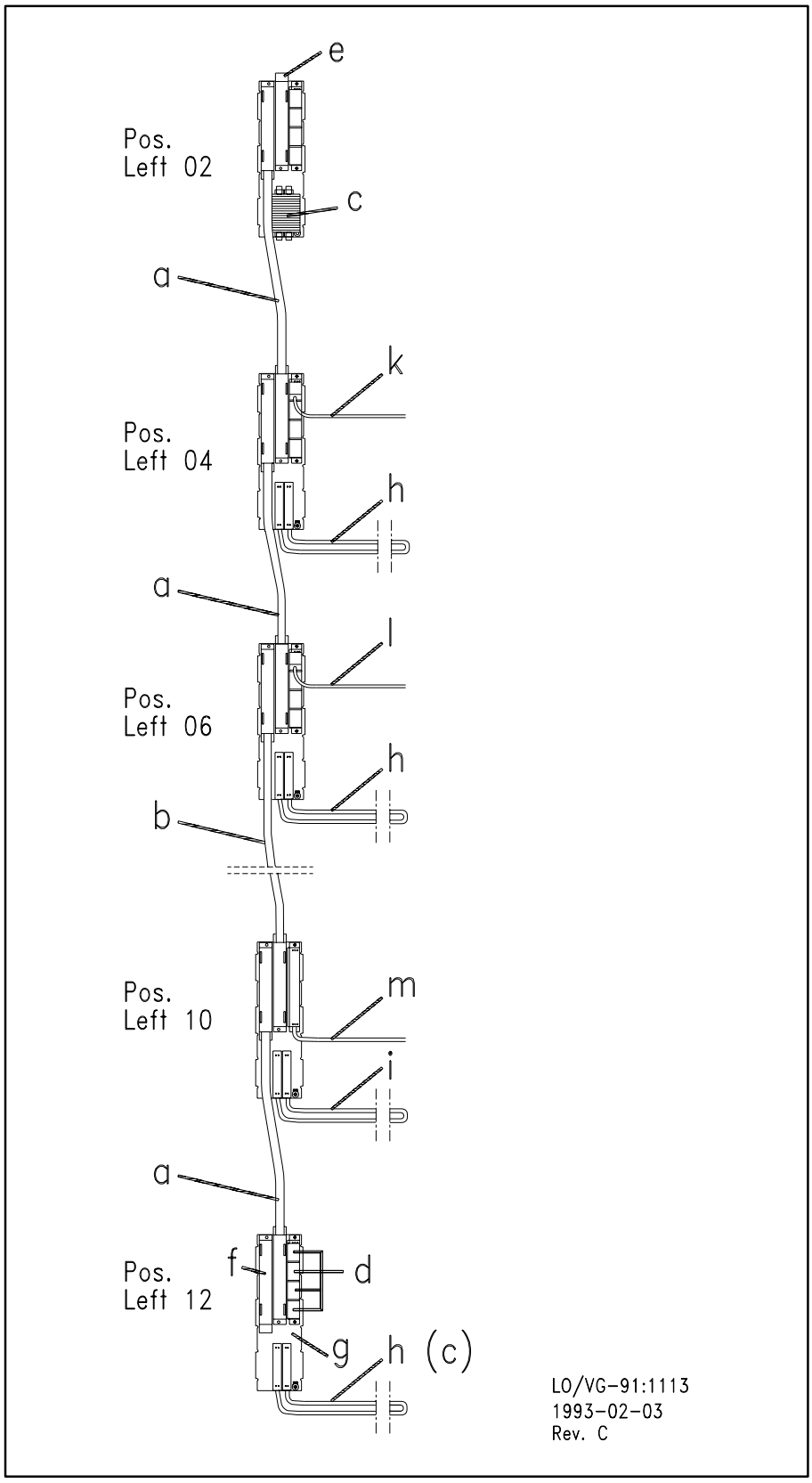



*Figure 32 CCB connection cables and plugs*

# 7 External Cabling

## 7.1 General

For all cabling diagrams, see 3.3; External cabling.

## 7.2 External Cabling Definition

The external cabling is all cabling to the RBS 200 cabinet and is divided up as follows:

- AC and DC power cabling
- Signal cabling
- Optical fibre cabling
- Alarm cabling
- Antenna feeders and jumpers

For the Antenna feeders and jumpers, see General Installation Instructions.

*General Installation Instructions LZN 302 49*

### Cable Labelling

All cables shall be labelled. See section 3.4.

Labelling assistance of the external cabling can be obtained from the Installation Engineering Radio department.

## 7.3 Power Supply Cabling, 230 V AC

The Power Supply Units (PSU:s) installed in the RBS 200 cabinets will be fed from 230V AC, 50-60 Hz.

Each RBS 200 cabinet will be connected to a back up battery, supplying the cabinet with +24V DC during a mains power failure.

### 7.3.1 DC Cabling

**CAUTION**

Read Safety instructions regarding handling of batteries.

When connecting Batteries (+24V DC), two cables must be laid between the BIM module and the connection field in the IDM.

- BIM 1 serves cabinet A1
- BIM 2 serves cabinet B1
- BIM 3 serves cabinet C1

**Battery Cable**

The selected cable area depends on the distance (or more correctly, the voltage drop) between the BIM and IDM units.

1. Use cable types and lengths shown in table 13 to avoid voltage drop:

*Table 13*

| Lmax, m | Area, $mm^2$ | Product No. |
|---|---|---|
| 14 | 50 | TFK 100 510/08 |
| 20 | 70 | TFK 100 511/08 |
| 42 | 150 | TFK 100 514/08 |

2. Label distribution cables.

3. Connect cables to the battery connection points, marked (+) and (-) on the IDM unit.

**Note** The BIM and IDM cable connectors can take 35 to 150 $mm^2$ cable.

TFK 100 510/08 is normally supplied.

### 7.3.2 AC Cabling, 3 x 2.5 mm2

**DANGER**

High voltage (more than 200 V) is used in the operation of this equipment. Direct contact with mains power can be fatal, and indirect contact via damp items may also be fatal.

**Note** The AC installation must be carried out by an authorised electrician.

**Note** Verify that the external AC mains supply is switched OFF before connecting the AC mains cable.

The electrical installation comprises a 380/220V AC panel with all wiring for lighting, air-conditioners, alarm system, service outlets, power supply units in the RBS 200 cabinets as well as an earth collection bar.

The mains panel shall be provided with a 16 A automatic circuit breaker for each power supply unit.

The earth collection bar shall be connected to an earth electrode system according to IEC standard 1024-1. See also Earthing principles in General Installation Instructions.

 *General Installation Instructions LZN 302 49*

Cabling to the power supply must be min. 3 x 2.5 $mm^2$, run separately to each RBS 200 cabinet. The cables must have a free end long enough to reach the connecting blocks on top of the cabinet.

## 7.4 + 24 V DC

The two distribution cables are connected to the IDM unit terminals on the cabinet top (battery connection point when 230V AC is used).

The distribution panel must be equipped with a power ON/OFF switch.

The cable area shall be selected with regard to the voltage drop and total cable length. See table 14.

The earth collection bar shall be connected to an earth electrode system according to IEC standard 1024-1.

*Table 14*

| Distance to BTS Rack (m) | Cable Type ($mm^2$) | Product No. | Fuse, minimum |
|---|---|---|---|
| 7 | 25 | TFK100508/08 | 80 A |
| 10 | 35 | TFK100509/08 | 80 A |
| 14 | 50 | TFK100510/08 | 80 A |
| 20 | 70 | TFK100511/08 | 80 A |
| 42 | 150 | TFK100514/08 | 80 A |

## 7.5 -48 V DC, DC/DC Converter

Each cabinet shall be equipped with two DC/DC converters.

The distribution panel must be equipped with one power ON/OFF switch for each converter.

All converter units shall be connected to the earth collection bar, which shall be connected to an earth electrode system according to IEC standard 1024-1.

The distribution cables shall be dimensioned according to the voltage drop and total length. See table 14.

### 7.5.1 Adaption

The cables are connected to the IDM unit on the cabinet top. The terminals can only take 16 $mm^2$ cables. Connection of a thicker cable requires a crimp-on adapter on the cable end which will reduce the area to max. 16 $mm^2$.

*Table 15*

| Distance to BTS Rack (m) | Cable Type ($mm^2$) | Product No. | Fuse, minimum |
|---|---|---|---|
| 10 | 16 | TFK100507/08 | 40 A |
| 15 | 25 | TFK100508/08 | 40 A |
| 21 | 35 | TFK100509/08 | 40 A |
| 30 | 50 | TFK100510/08 | 40 A |
| 42 | 70 | TFK100511/08 | 40 A |

## 7.6 Signal Cabling

The signal cabling consists of prefabricated cables, as follows:

- LIB cabling
- PCM cabling
- External alarm cabling

Signal cables shall be placed in cable tray installed on the cable ladder.

### 7.6.1 LIB Cabling

The LIB cables are delivered as prefabricated shielded cables with connectors on both ends. The cables may in some configurations be longer than needed.

- Place excess cable in the cable tray, forming S-curve(s) as shown in figure 33.

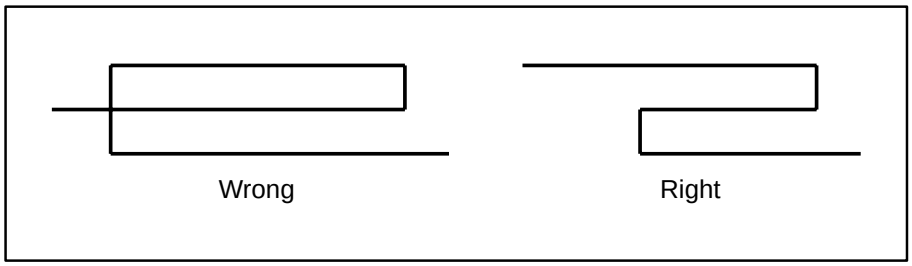



*Figure 33 Forming a loop of excess cable*

**LIB-bus**

The LIB-bus connects max. four TRXs in each cabinet. The TRI, normally installed in the A1 cabinet, can serve up to six cabinets.

- Connect the LIB-bus to the cabinet connection field according to figure 1, section 3.3.

**Distance**

**Note** Distance between cabinet A1, B1 to C1 is limited, due to the length (6.5 m) of the cables. The maximum permitted length of the LIB-Bus cables is 18 m.

### 7.6.2 PCM Cabling

The PCM cables, 75 ohm coaxial or 120 ohm pair cables, connect the 2 Mb/s bitstreams between the Distribution Field (DF) and the ETB board (s) in the TRI magazine, placed in RBS 200 cabinet A1.

The cables are prefabricated with one end connectorized with BNC for 75 ohm, DIN connector for 120 ohm, and the other end free, Total cable length is 15 meter.

Each ETB board will be connected with one cable for receive signal and one for transmit signals.

The Distribution Frame (DF) is shown in figure 34.

- Connect the cables to the cabinet connection field on top of cabinet A1 according to figure 2.

**Note** Maximum distance between TRI and transmission terminal: 120 Ω pair cable: 200 m

75 Ω coaxial cable: 250 m

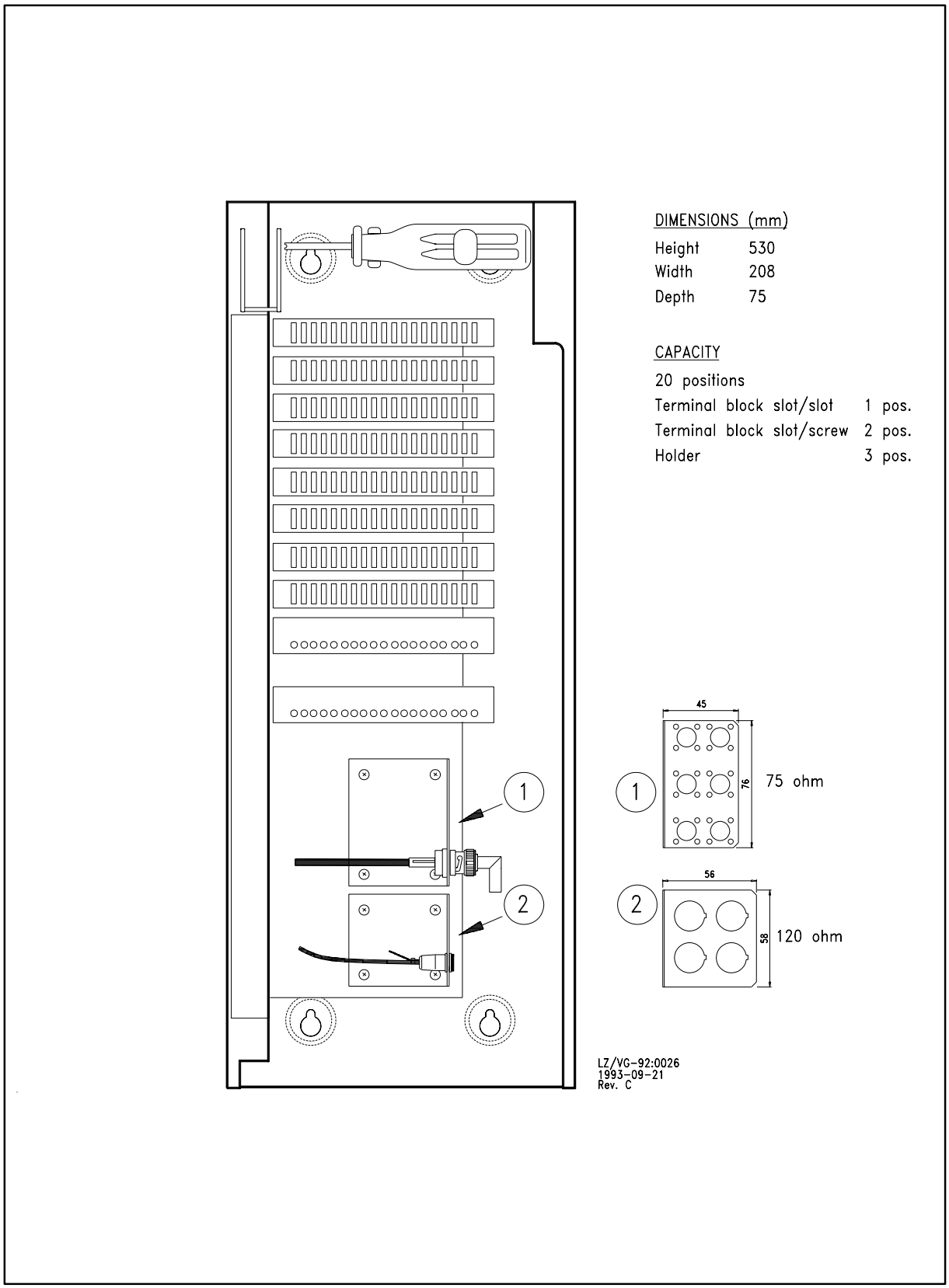



*Figure 34 Distribution Frame, DF*

### 7.6.3 Optical Fibre Cabling (230 V AC only)

For supervision and control of the +24V DC power supply system, a fiber optic cable shall be run from the Power Control Unit (PCU) unit to the Power Supply Unit (PSU) and Battery and Interconnection Module (BIM) units, forming a loop back to the PCU unit.

The following units communicate via fiber optics:

- PCU placed in the same RBS cabinet as the TRI (A1).
- PSU placed in each RBS cabinet.
- BIM placed in the BIM Unit in the Battery Stand. The BIM unit can house 1 - 3 BIM modules, one for each RBS 200 cabinet.

The fibre optic cables are delivered prefabricated with connectors for connection to the fibre optic interface on the unit fronts. The following prefabricated cables are specified:

*Table 16*

| **Designation** | **Product No.** |
|---|---|
| Fibre optic cable, 500 mm | RPM 982 01/500 |
| Ditto, 1000 mm | RPM 982 01/1000 |
| Ditto, 1500 mm | RPM 982 01/1500 |
| Ditto, 10000 mm | RPM 982 01/10000 |
| Cable set, 30 m | BMY 105 045/1 |

Prefabricated cable set BMY 105 045/1, which includes two separately delivered connectors, is used for making the site specific cables for the alarm loop between the battery rack and the RBS 200 cabinet. Before connectorizing, see General Installation Instructions.

*General Installation Instructions LZN 302 49*

The configuration of the power supply system and cables to be used for different configurations are shown in enclosed diagrams.

The fibre optic cables used are very thin and must be protected when installed on cable ladders. Consequently, the FO-cables shall be run through PVC tubes, installed according to General Installation Instructions.

*General Installation Instructions LZN 302 49*

To connect the optical fibre cables to the units installed in the RBS 200 cabinets:

1. Mark cables according to the instruction in sub-section 3.4.

2. Drop cables into the cabinet using the hole in the connection field pos. A, figure 12.

3. Run cables to the respective unit.

4. Place cables in the cable tray and run them into the DF.

5. Run the cables through the cable entries into the DF and cut them in suitable lenghths for connection to the coaxial connection field.

6. Connect the cables to the coaxial connectors using crimping tools: See General Installation Instructions.

*General Installation Instructions* *LZN 302 49*

### 7.6.4 External Alarms

External alarms from Fire Alarm Panel, Air Conditioner, Door Alarm control units, etc. can be connected to the RBS 200 system for transfer and display of remote alarms to the Maintenance Organization.

There is a possibility of connecting 32 alarms to the EXALI board in the TRI but some alarm positions are occupied by internal alarms for ACU and PSU.

Depending on power supply system chosen, a number of alarms for free use are available. See table 17 below.

*Table 17*

| **Power Supply** | **Number of External Alarms** | | |
|---|---|---|---|
| | **1 cell site** | **2 cell site** | **3 cell site** |
| 230 V AC | 23 | 19 | 15 |
| +24 V DC | 28 | 24 | 20 |
| -48 V DC | 26 | 20 | 14 |

Free and occupied alarm positions are shown in table 18, table 19 and table 20.

1. Connect cable RPM 513 338 to the cabinet connection field with the connector.

2. Connect the free end of the cable to the Distribution Field (DF). See recommendations in table 18, table 19 and table 20.

3. Connect customers remote alarms to the DF.

4. Cross-connect according to the tables but do not cross-connect internal alarms in the master cabinet where the TRI is located since these alarms are already connected.

5. Use a marking plug (product number 769 338/1) to mark the alarm already in use. See figure 35.

   The marking plug marks the individual pairs in termination blocks.

Alarm cabling, internal and external, see figure 36, figure 37 and figure 38. For further information, see:

Master cabinet internal, section 3.1, figure 10.

Extension cabinet internal, section 3.2, figure 8.

Master cabinet to DF, section 3.3, figure 2.

Extension cabinet to Master cabinet, section 3.3, figure 6-9.

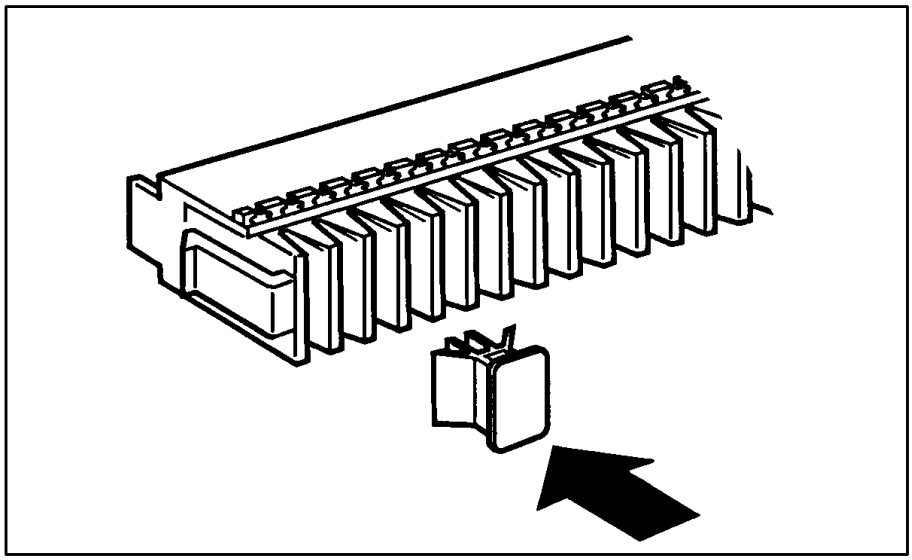


*Figure 35 Marking plug for marking internally used alarms in the DF*

*Table 18 Recommended alarm connections for 230 V AC power supply*

| **EXALI Input** | **Description** | **Distribution Frame Cross-Connection** | |
|---|---|---|---|
| | | **To** | **From** |
| 0 | | P1/01a,b | |
| 1 | | P1/02a,b | |
| 2 | | P1/03a,b | |
| 3 | | P1/04a,b | |
| 4 | For customer use | P1/05a,b | |
| 5 | | P1/06a,b | |
| 6 | | P1/07a,b | |
| 7 | | P1/08a,b | |
| 8 | | P1/09a,b | P7/01ab |
| 9 | Cell C | P1/00ab | P7/02ab |
| 10 | ACU 3 [1)] | P2/01ab | P7/03ab [1)] |
| 11 | | P2/02ab | P7/04ab |
| 12 | | P2/03ab | P5/01ab |
| 13 | Cell B | P2/04ab | P5/02ab |
| 14 | ACU 2 [1)] | P2/05ab | P5/03ab [1)] |
| 15 | | P2/06ab | P5/04ab |

| **EXALI Input** | **Description** | | **Distribution Frame Cross-Connection** | |
|---|---|---|---|---|
| | | | **To** | **From** |
| 16 | 1: VSWR | | P3/01ab | |
| 17 | 2: RXDA (1) | Cell A | P3/02ab | |
| 18 | 3: RXDA (2) | ACU 1 | P3/03ab | |
| 19 | 4: FAN ALARM | | P3/04ab | |
| 20 | | | P3/05ab | |
| 21 | For customer use | | P3/06ab | |
| 22 | | | P3/07ab | |
| 23 | | | P3/08ab | |
| 24 | Alarm A2, Power supply | | P3/09ab | |
| 25 | Alarm A2, Power supply | | P3/00ab | |
| 26 | Observation O1, Power supply | | P4/01ab | |
| 27 | Alarm from Mains supply | | P4/02ab | |
| 28 | Under-voltage alarm, Power supply | | P4/03ab | |
| 29 | | | P4/04ab | |
| 30 | For customer use | | P4/05ab | |
| 31 | | | P4/06ab | |

[1)] Alarms from sectors B and C.

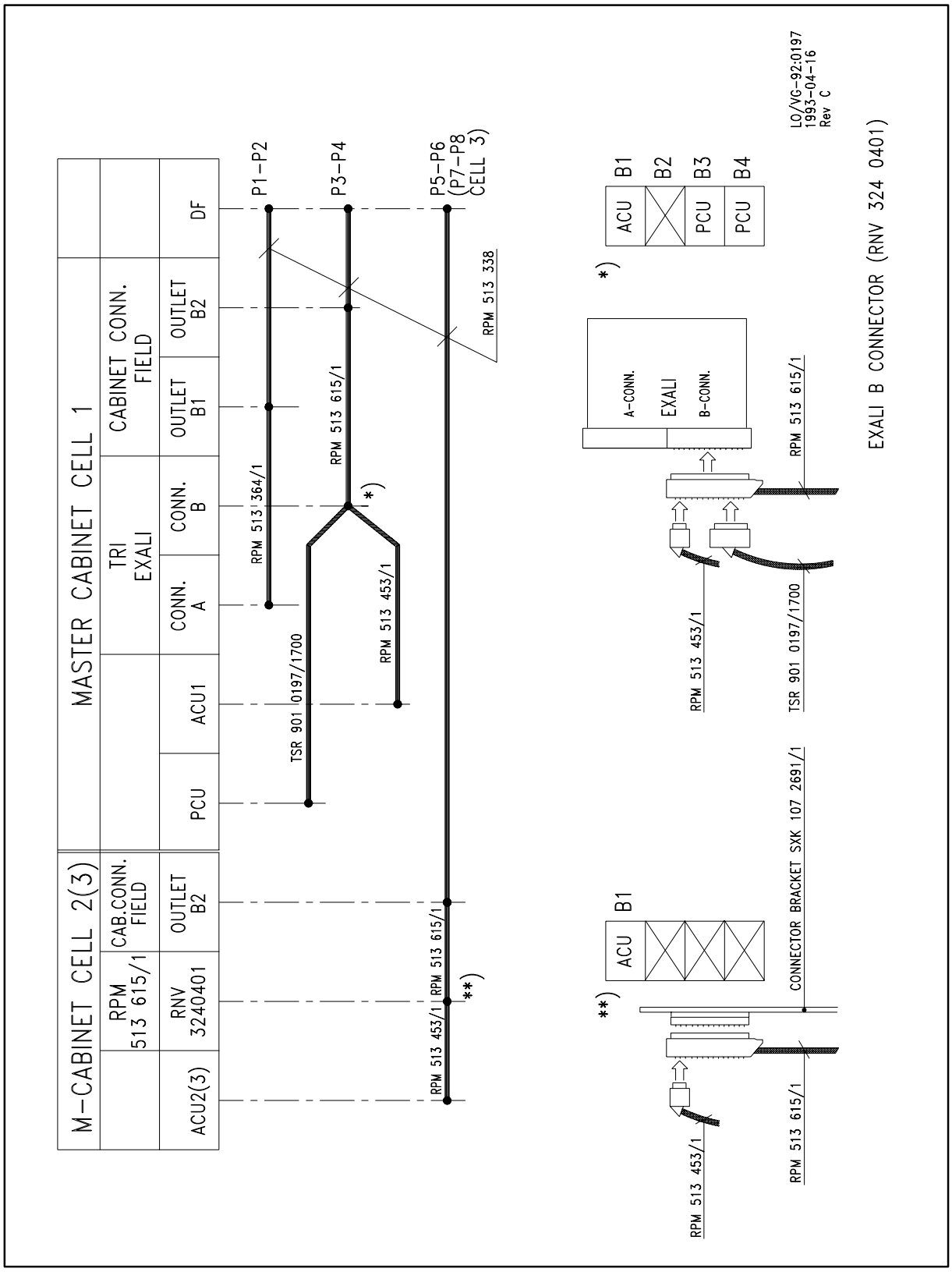



*Figure 36 230 V AC alarm connection cabling diagram*

*Table 19 Recommended alarm connections for -48 V DC power supply*

| **EXALI Input** | **Description** | | **Distribution Frame Cross-Connection** | |
|---|---|---|---|---|
| | | | **To** | **From** |
| 0 | | | P1/01a,b | |
| 1 | | | P1/02a,b | |
| 2 | | | P1/03a,b | |
| 3 | | | P1/04a,b | |
| 4 | For customer use | | P1/05a,b | |
| 5 | | | P1/06a,b | |
| 6 | | | P1/07a,b | |
| 7 | | | P1/08a,b | |
| 8 | | | P1/09a,b | P7/01ab |
| 9 | Cell C | | P1/00ab | P7/02ab |
| 10 | ACU 3 [1)] | | P2/01ab | P7/03ab [1)] |
| 11 | | | P2/02ab | P7/04ab |
| 12 | | | P2/03ab | P5/01ab |
| 13 | Cell B | | P2/04ab | P5/02ab |
| 14 | ACU 2 [1)] | | P2/05ab | P5/03ab [1)] |
| 15 | | | P2/06ab | P5/04ab |
| 16 | 1: VSWR | | P3/01ab | |
| 17 | 2: RXDA (1) | Cell A | P3/02ab | |
| 18 | 3: RXDA (2) | ACU 1 | P3/03ab | |
| 19 | 4: FAN ALARM | | P3/04ab | |
| 20 | PSU 2 | | P3/05ab | P5/05ab |
| 21 | | | P3/06ab | P5/06ab |
| 22 | 1: INPUT TO | PSU 1 | P3/07ab | |
| 23 | 2: OUTPUT FROM | | P3/08ab | |
| 24 | PSU 3 | | P3/09ab | P7/05 |
| 25 | | | P3/00ab | P7/06 |
| 26 | | | P4/01ab | |
| 27 | | | P4/02ab | |
| 28 | For customer use | | P4/03ab | |

| EXALI Input | Description | Distribution Frame Cross-Connection | |
|---|---|---|---|
| | | **To** | **From** |
| 29 | | P4/04ab | |
| 30 | | P4/05ab | |
| 31 | | P4/06ab | |

[1)] Alarms from sectors B and C.

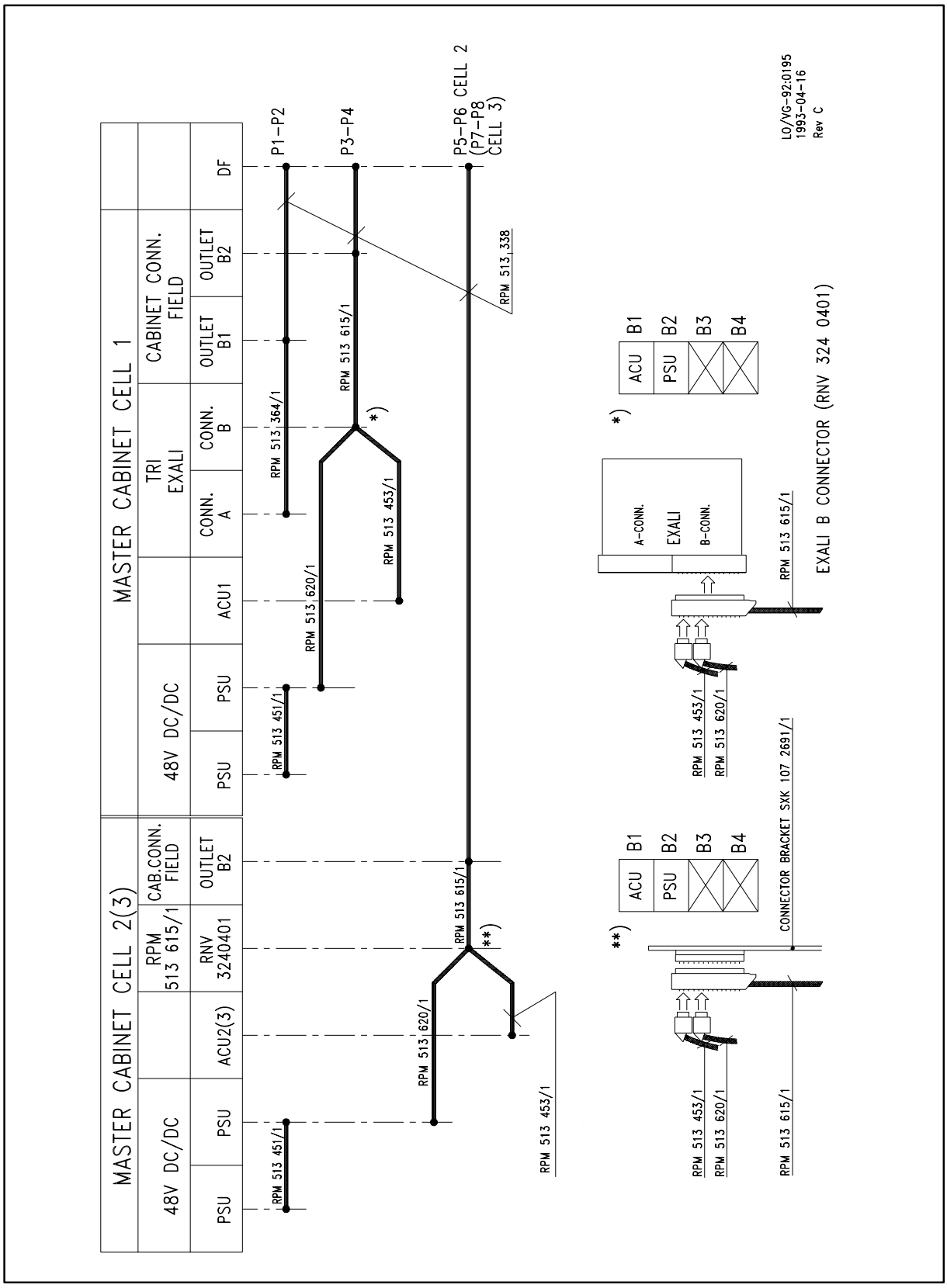



*Figure 37 -48 V DC Alarm connection cabling diagram*

*Table 20 Recommended alarm connections for +24 V DC power supply*

| **EXALI Input** | **Description** | | **Distribution Frame Cross-Connection** | |
|---|---|---|---|---|
| | | | **To** | **From** |
| 0 | | | P1/01a,b | |
| 1 | | | P1/02a,b | |
| 2 | | | P1/03a,b | |
| 3 | | | P1/04a,b | |
| 4 | For customer use | | P1/05a,b | |
| 5 | | | P1/06a,b | |
| 6 | | | P1/07a,b | |
| 7 | | | P1/08a,b | |
| 8 | | | P1/09a,b | P7/01ab |
| 9 | Cell C | | P1/00ab | P7/02ab |
| 10 | ACU 3 [1)] | | P2/01ab | P7/03ab [1)] |
| 11 | | | P2/02ab | P7/04ab |
| 12 | | | P2/03ab | P5/01ab |
| 13 | Cell B | | P2/04ab | P5/02ab |
| 14 | ACU 2 [1)] | | P2/05ab | P5/03ab [1)] |
| 15 | | | P2/06ab | P5/04ab |
| 16 | 1: VSWR | | P3/01ab | |
| 17 | 2: RXDA (1) | Cell A | P3/02ab | |
| 18 | 3: RXDA (2) | ACU 1 | P3/03ab | |
| 19 | 4: FAN ALARM | | P3/04ab | |
| 20 | | | P3/05ab | |
| 21 | | | P3/06ab | |
| 22 | | | P3/07ab | |
| 23 | | | P3/08ab | |
| 24 | For customer use | | P3/09ab | |
| 25 | | | P3/00ab | |
| 26 | | | P4/01ab | |
| 27 | | | P4/02ab | |
| 28 | | | P4/03ab | |

| EXALI Input | Description | Distribution Frame Cross-Connection | |
|---|---|---|---|
| | | **To** | **From** |
| 29 | | P4/04ab | |
| 30 | | P4/05ab | |
| 31 | | P4/06ab | |

[1)] Alarms from sectors B and C.

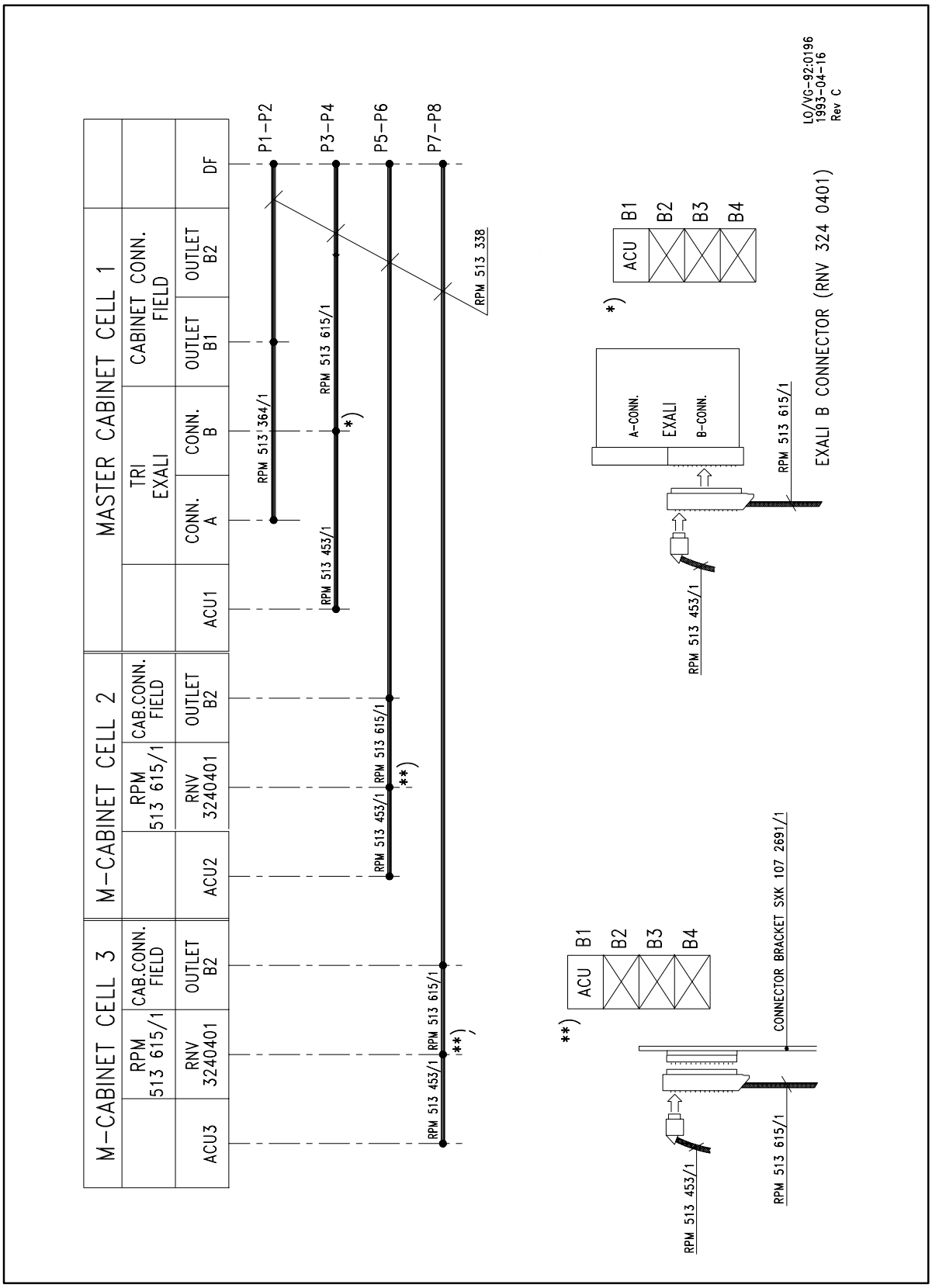



*Figure 38 +24 V DC alarm connection cabling diagram*

**Cable installation method**

1. Use a prefabricated cable type RPM 513 338 as shown in figure 38. The cable has one end fitted with a connector and the other end free. Total cable length is 15 meters.

2. Label cables according to instructions in section 3.4.

3. Connect the cable to the cabinet connection field on top of cabinets, according to figure 12, sub-section 3.0.

4. Place the cable in the cable tray and run it to the DF.

5. Run the cable through the cable entry into the cabinet.

6. Remove cable mantling according to figure 39.

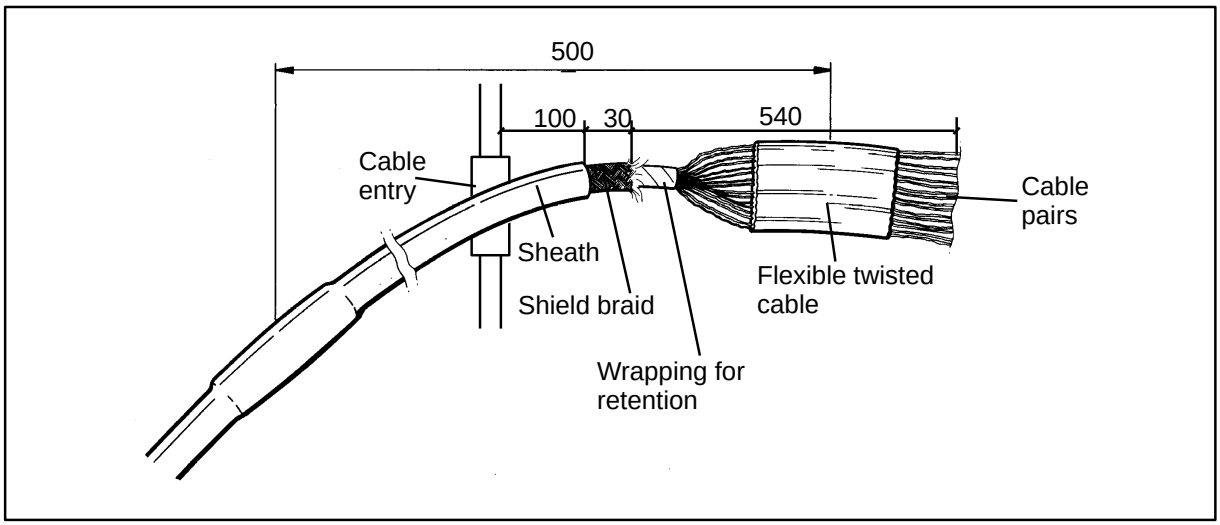



*Figure 39 Connecting the cable type RPM 513 338*

7. Split the cable, pairs 1-10 for connection to terminal block P1 (P3) and pairs 11-16 for connection to terminal block P2 (P4). Cut off any excess cable.

8. Start the termination at the lowest block.

9. Pass conductors through the wire guide on the rear side of the block.

10. Make a loop of the conductors on the rearside of the block and fasten the block by snapping it into the block holder.

11. Distribute wires over the connection slots according to the cable colour code.

12. Position terminal tool against the slot and the wire, see figure 40. Press the tool firmly into the slot. The wire is now connected and cut at the same time. Remove the tool and excess wire.

13. Connect the shield braid of the cable to the earth connection bar.

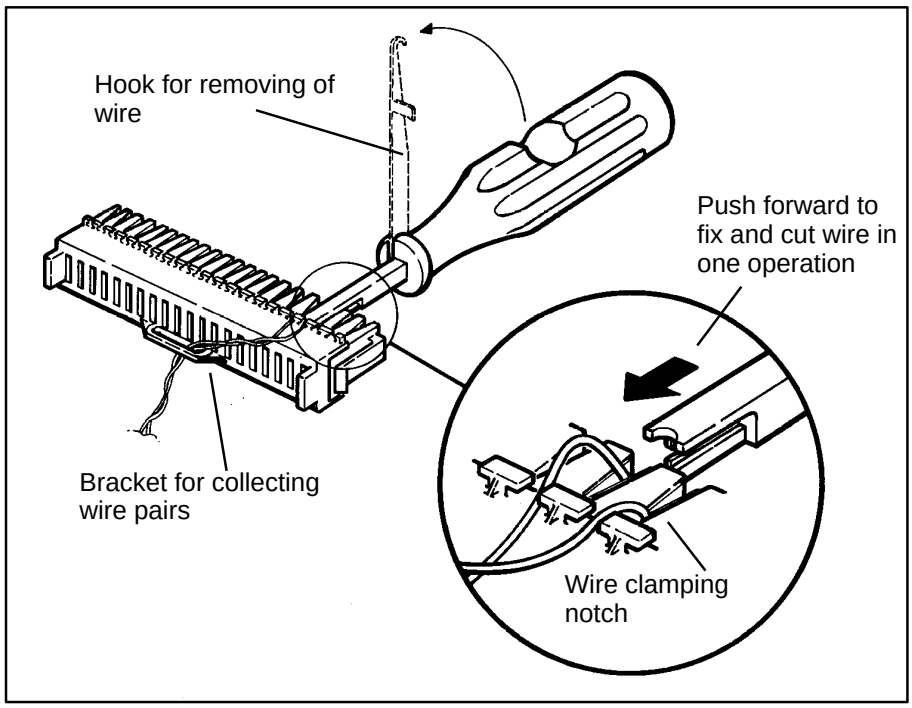



*Figure 40 How to use tool LSY 138 252*

# 8 Earthing

For Earthing methods, see General Installation Instructions.

*General Installation Instructions LZN 302 49*

# Master Cabinet BDE 201 162/-

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# 1 Equipment specification

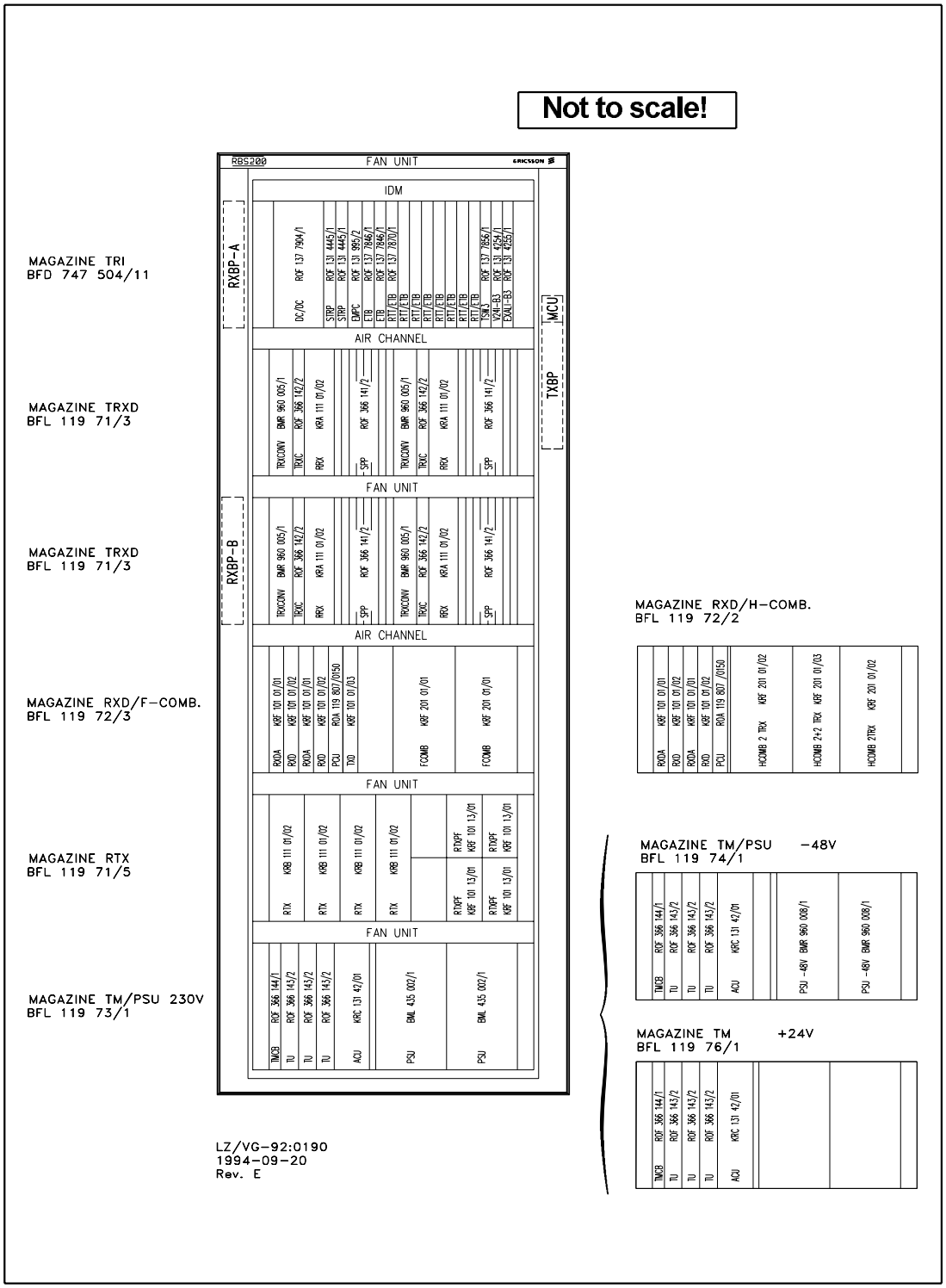


*Figure 1 RBS 200 Master cabinet, fully equipped*

## 1.1 Index register

The following selections of the cabinet are available:

- Standard or extended RXBP filter
- Power Supply +24V DC, –48V DC or 230V AC
- Filter combiner with a 4- or 6-pole TXBP filter
- Hybrid combiner
- With or without diversity

*Table 1 Index Register*

| Master cabinet | RXBP type | Power Supply | COMB type | Receiver Diversity | Index |
|---|---|---|---|---|---|
| M | Std | 24 | F4 | No | /101 |
| M | Std | 24 | F4 | Yes | /102 |
| M | Std | 24 | F6 | No | /103 |
| M | Std | 24 | F6 | Yes | /104 |
| M | Std | 24 | H | No | /105 |
| M | Std | 24 | H | Yes | /106 |
| M | Std | 230 | F4 | No | /107 |
| M | Std | 230 | F4 | Yes | /01 X A12 |
| M | Std | 230 | F6 | No | /109 |
| M | Std | 230 | F6 | Yes | /05 X E12 |
| M | Std | 230 | H | No | /111 |
| M | Std | 230 | H | Yes | /112 |
| M | Std | -48 | F4 | No | /113 |
| M | Std | -48 | F4 | Yes | /04 X D12 |
| M | Std | -48 | F6 | No | /115 |
| M | Std | -48 | F6 | Yes | /116 |
| M | Std | -48 | H | No | /117 |

| Master cabinet | RXBP type | Power Supply | COMB type | Receiver Diversity | Index |
|---|---|---|---|---|---|
| M | Std | -48 | H | Yes | /118 |
| M | Ext | 24 | F4 | No | /119 |
| M | Ext | 24 | F4 | Yes | /03 X C12 |
| M | Ext | 24 | F6 | No | /121 |
| M | Ext | 24 | F6 | Yes | /122 |
| M | Ext | 24 | H | No | /123 |
| M | Ext | 24 | H | Yes | /124 |
| M | Ext | 230 | F4 | No | /125 |
| M | Ext | 230 | F4 | Yes | /126 |
| M | Ext | 230 | F6 | No | /127 |
| M | Ext | 230 | F6 | Yes | /128 |
| M | Ext | 230 | H | No | /129 |
| M | Ext | 230 | H | Yes | /130 |
| M | Ext | -48 | F4 | No | /131 |
| M | Ext | -48 | F4 | Yes | /132 |
| M | Ext | -48 | F6 | No | /133 |
| M | Ext | -48 | F6 | Yes | /134 |
| M | Ext | -48 | H | No | /135 |
| M | Ext | -48 | H | Yes | /136 |

Master cabinet BDE 201 162/1- is delivered from factory either with some equipment pre-installed or delivered without any pre-installed equipment. In the last case, the equipment is delivered separately according to configuration ordered.

*Table 2*

| Product number | Designation | Qty |
|---|---|---|
| BFL 119 71/3 | Magazine, TRXD 3-4 | 1 |
| KRC 121 02/- Including: | Transceiver 900 MHz 45 W each | 1-4 [1)] |
| - BMR 960 005/1 | TRX 90 W | 1 |
| - KRA 111 01/- | RRX 890-915 MHz | 1 [1)] |
| - KRB 111 01/02 | RTX 935-960 MHz | 1 |

| Product number | Designation | Qty |
|---|---|---|
| - KRF 101 13/01 | RTX PF | 1 [1)] |
| - KRF 101 13/02 | RTX PB | 1 [1)] |
| - ROF 366 141/- | SPP | 8 [1)] |
| - ROF 366 284/- | SPU alt. SPU+ | 1 [1)] |
| - ROF 366 142/2 | TRXC | 1 |
| KRF 101 01/01 | Filter RXDA | 2 |
| KRF 101 01/02 | Filter RXD (Divider) | 2 |
| KRF 101 01/03 | Filter TXD | 1 |
| KRF 201 01/01 | Filter Combiner | 2 [2)] |
| KRF 201 01/02 | H-comb (2 TRX) | 1-2 [2)] |
| KRF 201 01/03 | H-comb (2+2 TRX) | 1 [2)] |
| KRG 101 01/01 Including: | Freq. Generator (Timing Module) | 1 |
| - ROF 366 143/2 | TU | 3 |
| - ROF 366 144/1 | TMCB | 1 |
| BML 435 002/1 | Rectifier 230V AC/+24V DC | 1-2 [3)] |
| BMR 960 009/1 | Converter -48V DC/+24V DC | 2 [3)] |
| ROA 119 807/0150 | PCU (Power Control Unit) | 1 [3)] |
| KRC 131 42/01 | ACU (Alarm Collection Unit) | 1 |
| BMY 201 071/1 including: | Set of parts | 1 |
| - RPM 982 01/500 | Opto cable | 1 |
| - RPM 982 01/1500 | Opto cable | 1 |
| - TSR 901 0197/1700 | Connection cable | 1 |
| BFD 747 504/11 | TRI Magazine | 1 |
| RPM 113 12/01 | Cable, End-link 50 Ω | 1 |
| RPM 113 13/01 | Cable, End-link 50 Ω | 1 |
| RPM 113 14/01 | Cable, U-link 50 Ω | 1 |
| RPM 513 364/1 | Cable, TRI-Ext | 2 |
| RPM 513 389/1 | Power Cable, 24V | 1 |
| RPM 513 423/1 | Connection Cable, PCM/TRI 120 Ω | 1 |
| RPM 513 363/1 | Connection Cable, PCM/TRI 75 Ω | 1 |

**1** See Chapter 4 in this manual for information on TRXD magazine BFL 119 71/3 and IE manual Chapter 10, "Dimensioning and Ordering."

**2** The choice of combiner is made by selecting the index number, which is added to the basic cabinet product number.

**3** The choice of power system is made by selecting the index number,which is added to the basic cabinet product number.

The PCU is only needed when rectifier BML 435 002/1 (230V AC/ +24V DC) is used as power supply. One PCU per site is required.

If a PCU is not installed, mount a dummy front SDK 107 60/5.

## 1.2 Location of magazines

1. Locate the magazines in the omni and sector site cabinet(s) shown in figure 1.

2. Fasten each magazine with the 4 torx screws 03/SBA 121 060/0160 delivered with each cabinet, except for the TRI magazine where the screws are delivered with the magazine.

3. Check that the screws are securely fastened to ensure that a solid contact is obtained between magazine and cabinet.

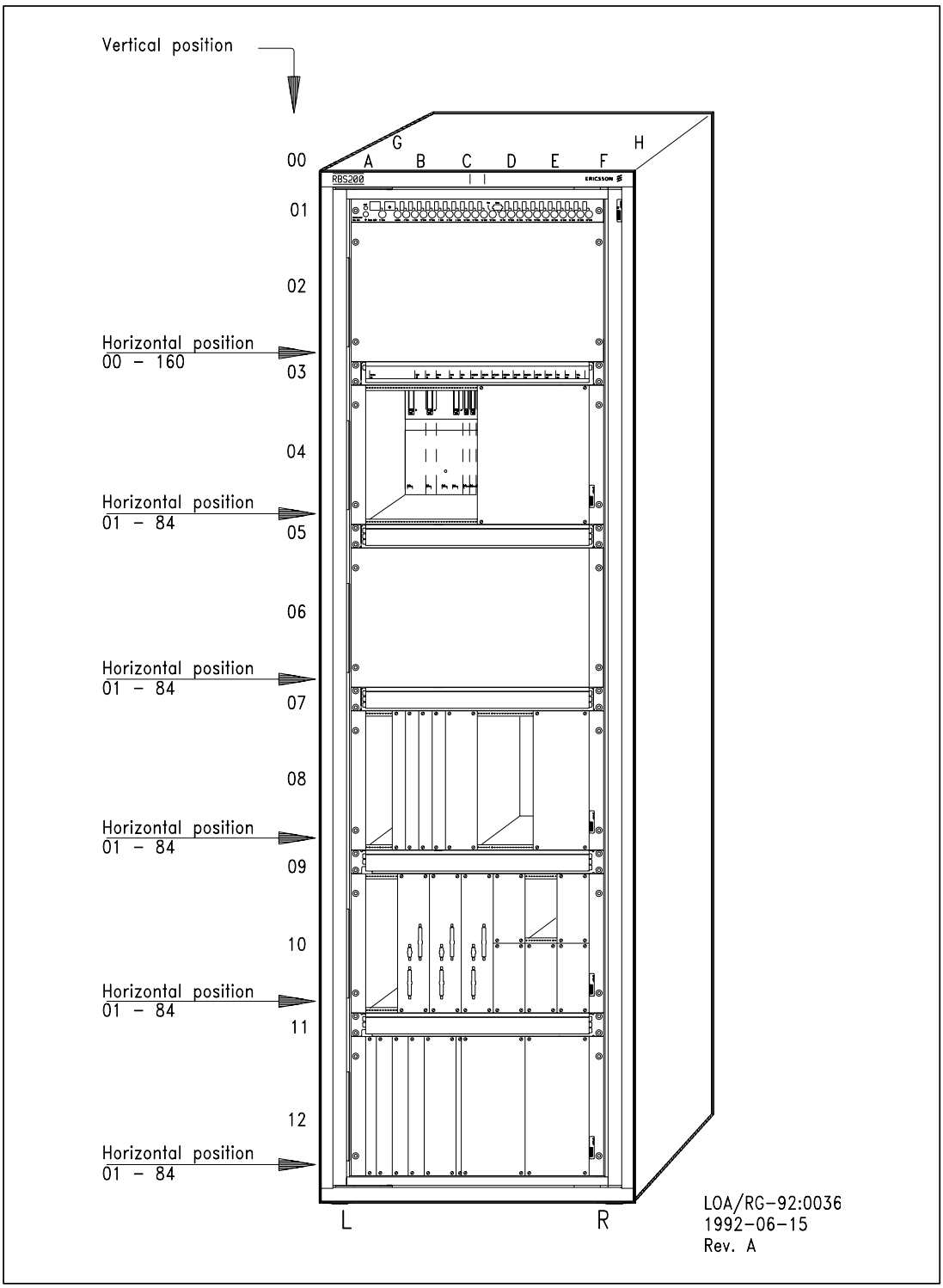


*Figure 2 Cabinet BDE 201 162/100, hardware positions*

# 2 Cabinet BDE 162/-, delivery equipped

On delivery, the cabinet is equipped as follows. See also figure 2.

*Table 3*

| Vertical pos. | Item |
|---|---|
| 02 | Dummy front, SDK 107 61/6 (in TRI position) |
| 04 | Magazine TRXD, BFL 119 71/3 |
| 06 | Dummy front, SDK 107 6/6 (in TRXD position) |
| 08 | Magazine F-combiner, BFL 119 72/3 [1)] |
| 08 | Magazine H-combiner, BFL 119 72/2 [1)] |
| 10 | Magazine RTX, BFL 119 71/5 |
| 12 | Magazine TM/PSU, BFL 119 73/1 [1)] |
| 12 | BFL 119 74/1 [1)] |
| 12 | BFL 119 76/1 [1)] |
| L 02 | Filter unit RXBP, KRF 101 18/01 [1)] |
| L 02 | KRF 101 19/01 [1)] |
| L 06 | Filter unit RXBP, KRF 101 18/01 [1)] |
| L 06 | KRF 101 19/01 [1)] |
| R 02 | Filter unit MCU, KRF 121 03/01 [1)] |
| R 06 | Filter unit TXBP, KRF 101 16/01 [1)] |
| R 06 | KRF 101 17/01 [1)] |
| R 04 | Filter unit MCU, KRY 121 01/01 [2)] |

**1** to be specified by the index number.

**2** included in KRF 101 16/01 and KRF 201 089/1.

**Note** For information about factory installed cables and cables to be installed on site, refer to cable list, table 4 and table 5.

## 2.1 Location of magazines

1. Locate magazines in omni and sector site cabinet(s) shown in figure 1.

2. Mount each magazine using the four TORX screws 03/ SBA 121 060/0160 delivered with each cabinet, except for the TRI magazine, where the screws are delivered with the magazine.

3. Check that the screws are securely fastened to ensure that a good contact is obtained between magazine and cabinet.

## 2.2 Cables included in the manufacturing specification

*Table 4 Cables sorted according to product number, Figures 3 to 10*

| Product number | Item | Figure | Vertical pos. | Installed | | Label |
|---|---|---|---|---|---|---|
| | | | | in prod. | on site | |
| RNV 321 011/1 | Plug | 5 | | | x | 1) |
| RNV 403 215/1 | Plug | 6 | | x | | 1) |
| RNV 403 215/2 | Plug | 6 | | x | | 1) |
| RNV 991 712/001 | Plug | 5 | | | x | 1) |
| RNV 991 2005/1 | Plug | 6 | | x | | 1) |
| RPM 513 351/1 | Power cable | 3 | R | x | | |
| RPM 513 352/1 | Connection cable | 6 | L | x | | 1) |
| RPM 513 352/2 | Connection cable | 6 | L | x | | 1) |
| RPM 513 363/1 | Coaxial cable | 5 | R | | x | 2) |
| RPM 513 364/1 | Connection cable | 5 | R | | x | 2) |
| RPM 513 365/1 | Connection cable | 10 | R | x | | |
| RPM 513 367/1 | Coaxial cable | 8 | L | | x | |
| RPM 513 367/2 | Coaxial cable | 8 | L | | x | |
| RPM 513 368/2 | Coaxial cable | 7, 9 | R | | x | |
| RPM 513 368/3 | Coaxial cable | 7 | R | | x | |
| RPM 513 368/4 | Coaxial cable | 8 | L | | x | |
| RPM 513 368/5 | Coaxial cable | 8 | L | | x | |
| RPM 513 368/6 | Coaxial cable | 7, 9 | R | | x | |
| RPM 513 368/7 | Coaxial cable | 7 | R | | x | |
| RPM 513 369/1 | Connection cable | 8 | L | | x | |
| RPM 513 370/4 | Coaxial cable | 7 | R | | x | 2) |
| RPM 513 370/9 | Coaxial cable | 8 | L | x | | 2) |
| RPM 513 370/11 | Coaxial cable | 8, 9 | R | x | | 2) |
| RPM 513 372/1 | Connection cable | 10 | L | x | | 2) |
| RPM 513 376/1 | Coaxial cable | 7 | L | x | | 1) |
| RPM 513 376/2 | Coaxial cable | 7 | L | x | | 1) |

| Product number | Item | Figure | Vertical pos. | Installed | | Label |
|---|---|---|---|---|---|---|
| | | | | in prod. | on site | |
| RPM 513 389/1 | Power cable | 3 | R | x | | |
| RPM 513 390/1 | Connection cable | 6 | | x | | |
| RPM 513 391/1 | Connection cable | 6 | | x | | |
| RPM 513 392/1 | Connection cable | 6 | | x | | |
| RPM 513 393/1 | Connection cable | 6 | | x | | 1) |
| RPM 513 394/1 | Connection cable | 6 | | x | | |
| RPM 513 395/1 | Connection cable | 6 | | x | | |
| RPM 513 409/1 | Power cable | 3 | | | x | |
| RPM 513 421/1 | Coaxial cable | 7 | L | x | | 2) |
| RPM 513 421/2 | Coaxial cable | 7 | L | x | | 2) |
| RPM 513 423/1 | Connection cable | 5 | R | | x | 2) |
| RPM 513 424/1 | Coaxial cable | 8, 9 | | | x | 1) |
| RPM 513 424/2 | Coaxial cable | 8 | | | x | |
| RPM 513 424/3 | Coaxial cable | 8 | | | x | 1) |
| RPM 513 425/1 | Connection cable | 7 | L | x | | |
| RPM 513 427/1330 | Coaxial cable | 7 | L | x | | |
| RPM 513 432/1 | Power cable | 3 | R | x | | |
| RPM 513 434/2 | Power cable | 4 | L | x | | 1) |
| RPM 513 435/2 | Power cable | 4 | L | x | | 1) |
| RPM 513 451/1 | Connection cable | 10 | R | | x | |
| RPM 513 453/1 | Connection cable | 10 | R | x | | |
| RPM 513 454/1 | Power cable | 4 | L | x | | 1) |
| RPM 513 455/1 | Power cable | 4 | R | x | | 1) |
| RPM 513 460/4 | Coaxial cable | 8, 9 | R | x | | 1) |
| RPM 513 615/1 | Connection cable | 10 | R | x | | 2) |
| RPM 513 619/1 | Coaxial cable | 8, 9 | R | x | | 2) |
| RPM 513 620/1 | Connection cable | 10 | R | x | | |
| RPM 513 904/02160 | ESB cable | 10 | L | x | | 2) |
| RPM 513 935/1 | Power cable | 3 | L | x | | 2) |
| TRE 211 048/1 | Power cable | 4 | L | x | | 2) |
| TRE 211 048/2 | Power cable | 4 | L | x | | 2) |

| Product number | Item | Figure | Vertical pos. | Installed | | Label |
|---|---|---|---|---|---|---|
| | | | | in prod. | on site | |
| TRE 211 049 | Power cable | 4 | R | x | | 2) |
| TSR 204 0201/500 | Connection cable | 5 | | | x | 1) |
| TSR 901 0197/1700 | Connection cable | 10 | R | | x | |

**Note** Cables shall be labelled at both ends.

Exceptions in table 4:

**1** not labelled

**2** labelled in one end of the cable only (shelf-side)

### 2.2.1 Optional TRXT

*Table 5 Cables sorted according to cabling diagram, Figure 11.*

| Product number | Item | Figure |
|---|---|---|
| RPM 513 351/1 | Power cable 24 V | 11 |
| RPM 513 370/4 | Coaxial cable | 11 |
| RPM 513 424/3 | Coaxial cable | 11 |

**Note** If the cabinet is not to be fully equipped, cables shall not be installed. Factory installed cables and bus-cables, having free ends shall be put in the parking position on each magazine.

*Table 6 Cables sorted according to cabling diagrams, Figures 3-10*

| Item | Product number | Qty |
|---|---|---|
| Figure 3 | | |
| Power cable | RPM 513 351/1 | 14 |
| Power cable | RPM 513 389/1 | 1 |
| Power cable | RPM 513 409/1 | 4 |
| Power cable | RPM 513 432/1 | 4 |
| Power cable | RPM 513 935/1 | 1 |
| Figure 4 | | |
| Power cable | RPM 513 434/2 | 2 |
| Power cable | RPM 513 435/2 | 2 |
| Power cable | RPM 513 454/1 | 2 |

| | | |
|---|---|---|
| Power cable | RPM 513 455/1 | 2 |
| Power cable | TRE 211 048/1 | 2 |
| Power cable | TRE 211 048/2 | 2 |
| Power cable | TRE 211 049 | 2 |
| Figure 5 | | |
| Coaxial cable | RPM 513 363/1 | 3 |
| Connection cable | RPM 513 364/1 | 7 |
| Connection cable | RPM 513 423/1 | 2 |
| Connection cable | TSR 204 0201/500 | 2 |
| Plug | RNV 321 011/1 | 1 |
| Plug | RNV 991 712/001 | 1 |
| Figure 6 | | |
| Plug | RNV 403 215/1 | 1 |
| Plug | RNV 403 215/2 | 1 |
| Plug | RNV 991 2005/1 | 14 |
| Connection cable | RPM 513 352/1 | 3 |
| Connection cable | RPM 513 352/2 | 1 |
| Connection cable | RPM 513 390/1 | 1 |
| Connection cable | RPM 513 391/1 | 1 |
| Connection cable | RPM 513 392/1 | 1 |
| Connection cable | RPM 513 393/1 | 1 |
| Connection cable | RPM 513 394/1 | 3 |
| Connection cable | RPM 513 395/1 | 1 |
| Figure 7 | | |
| Coaxial cable | RPM 513 368/2 | 2 |
| Coaxial cable | RPM 513 368/3 | 2 |
| Coaxial cable | RPM 513 368/6 | 4 |
| Coaxial cable | RPM 513 368/7 | 2 |
| Coaxial cable | RPM 513 370/4 | 2 |
| Coaxial cable | RPM 513 376/1 | 1 |
| Coaxial cable | RPM 513 376/2 | 1 |
| Coaxial cable | RPM 513 421/1 | 1 |

| | | |
|---|---|---|
| Coaxial cable | RPM 513 421/2 | 1 |
| Connection cable | RPM 513 425/1 | 2 |
| Coaxial cable | RPM 513 427/1330 | 1 |
| Figure 8 | | |
| Coaxial cable | RPM 513 424/1 | 4 |
| Coaxial cable | RPM 513 424/2 | 4 |
| Coaxial cable | RPM 513 424/3 | 1 |
| Coaxial cable | RPM 513 460/4 | 1 |
| Coaxial cable | RPM 513 367/1 | 1 |
| Coaxial cable | RPM 513 367/2 | 1 |
| Coaxial cable | RPM 513 368/4 | 1 |
| Coaxial cable | RPM 513 368/5 | 1 |
| Connection cable | RPM 513 369/1 | 4 |
| Coaxial cable | RPM 513 370/9 | 1 |
| Coaxial cable | RPM 513 370/11 | 2 |
| Coaxial cable | RPM 513 619/1 | 1 |
| Figure 9 | | |
| Coaxial cable | RPM 513 368/2 | 2 |
| Coaxial cable | RPM 513 368/6 | 2 |
| Coaxial cable | RPM 513 370/11 | 2 |
| Coaxial cable | RPM 513 424/1 | 4 |
| Coaxial cable | RPM 513 460/4 | 1 |
| Coaxial cable | RPM 513 619/1 | 1 |
| Figure 10 | | |
| Connection cable | RPM 513 365/1 | 1 |
| Connection cable | RPM 513 372/1 | 1 |
| Connection cable | RPM 513 451/1 | 1 |
| Connection cable | RPM 513 453/1 | 1 |
| Connection cable | RPM 513 615/1 | 1 |
| Connection cable | RPM 513 620/1 | 1 |
| Connection cable | TSR 901 0197/1700 | 1 |
| ESB cable | RPM 513 904/02160 | 1 |
| Figure 11 | | |

| | | |
|---|---|---|
| Power cable 24V | RPM 513 351/1 | 1 |
| Coaxial cable | RPM 513 370/4 | 2 |
| Coaxial cable | RPM 513 424/3 | 1 |

# 3 Internal cabling diagrams

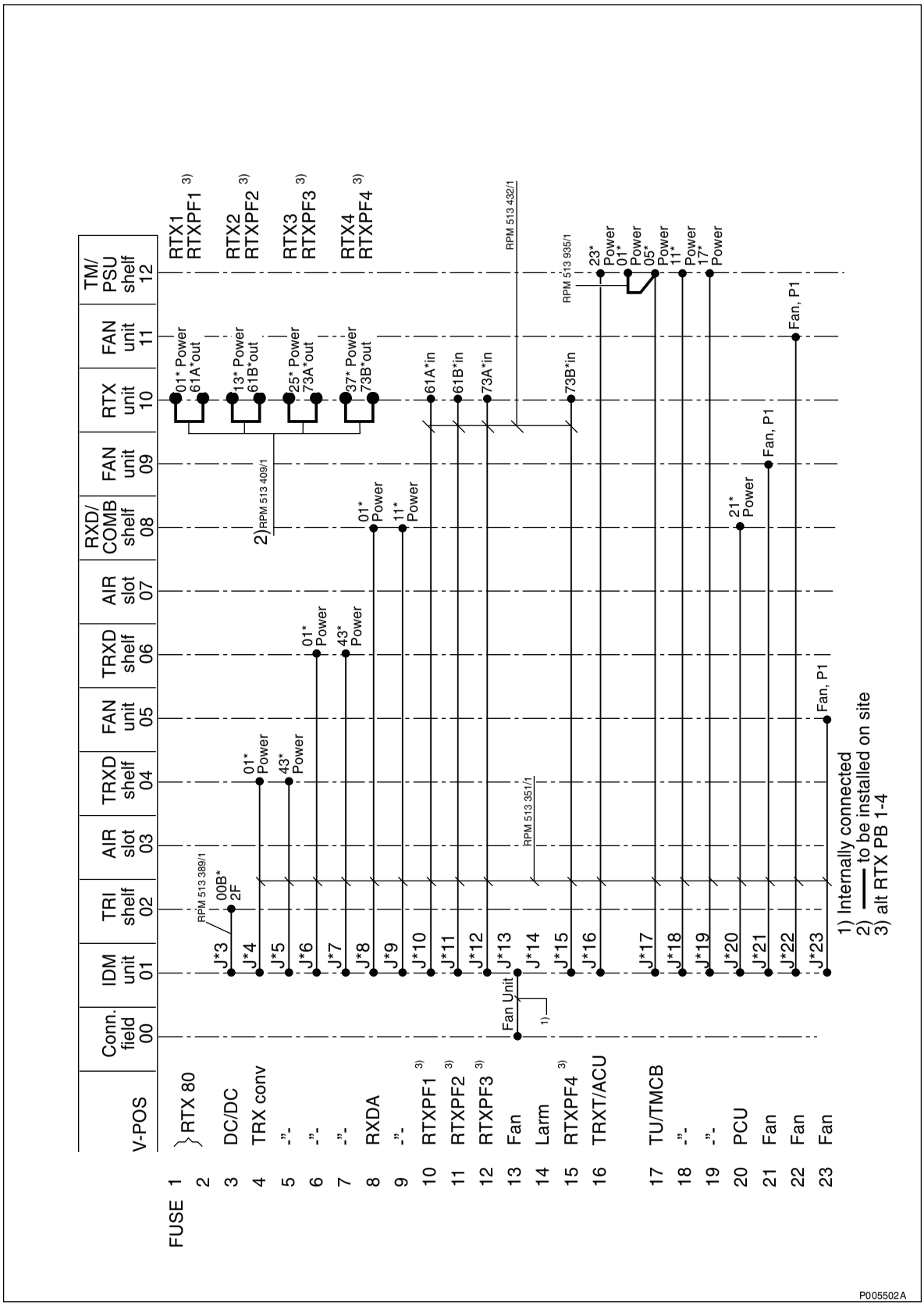


*Figure 3 +24V DC distribution cabling diagram (general)*

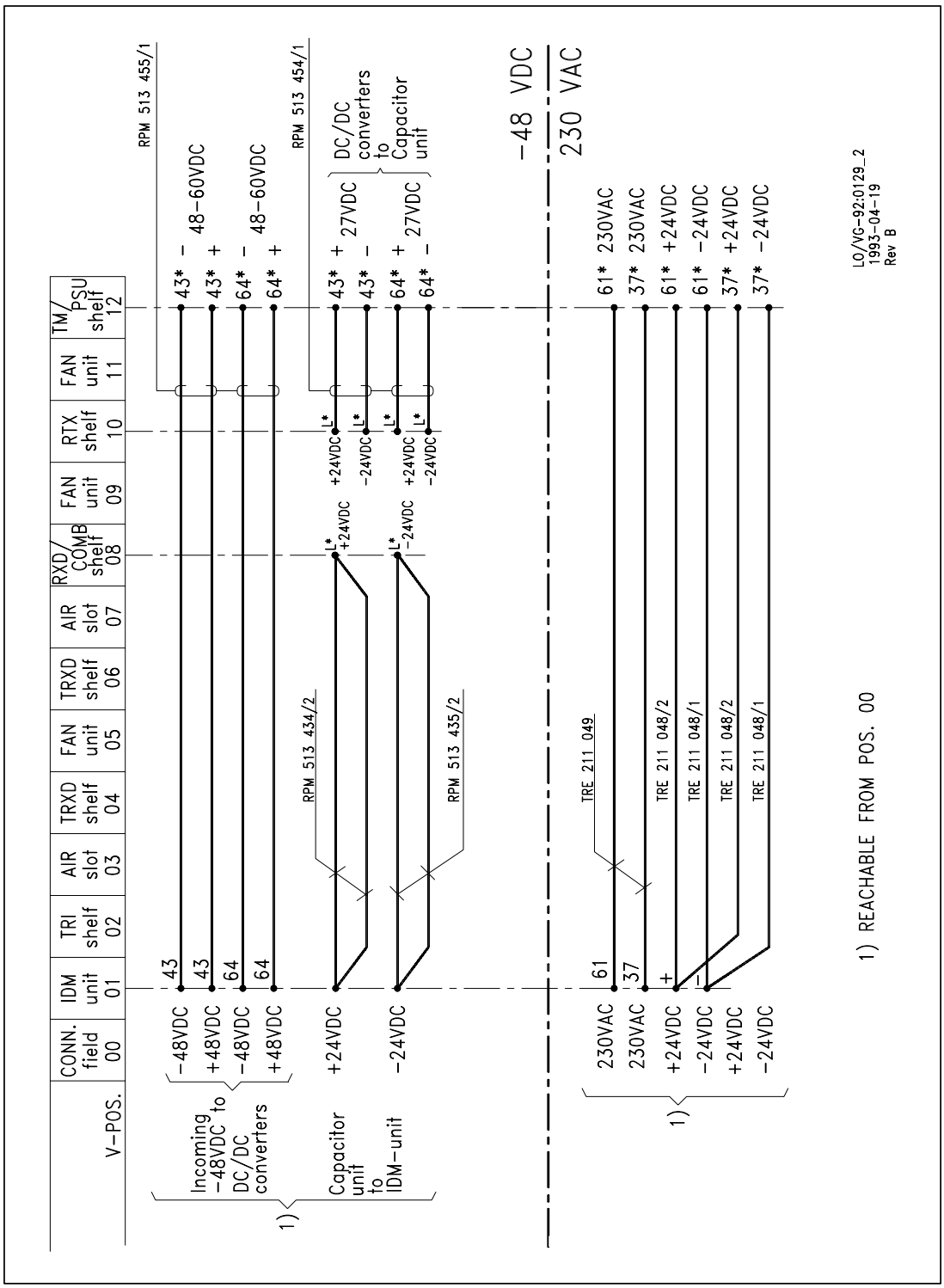


*Figure 4 -48V DC and 230V AC power supply cabling*

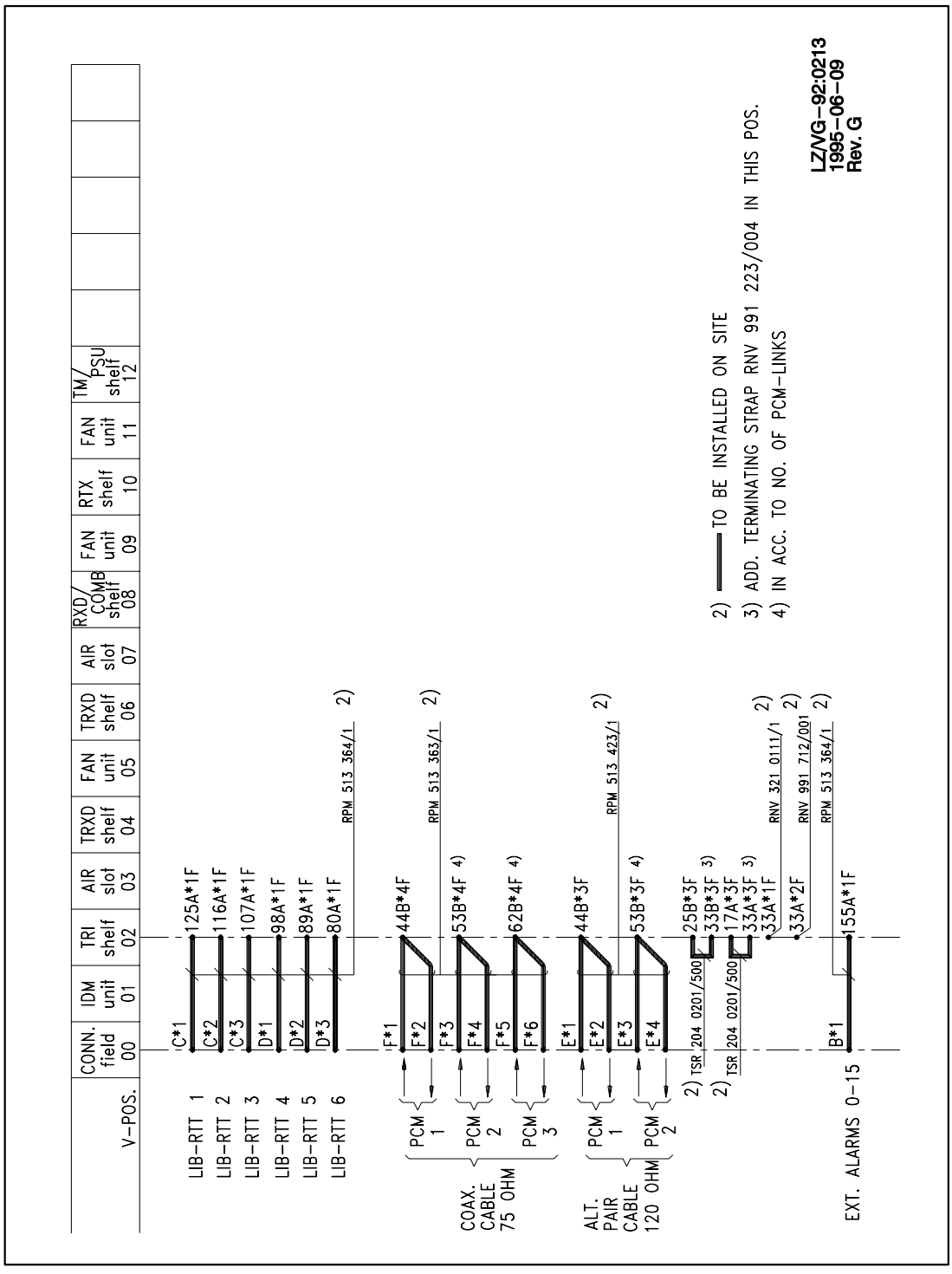


*Figure 5 TRI Cabling diagram (general)*

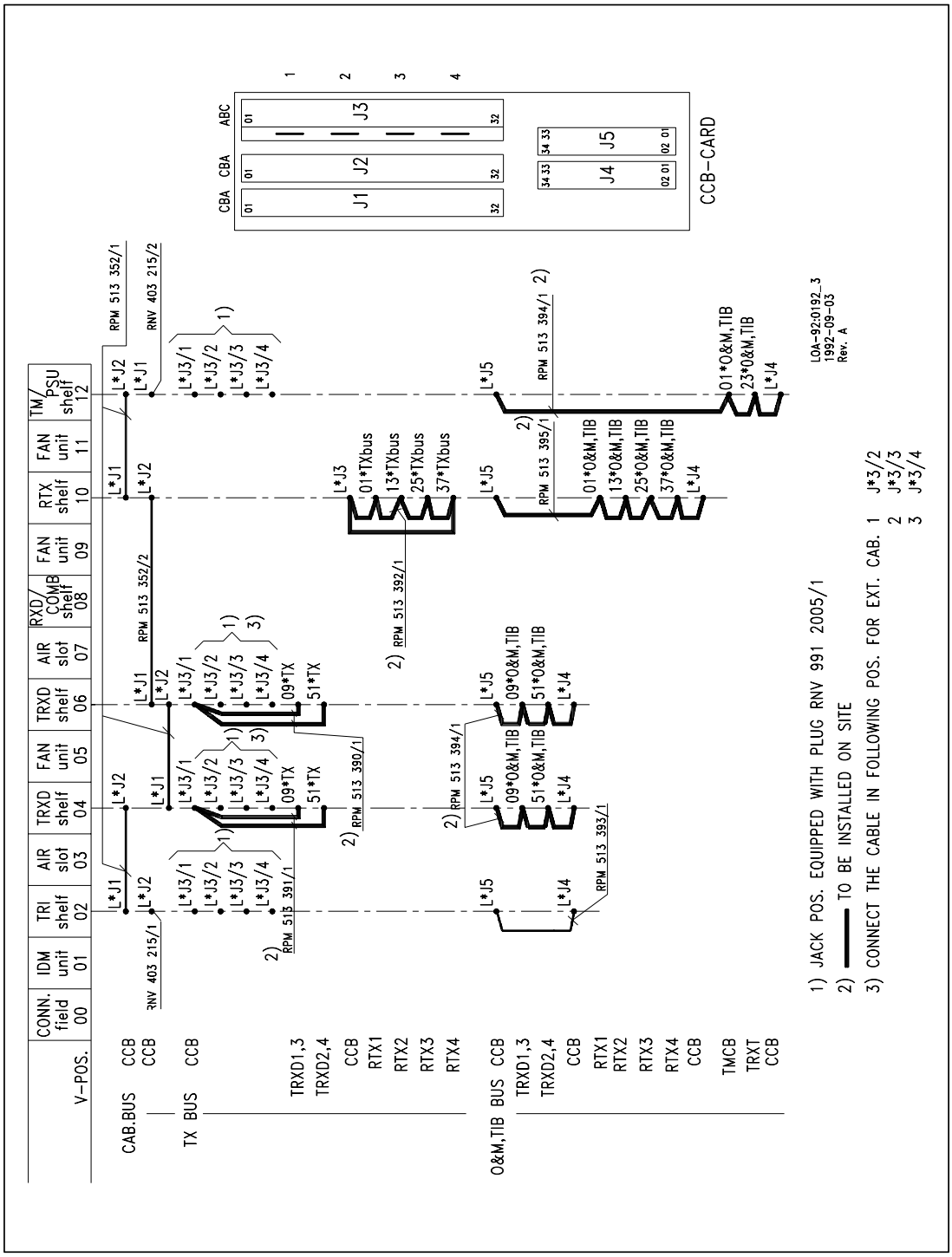


*Figure 6 Bus cabling diagram (general)*

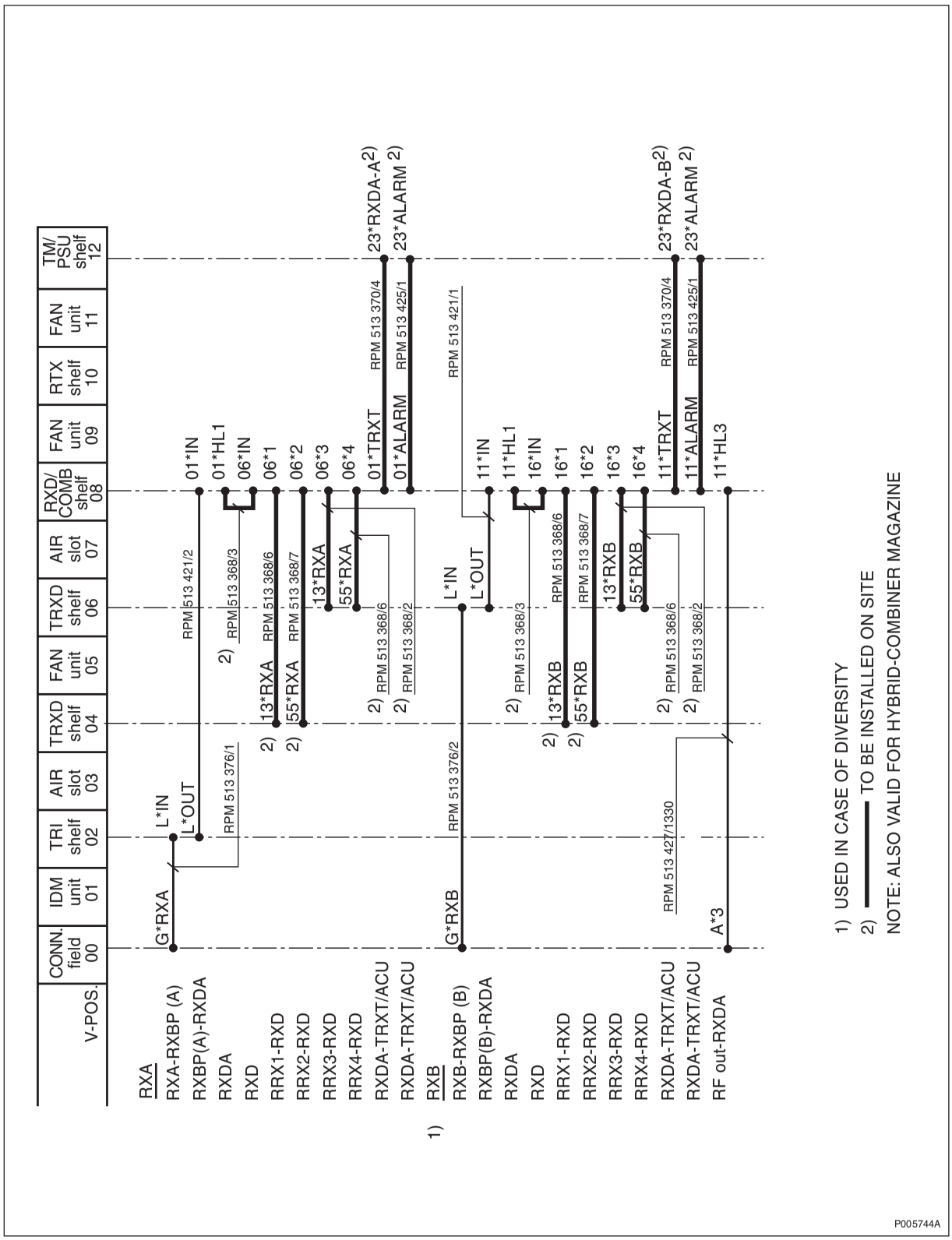


*Figure 7 RX cabling diagram (general)*

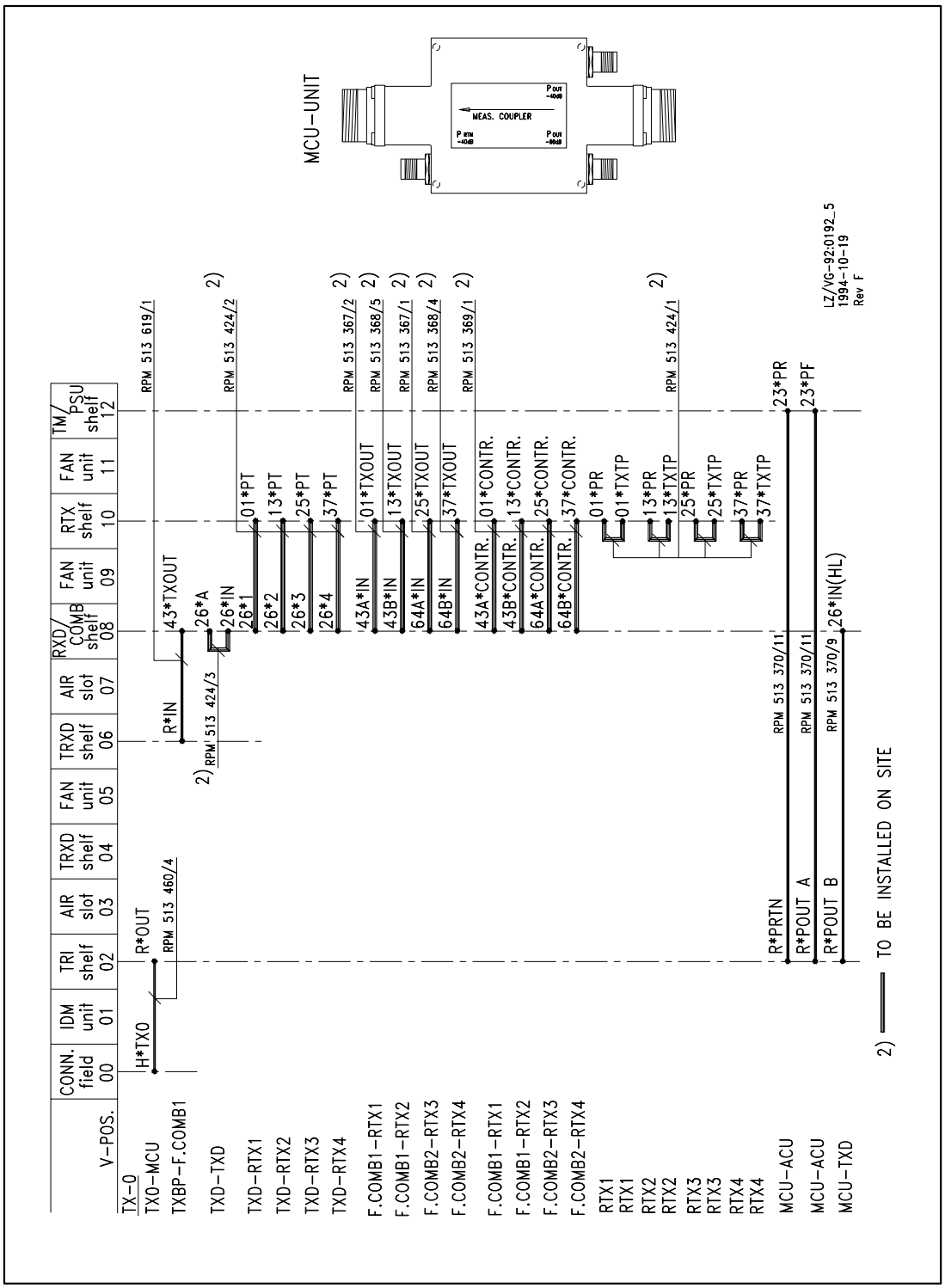


*Figure 8 TX cabling diagram (F-combiner)*

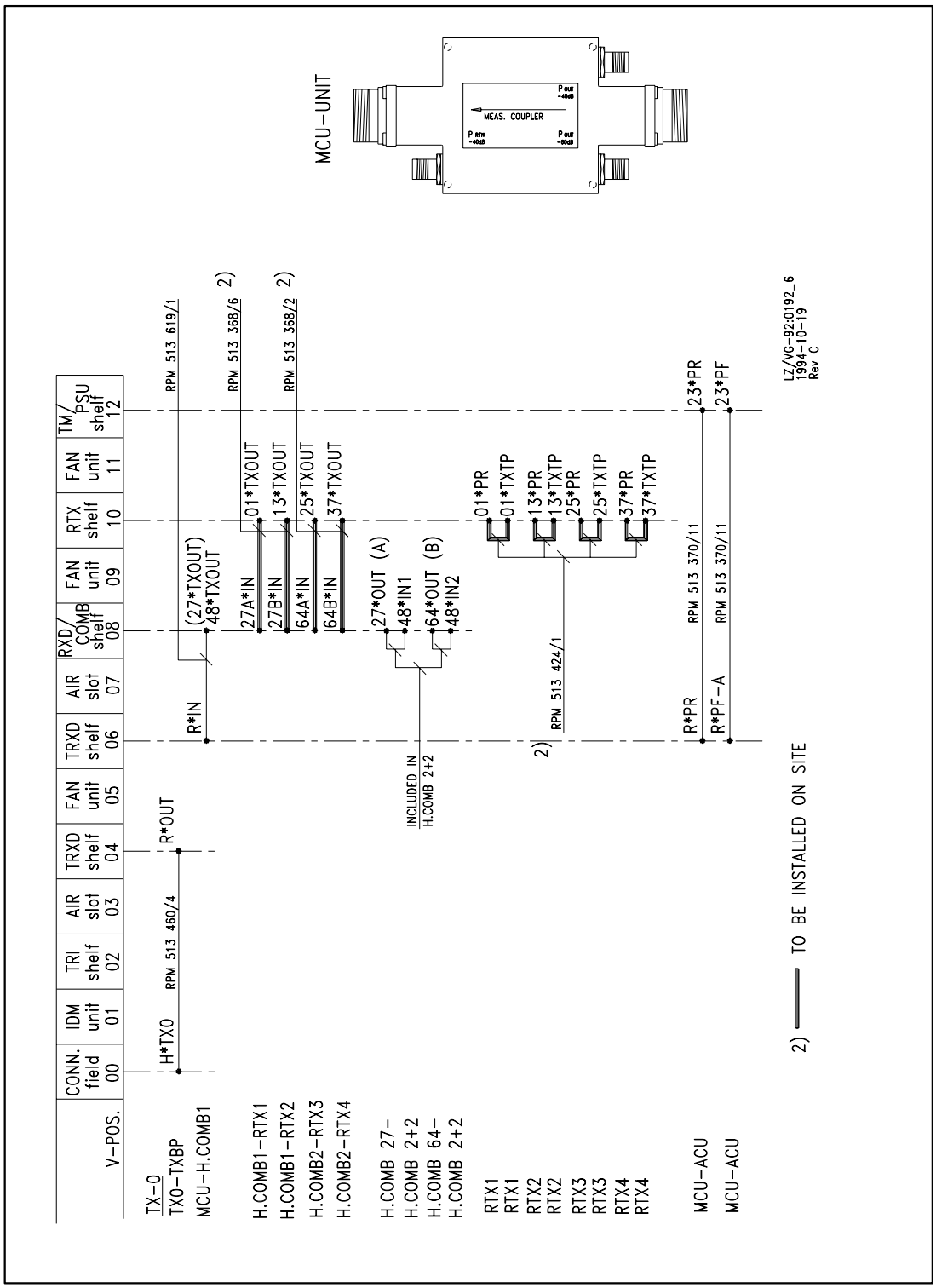


*Figure 9 TX cabling diagram (H-combiner)*

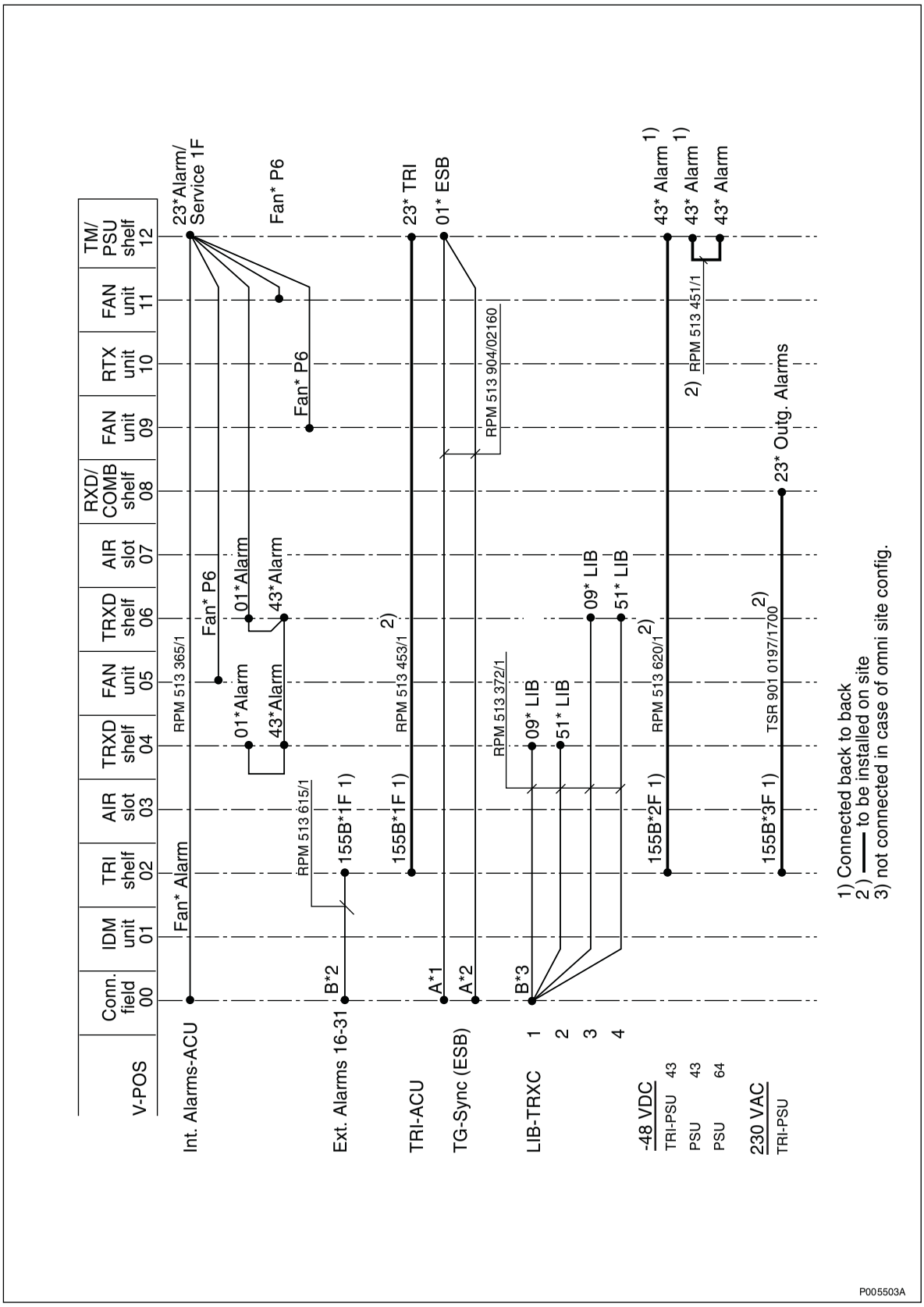


*Figure 10 LIB and alarm cabling*

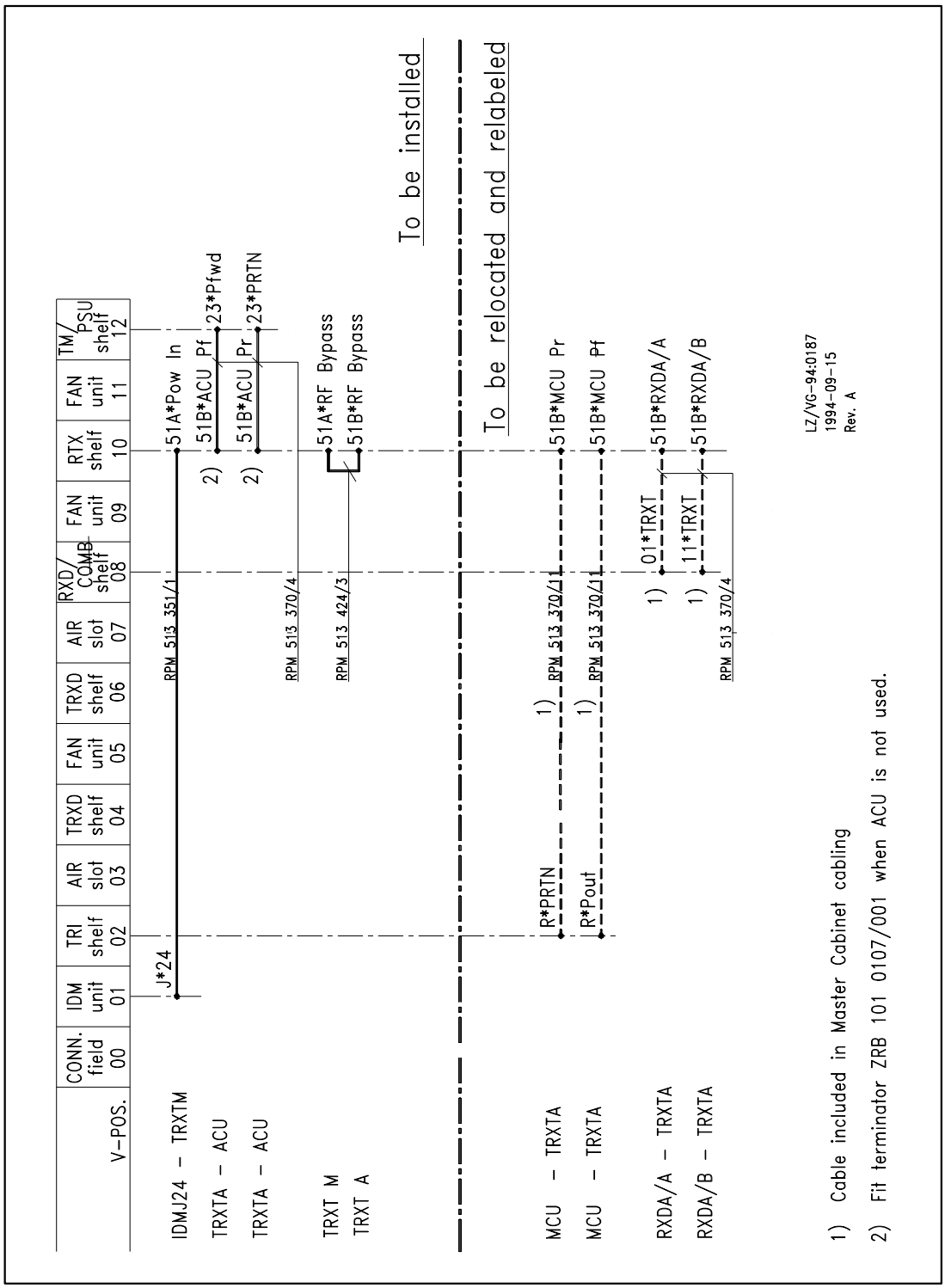


*Figure 11 TRXT, internal cabling*

# Extension Cabinet BDE 201 162/–

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# 1 Equipment specification

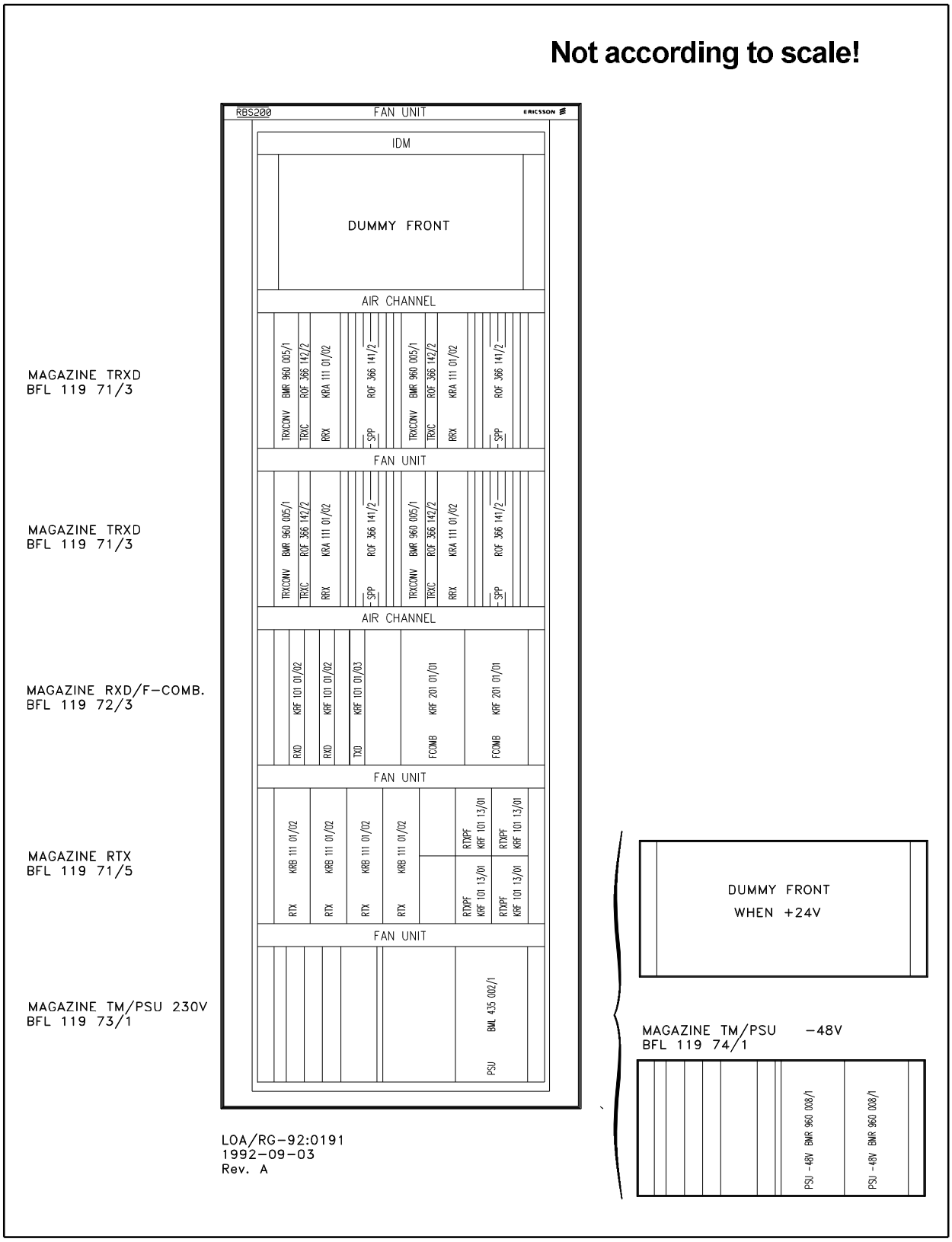


*Figure 1 RBS 200 Extension cabinet, fully equipped*

## 1.1 Index register

The following selections of the cabinet are available:

- Power Supply +24V DC, -48V DC or 230V AC
- Filter combiner

*Table 1 Index Register*

| Extension cabinet | RXBP type | Power Supply | COMB type | Diversity | Index |
|---|---|---|---|---|---|
| E1-E3 | - | 24 | F | - | /201 |
| E1-E3 | - | 230 | F | - | /202 |
| E1-E3 | - | -48 | F | - | /203 |

Master cabinet BDE 201 162/2– is delivered from factory either with some equipment pre-installed or delivered without any pre-installed equipment. In the last case, the equipment is delivered separately according to configuration ordered.

## 1.2 Cabinet extension

Extension can be made to the right using 1, 2 or 3 cabinets.

Extension can be made to the left using a maximum of one extension cabinet.

## 1.3 Combiners

The H-combiner can be used for a single cabinet and omni-site only.

The F-combiner can be used for extension, omni- and sector-sites.

For the extension, F-combiners are required for master and connected extension cabinets.

*Table 2*

| Product number | Designation | Qty |
|---|---|---|
| BFL 119 71/3 | Magazine, TRXD 3-4 | 1 |
| KRC 121 02/- | Transceiver GSM 900 MHz 45 W each | 1-4 [1)] |
| including: | | |
| BMR 960 005/1 | TRX 90 W | 1 |

| | | |
|---|---|---|
| KRA 111 01/02 | RRX 890-915 MHz | 1 [1] |
| KRB 111 01/02 | RTX 935-960 MHz | 1 |
| ROF 366 142/2 | TRXC | 1 |
| KRF 101 13/01 | RTX PF | 1 [1] |
| KRF 101 13/02 | RTX PB | 1 [1] |
| ROF 366 141/- | SPP | 8 [1] |
| ROF 366 284/- | SPU alt. SPU+ | 1 [1] |
| | | |
| KRF 101 01/02 | Filter RXD (Divider) | 2 |
| KRF 101 01/03 | Filter TXD | 1 |
| KRF 201 01/01 | Filter Combiner | 1-2 |
| | | |
| BML 435 002/1 | Rectifier 230V AC/+24V DC | 1-2 [2] |
| BMR 960 009/1 | Converter -48V DC/+24V DC | 2 [2] |

[1] See Chapter 3.0 in this manual for information on TRXD magazine BFL 119 71/3 and IE manual Chapter 4.0, "Dimensioning and Ordering."

[2] The choice of power system is made by selecting the index number, which is added to the basic cabinet product number.

The PCU is only needed, when rectifier BML 435 002/1 (230V AC/ +24V DC) is used as power supply. In this case, one PCU per site is required.

If the PCU is not installed, mount a dummy front SDK 107 60/5.

## 1.4 Location of magazines

1. Locate the magazines in the omni and sector site cabinet(s) according to figure 1.

2. Fasten each magazine using the four torx screws 03/ SBA 121 060/0160 delivered with each cabinet except for the TRI magazine where the screws are delivered with the magazine.

3. Check that the screws are securely fastened to ensure that a good contact is obtained between the magazine and cabinet.

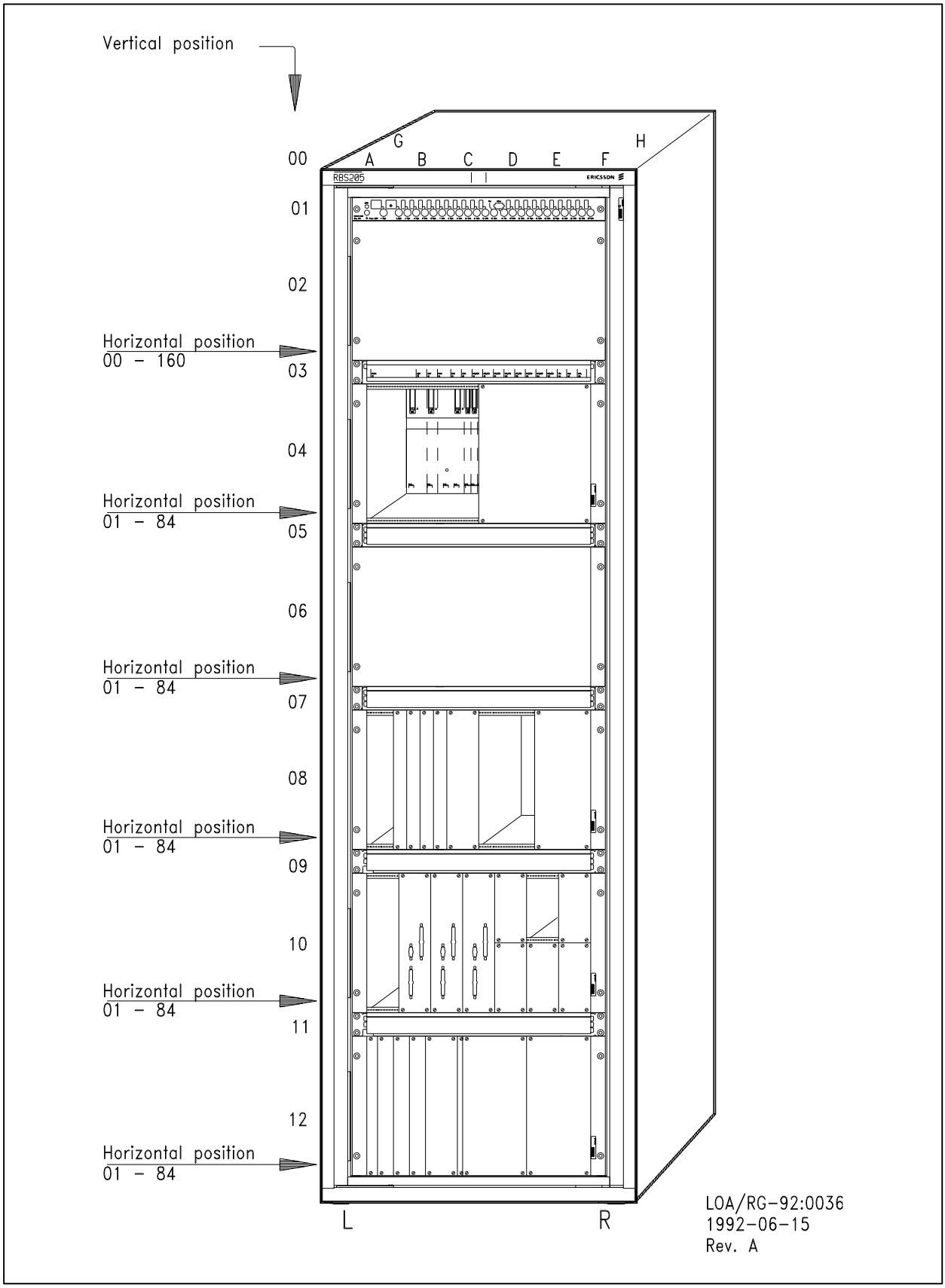


*Figure 2 Cabinet BDE 201 162/200, hardware positions*

# 2 Cabinet BDE 162/–, delivery equipped

On delivery, the cabinet is equipped as follows. See also figure 2.

*Table 3*

| Vertical pos | Item |
|---|---|
| 02 | Dummy front SDK 107 61/6 (for TRI position) |
| 04 | Magazine TRXD BFL 119 71/3 |
| 06 | Dummy front SDK 107 61/6 (for TRXD position) |
| 08 | Magazine F-combiner BFL 119 72/3 |
| 10 | Magazine RTX BFL 119 71/5 |
| 12 | Magazine TM/PSU 230V AC BFL 119 73/1 |
| 12 | Magazine TM/PSU -48V DC BFL 119 74/1 |

**Note** When +24V DC is used as power supply, a dummy front is mounted in vertical position 12.

## 2.1 Cables included in the manufacturing specification

*Table 4 Cables sorted according to cabling diagrams, Figures 3-8 and 13.*

| Product number | Item | Figure | Verticalpos | Installed in prod. | onsite | Label |
|---|---|---|---|---|---|---|
| RNV 403 215/1 | Plug | 5 | | x | | 1) |
| RNV 403 215/2 | Plug | 5 | | x | | 1) |
| RNV 991 2005/1 | Plug | 5 | | x | | 1) |
| RPM 98 201/ 1500 | Connection cable | 13 | | | x | |
| RPM 513 351/1 | Power cable | 3 | R | x | | |
| RPM 513 352/1 | Connection cable | 5 | L | x | | 1) |
| RPM 513 352/2 | Connection cable | 5 | L | x | | 1) |
| RPM 513 353/1 | Connection cable | 13 | | | x | |
| RPM 513 354/1 | Connection cable | 13 | | | x | |
| RPM 513 355/2 | Connection cable | 13 | | | x | |
| RPM 513 355/3 | Connection cable | 13 | | | x | |
| RPM 513 355/5 | Connection cable | 13 | | | x | |
| RPM 513 365/1 | Connection cable | 8 | | x | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| RPM 513 367/1 | Coaxial cable | 7 | R | | x | |
| RPM 513 367/2 | Coaxial cable | 7 | R | | x | |
| RPM 513 368/2 | Coaxial cable | 6 | R | | x | |
| RPM 513 368/2 | Coaxial cable | 13 | | | x | |
| RPM 513 368/4 | Coaxial cable | 7 | R | | x | |
| RPM 513 368/5 | Coaxial cable | 7 | R | | x | |
| RPM 513 368/6 | Coaxial cable | 6 | R | | x | |
| RPM 513 368/7 | Coaxial cable | 6 | R | | x | |
| RPM 513 368/9 | Coaxial cable | 13 | | | x | |
| RPM 513 368/10 | Coaxial cable | 13 | | | x | |
| RPM 513 369/1 | Connection cable | 7 | R | | x | |
| RPM 513 372/1 | Connection cable | 8 | | x | | 2) |
| RPM 513 389/1 | Power cable | 3 | R | x | | |
| RPM 513 390/1 | Connection cable | 5 | | x | | |
| RPM 513 391/1 | Connection cable | 5 | | x | | |
| RPM 513 392/1 | Connection cable | 5 | | x | | |
| RPM 513 393/1 | Connection cable | 5 | | x | | 1) |
| RPM 513 394/1 | Connection cable | 5 | | x | | |
| RPM 513 395/1 | Connection cable | 5 | | x | | |
| RPM 513 409/1 | Power cable | 3 | | | x | |
| RPM 513 424/1 | Coaxial cable | 7 | | x | | 1) |
| RPM 513 424/2 | Coaxial cable | 7 | | | x | |
| RPM 513 424/3 | Coaxial cable | 7 | | | x | |
| RPM 513 424/4 | Coaxial cable | 13 | | | x | |
| RPM 513 424/5 | Coaxial cable | 13 | | | x | |
| RPM 513 424/6 | Coaxial cable | 13 | | | x | |
| RPM 513 429/1 | Coaxial cable | 13 | | | x | |
| RPM 513 432/1 | Power cable | 3 | R | x | | |
| RPM 513 434/2 | Power cable | 4 | L | x | | 1) |
| RPM 513 435/2 | Power cable | 4 | L | x | | 1) |
| RPM 513 451/1 | Connection cable | 8 | | | x | 2) |
| RPM 513 451/2 | Connection cable | 13 | | | x | |
| RPM 513 454/1 | Power cable | 4 | L | x | | 1) |
| RPM 513 455/1 | Power cable | 4 | R | x | | 1) |
| RPM 513 615/1 | Connection cable | 8 | | x | | 2) |

| | | | | | |
|---|---|---|---|---|---|
| TRE 211 048/1 | Power cable | 4 | L | x | 2) |
| TRE 211 048/2 | Power cable | 4 | L | x | 2) |
| TRE 211 049 | Power cable | 4 | R | x | 2) |

**Note** Cables shall be labelled at both ends.

Exceptions in table 4:

1) not labelled

2) labelled in one end of the cable only (shelf-side)

**Note** If the cabinet is not to be fully equipped, cables shall not be installed. Factory installed cables and bus-cables, having free ends shall be put in the parking position on each magazine.

*Table 5 Cables sorted according to cabling diagrams, Figures 3-8 and 13.*

| Item | Product number | Qty |
|---|---|---|
| Figure 3 | | |
| Power cable | RPM 513 351/1 | 7 |
| Power cable | RPM 513 389/1 | 1 |
| Power cable | RPM 513 409/1 | 4 |
| Power cable | RPM 513 432/1 | 4 |
| Figure 4 | | |
| Power cable | RPM 513 434/2 | 2 |
| Power cable | RPM 513 435/2 | 2 |
| Power cable | RPM 513 454/1 | 2 |
| Power cable | RPM 513 455/1 | 2 |
| Power cable | TRE 211 048/1 | 2 |
| Power cable | TRE 211 048/2 | 2 |
| Power cable | TRE 211 049 | 2 |
| Figure 5 | | |
| Plug | RNV 403 215/1 | 1 |
| Plug | RNV 403 215/2 | 1 |
| Plug | RNV 991 2005/1 | 14 |

| | | |
|---|---|---|
| Connection cable | RPM 513 352/1 | 2 |
| Connection cable | RPM 513 352/2 | 1 |
| Connection cable | RPM 513 390/1 | 1 |
| Connection cable | RPM 513 391/1 | 1 |
| Connection cable | RPM 513 392/1 | 1 |
| Connection cable | RPM 513 393/1 | 2 |
| Connection cable | RPM 513 394/1 | 2 |
| Connection cable | RPM 513 395/1 | 1 |
| | | |
| Figure 6 | | |
| Coaxial cable | RPM 513 368/6 | 4 |
| Coaxial cable | RPM 513 368/7 | 2 |
| Coaxial cable | RPM 513 368/2 | 2 |
| Figure 7 | | |
| Coaxial cable | RPM 513 367/1 | 1 |
| Coaxial cable | RPM 513 367/2 | 1 |
| Coaxial cable | RPM 513 368/4 | 1 |
| Coaxial cable | RPM 513 368/5 | 1 |
| Connection cable | RPM 513 369/1 | 4 |
| Coaxial cable | RPM 513 424/1 | 4 |
| Coaxial cable | RPM 513 424/2 | 4 |
| Coaxial cable | RPM 513 424/3 | 1 |
| | | |
| Figure 8 | | |
| Connection cable | RPM 513 365/1 | 1 |
| Connection cable | RPM 513 372/1 | 1 |
| Connection cable | RPM 513 451/1 | 1 |
| Connection cable | RPM 513 615/1 | 1 |
| | | |
| Figure 13 | | |
| Coaxial cable | RPM 513 424/4 | 1 |
| Coaxial cable | RPM 513 424/5 | 1 |
| Coaxial cable | RPM 513 424/6 | 1 |

| | | |
|---|---|---|
| Coaxial cable | RPM 513 429/1 | 3 |
| Connection cable | RPM 98 201/1500 | 3 |
| Connection cable | RPM 513 353/1 | 1 |
| Connection cable | RPM 513 354/1 | 2 |
| Connection cable | RPM 513 355/2 | 1 |
| Connection cable | RPM 513 355/3 | 1 |
| Connection cable | RPM 513 355/5 | 1 |
| Connection cable | RPM 513 368/2 | 2 |
| Connection cable | RPM 513 368/9 | 2 |
| Connection cable | RPM 513 368/10 | 2 |
| Connection cable | RPM 513 451/2 | 3 |

# 3 Internal cabling diagrams

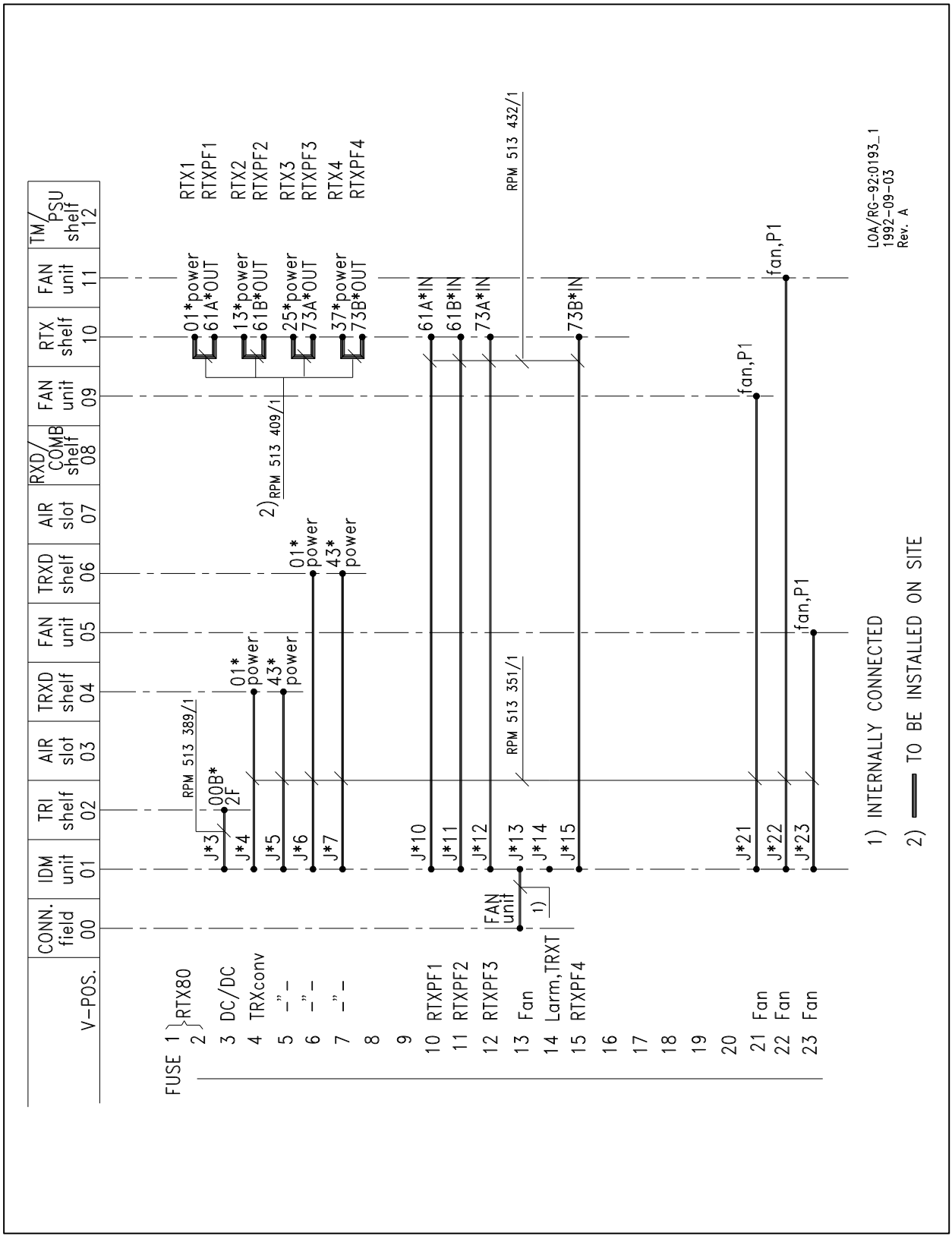


*Figure 3 +24V DC distribution cabling diagram (general)*

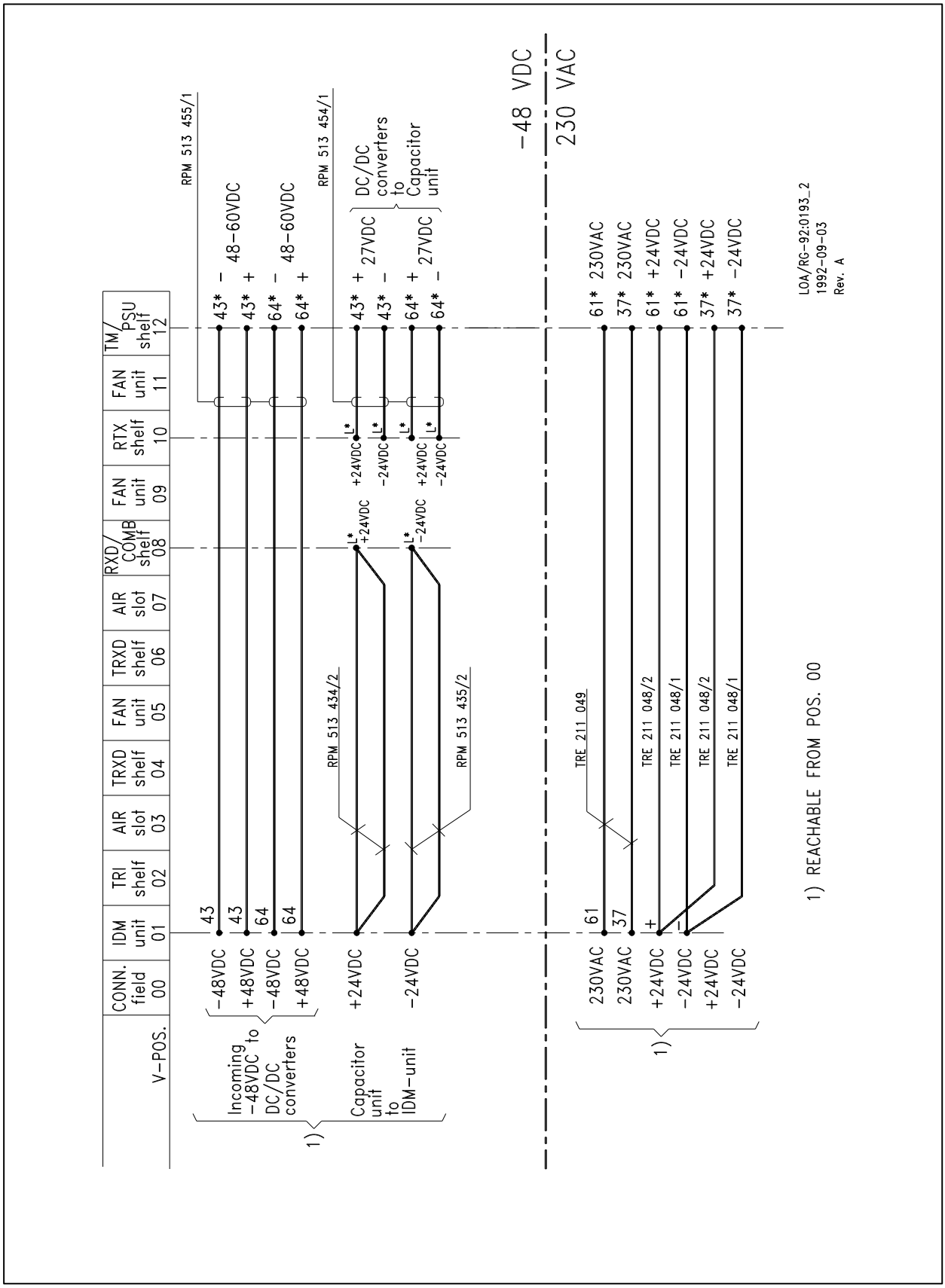


*Figure 4 -48V DC and 230V AC Power supply cabling*

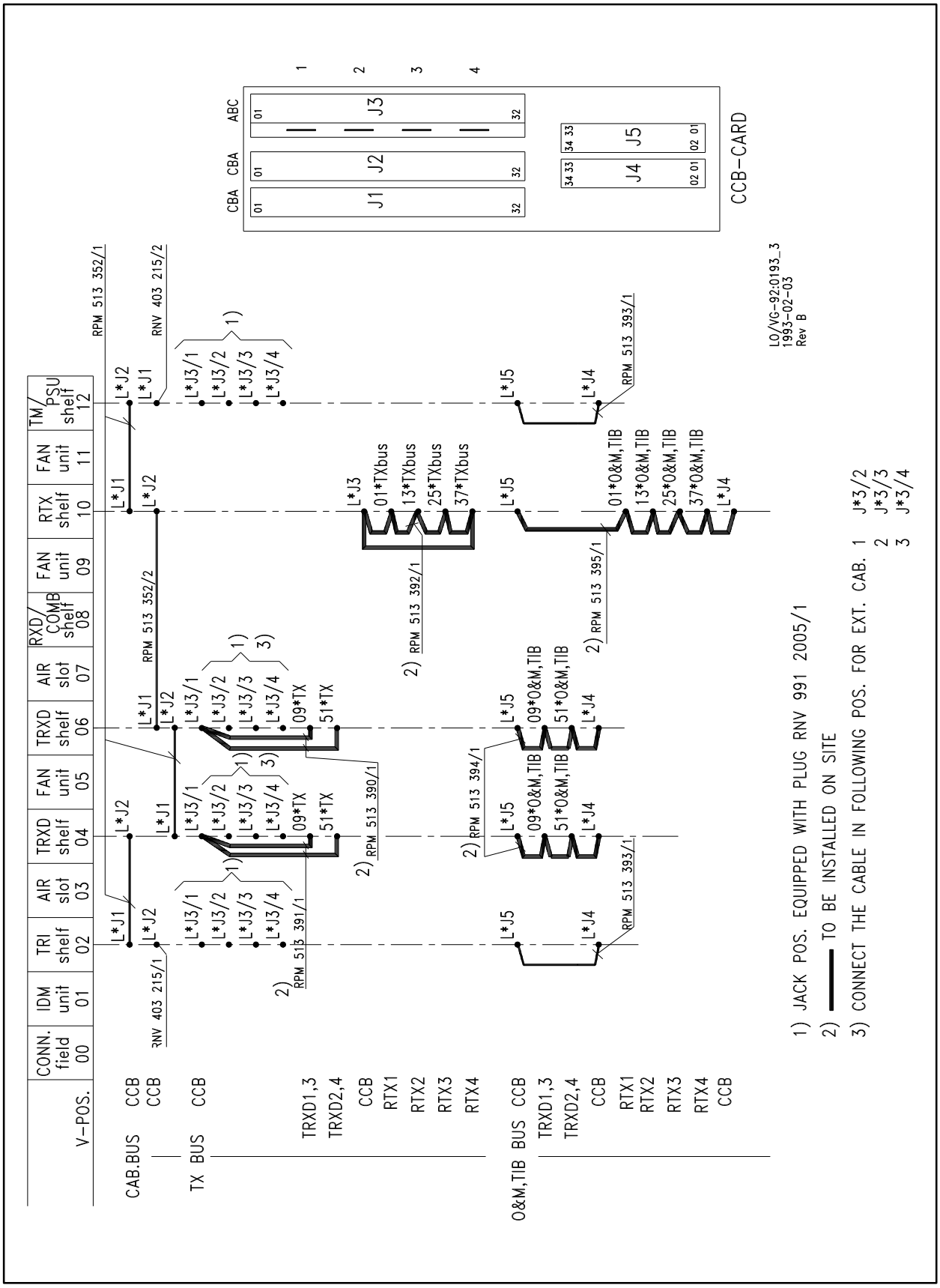


*Figure 5 Bus cabling diagram (general)*

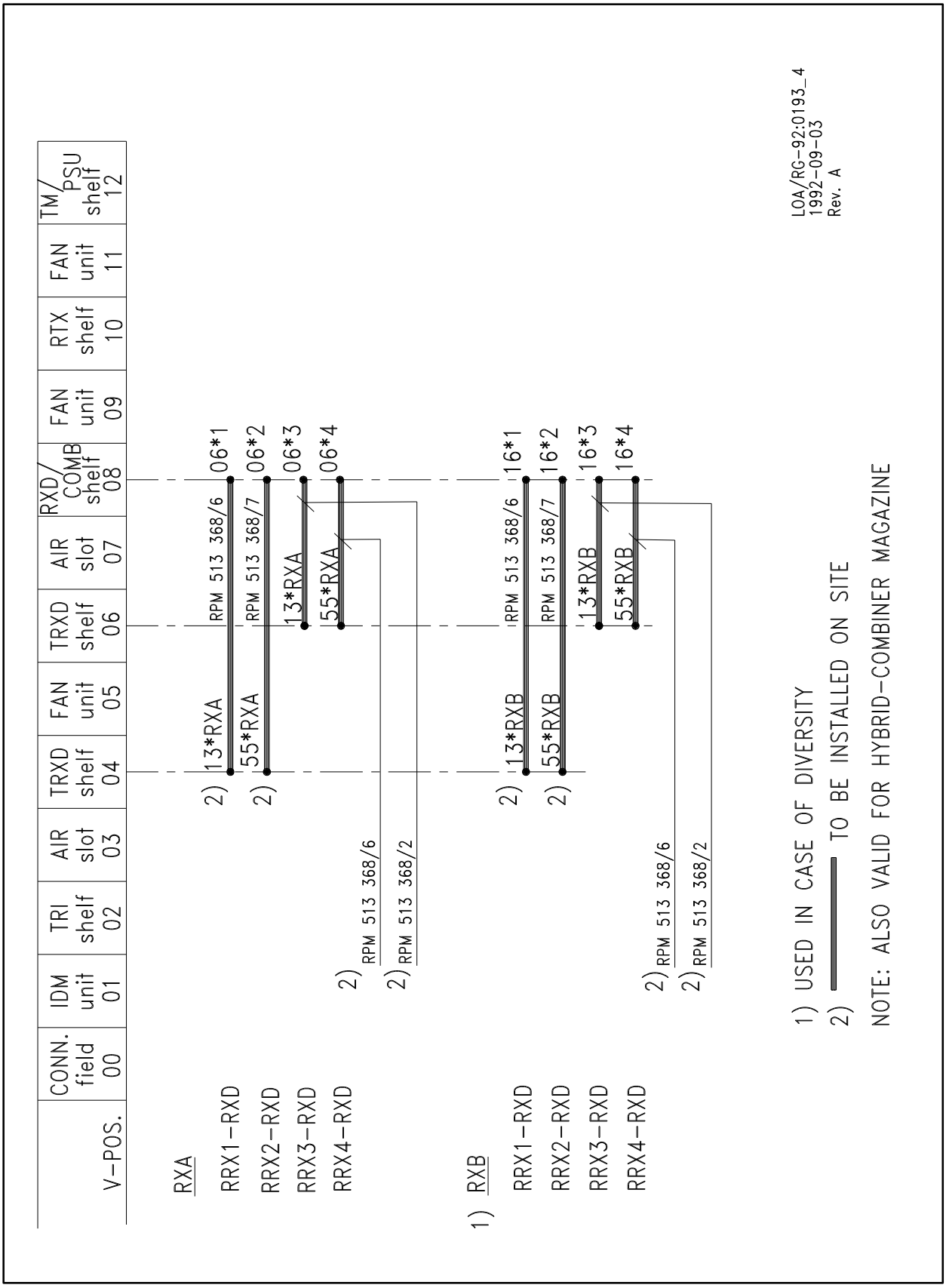


*Figure 6 RX cabling diagram*

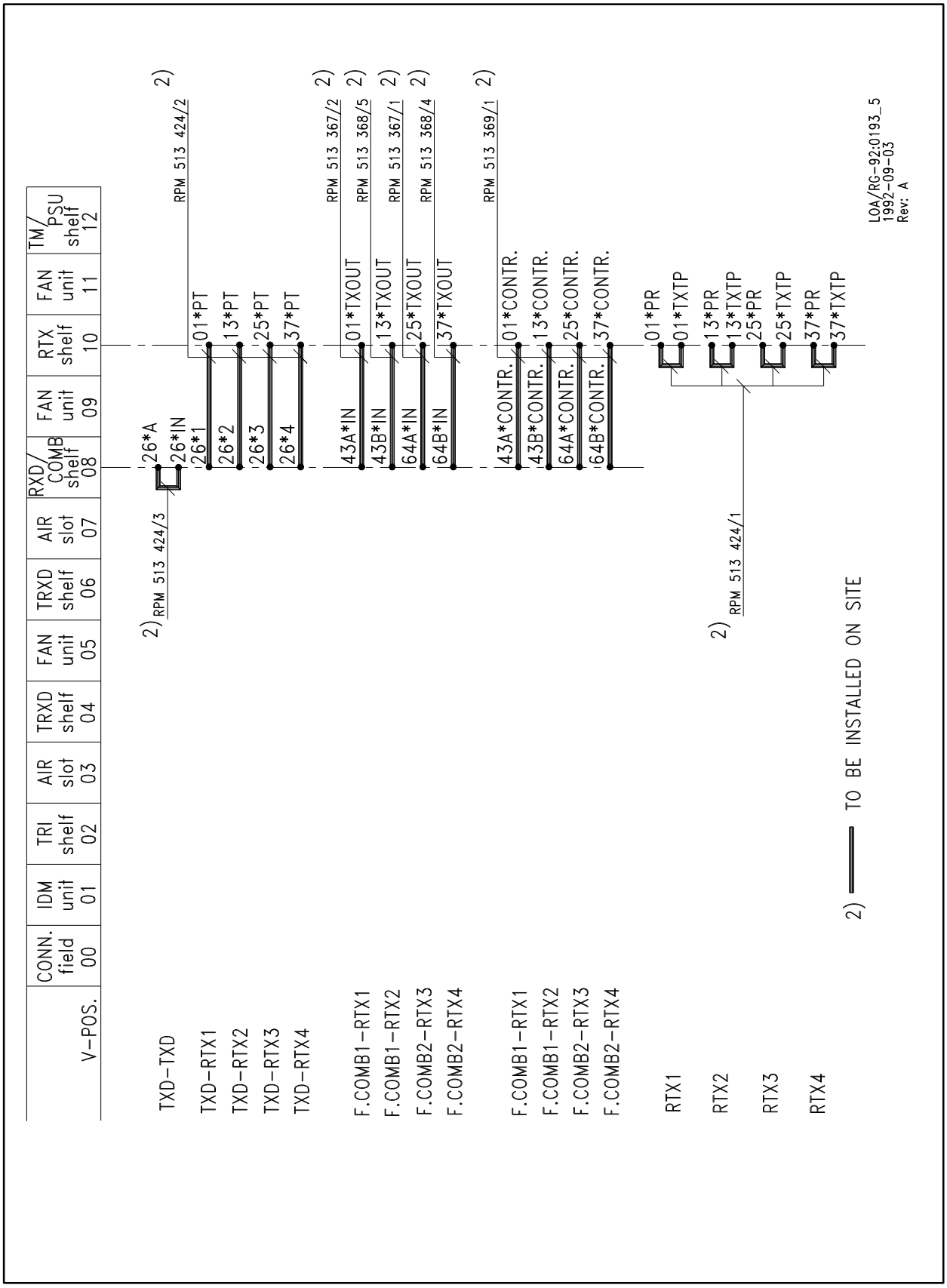


*Figure 7 TX cabling diagram, F-combiner*

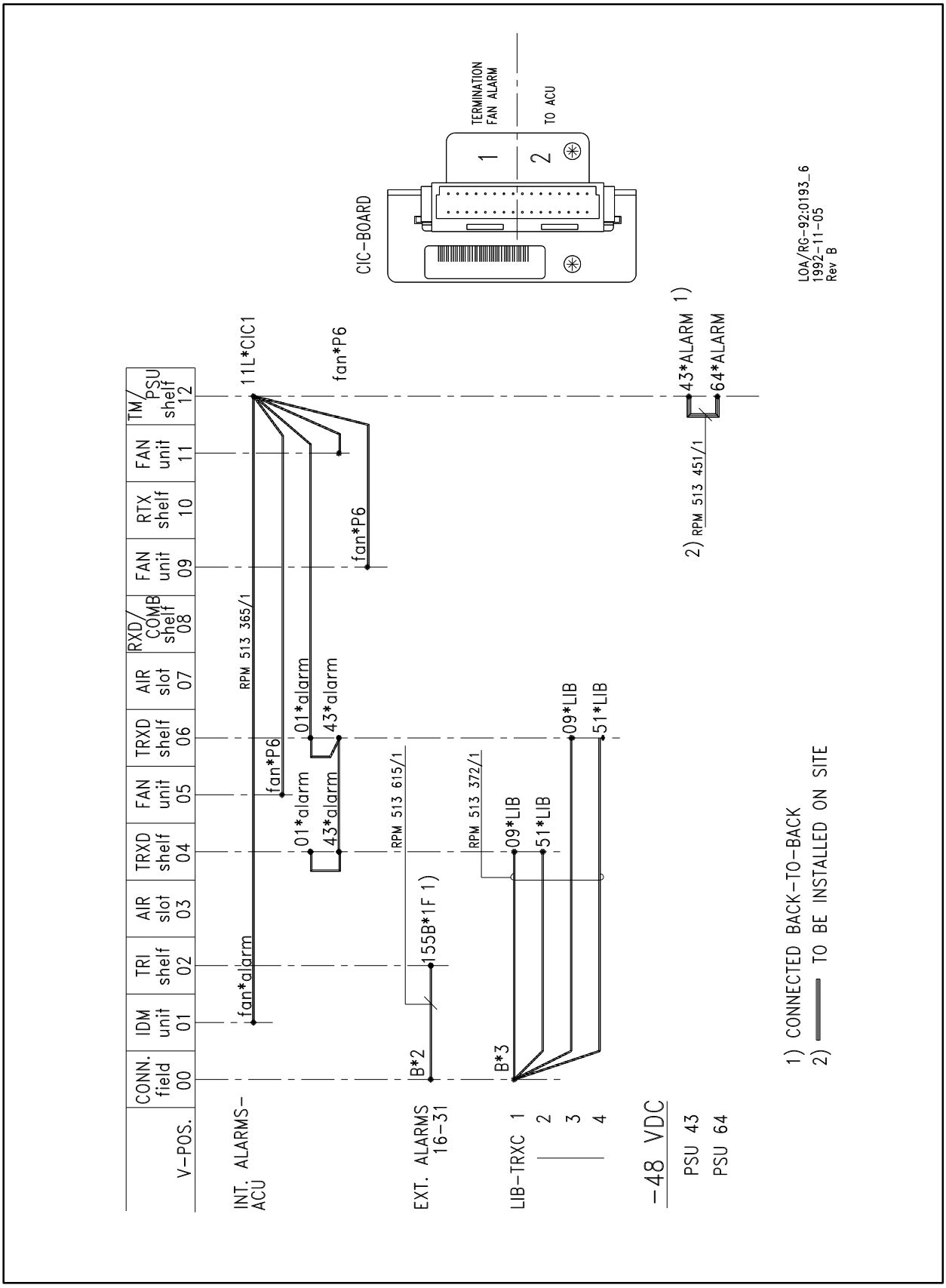


*Figure 8 LIB and alarm cabling*

# 4 Master-Extension cabinet installation

## 4.1 Mechanical structure

The material for this installation has to be ordered separately and is delivered in kits.

The kits include all cables and mechanical parts needed to install a Master and Extension cabinet together.

## 4.2 Extension direction

This instruction is based on an extension from left to right.

## 4.3 Preparation

**DANGER**

High voltage (more than 200V) is used in the operation of this equipment. Direct contact with mains power can be fatal, and indirect contact via damp items may also be fatal.

**Note** Verify that the external AC mains supply is switched OFF before connecting the AC mains cable.

### 4.3.1 Master cabinet

- Dismount the right side cover plate (as seen from the cabinet front), by loosening the 16 nuts on the inside of the cabinet. The cover plate covers the holes for the horizontal cabinet cabling.

### 4.3.2 Extension cabinet

The mechanical structure is the same as for the Master cabinet, except that it is reversed as seen from the cabinet front, so that you have to do the same work on the left side of the cabinet.

In case of a second extension cabinet, this is reversed again.

### 4.3.3 Cabling

1. Cut off the straps, holding the cabling together, to prevent any damage to the cables when opening up the holes for the cabling between the cabinets.

2. To avoid damaging the cables, move the loosened cables away from the cable holes which are to be opened.

## 4.4 Opening up the cable holes

There are 11 places on each side of the cabinet that can be opened up for use as cable holes. See figure 9.

### 4.4.1 Cable holes to be opened

*Table 6*

| Master Cabinet | Extension Cabinet 1 | | Extension Cabinet 2 | | Extension Cabinet 3 |
|---|---|---|---|---|---|
| | Left (L) | Right (R) [5] | Left (L) | Right (R) [5] | Left (L) |
| R 8 [1] | L 8 | R 8 | L 8 | R 8 | L 8 |
| R 11 [2] | L 11 | R 1 | L 1 | R 11 | L 11 |
| R 7 [3] | L 7 | R 7 | L 7 | R 7 | L 7 |
| R 11 [4] | L 11 | R 11 | L 11 | R 11 | L 11 |

[1] Combiner cable

[2] Bus cable

[3] Cabling between RXDA - RXD and TXD - TXD

[4] Alarm cabling

[5] In case of a second or third cabinet

### 4.4.2 Method for opening the cable holes

- Open holes with a sidecutter/cutting pliers as shown in figure 9.

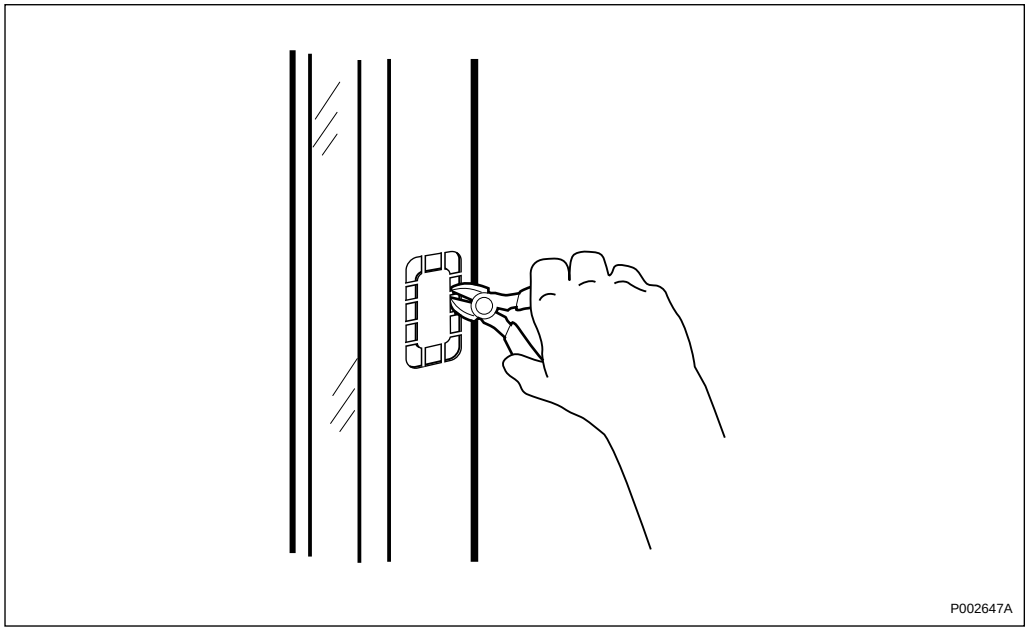


*Figure 9 Opening Cable Holes*

**Note** Check that no sharp edges are left in the cable holes. In such case, file smooth..

### 4.4.3 Mechanical shielding

Before putting the cabinets together, mount a shielding gasket around each cable hole on one of the cabinets.

- Cut out the shielding gaskets from the piece of shielding material included in the extension kit. The shielding gasket should cover approximately 1 cm around the cable hole as shown in figure 10.

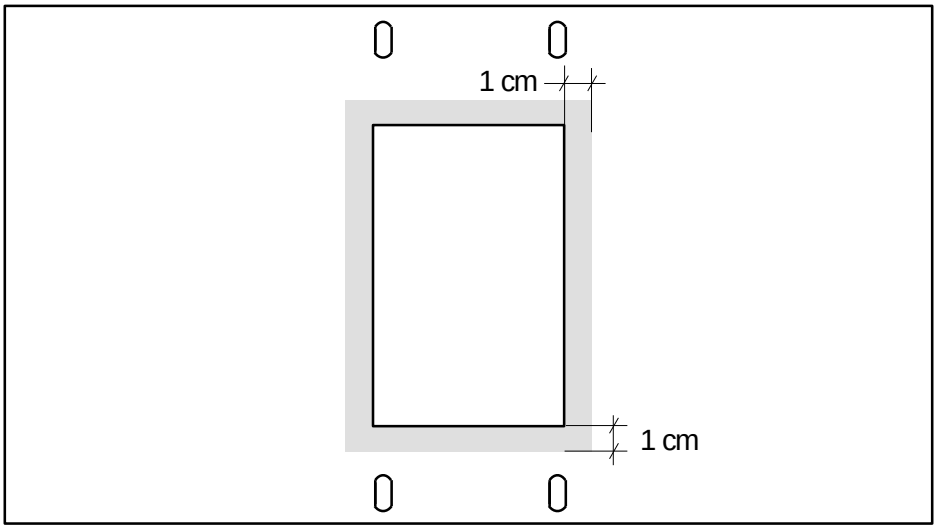


*Figure 10 Mounting shielding gasket around cable holes*

### 4.4.4 Putting cabinets together

**WARNING**

There is a danger of the assembly toppling over, which could cause injury to personnel or damage to the equipment.

- Check carefully that the cabinets are level with each other before fastening them together.

**Note** If cabinets are not level with each other, it may become difficult to fasten screws and other equipment necessary to the installation.

### 4.4.5 Fastening the cabinets

1. Fasten extension cabinet to the floor in the same way as described in Cabinet - General Information, sub-section 3.0, Cabinet fastening.

2. Use four screws for each opened cable hole to fasten the cabinets together. The holes for the screws are positioned in each corner of the cable hole, see figure 10.

   Screws must be screwed in from left to right to fit the pre-installed nuts.

3. Use the M8 screws and nuts in the cable hole that has not been opened.

4. On the cabinet tops, install the four brackets with screws included in the extension kit. See figure 11.

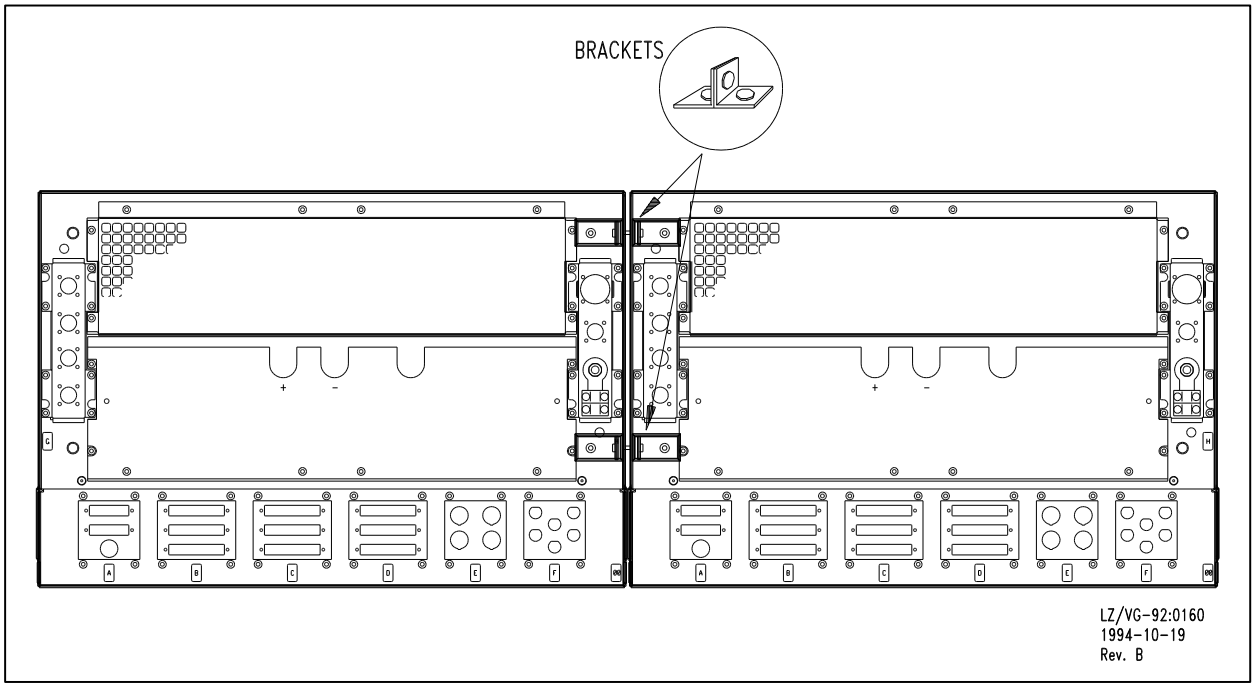


*Figure 11 Fastening cabinet tops with brackets (Seen from above)*

### 4.4.6 Protective collar

- Mount a plastic collar in each cable hole to prevent damages on the cables going through them. The protective collars are included in the extension kit.

## 4.5 Cabling

- Install all cabling according to the tables included in this chapter.

The cables and mechanical parts needed to connect a Master to an Extension cabinet and an Extension to Extension cabinet are included in three separate kits:

*Table 7*

| Cabinet | Kit Product number |
|---|---|
| Master - Extension 1 | NTM 201 651/01 |
| Master - Extension 1 (left) | NTM 201 871/01 |

| | |
|---|---|
| Extension 1 - Extension 2 | NTM 201 652/01 |
| Extension 2 - Extension 3 | NTM 201 653/01 |

## 4.6 Alarm cabling

For the transfer of fan and TRXC alarms from an extension cabinet to the Alarm Collection Unit ACU/TRXT in a master cabinet, a CIC board has to be mounted in every extension cabinet. The CIC board works as a junction between the alarm collecting cable in the extension cabinet and the ACU/TRXT in the Master cabinet.

1. Mount the CIC board on the left side of the cabinet, as seen facing the left side, according to figure 12.

2. See Internal cabling diagrams in this chapter for detailed information about the cabling.

All material needed for installing the CIC board and the cabling is included in the extension kit.

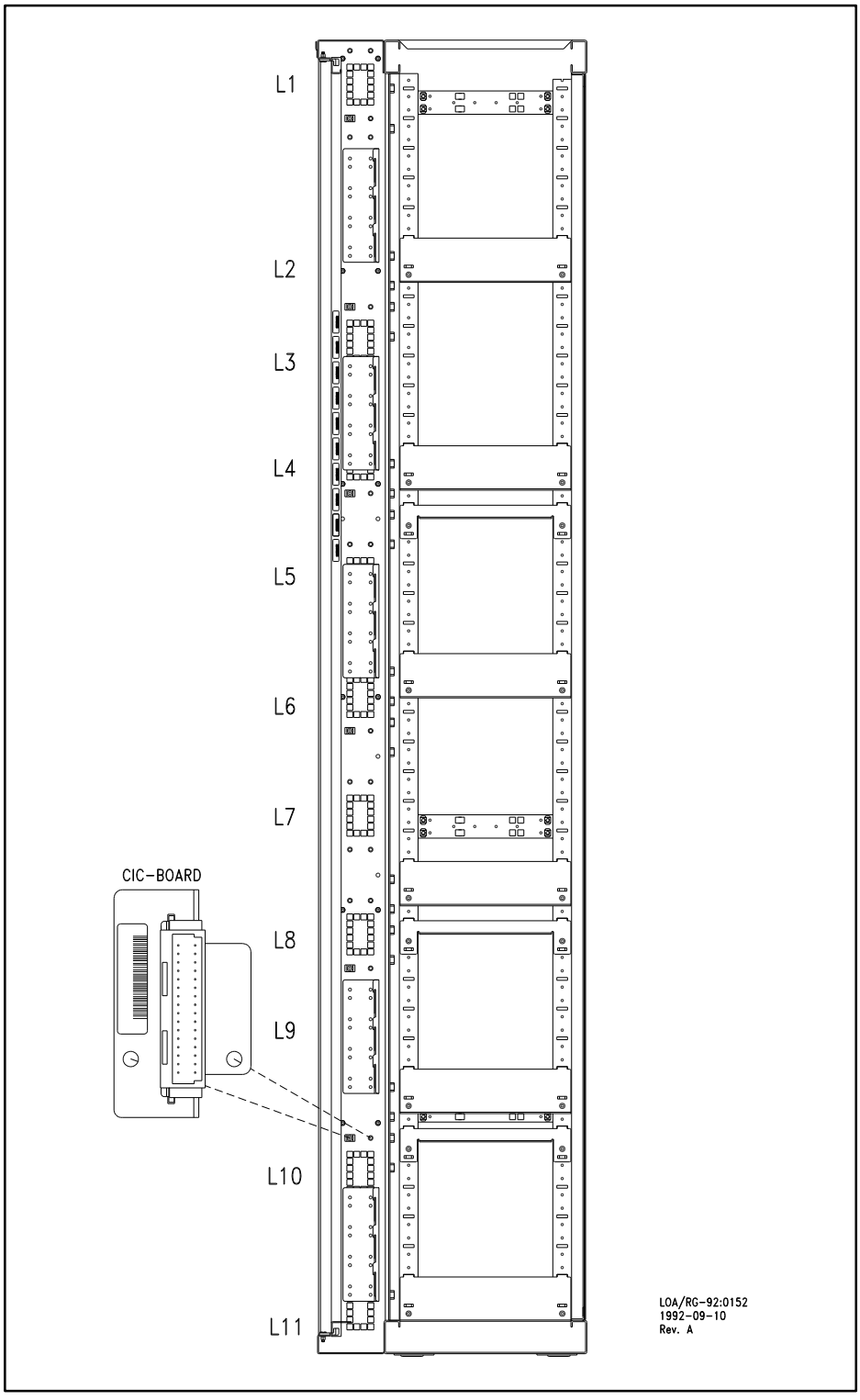


*Figure 12 CIC board*

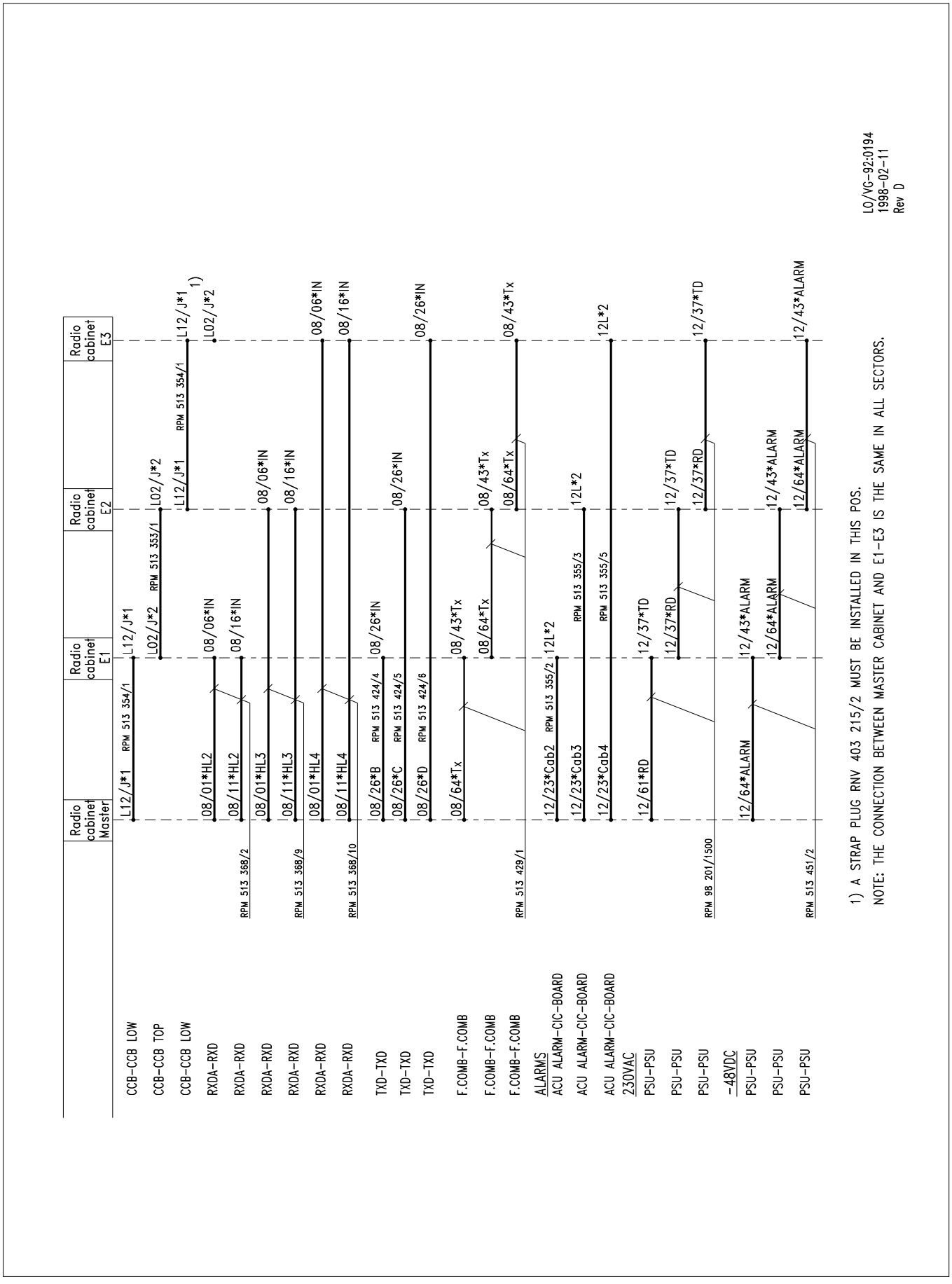


*Figure 13 Connection of Master to Extension Cabinets 1, 2 & 3*

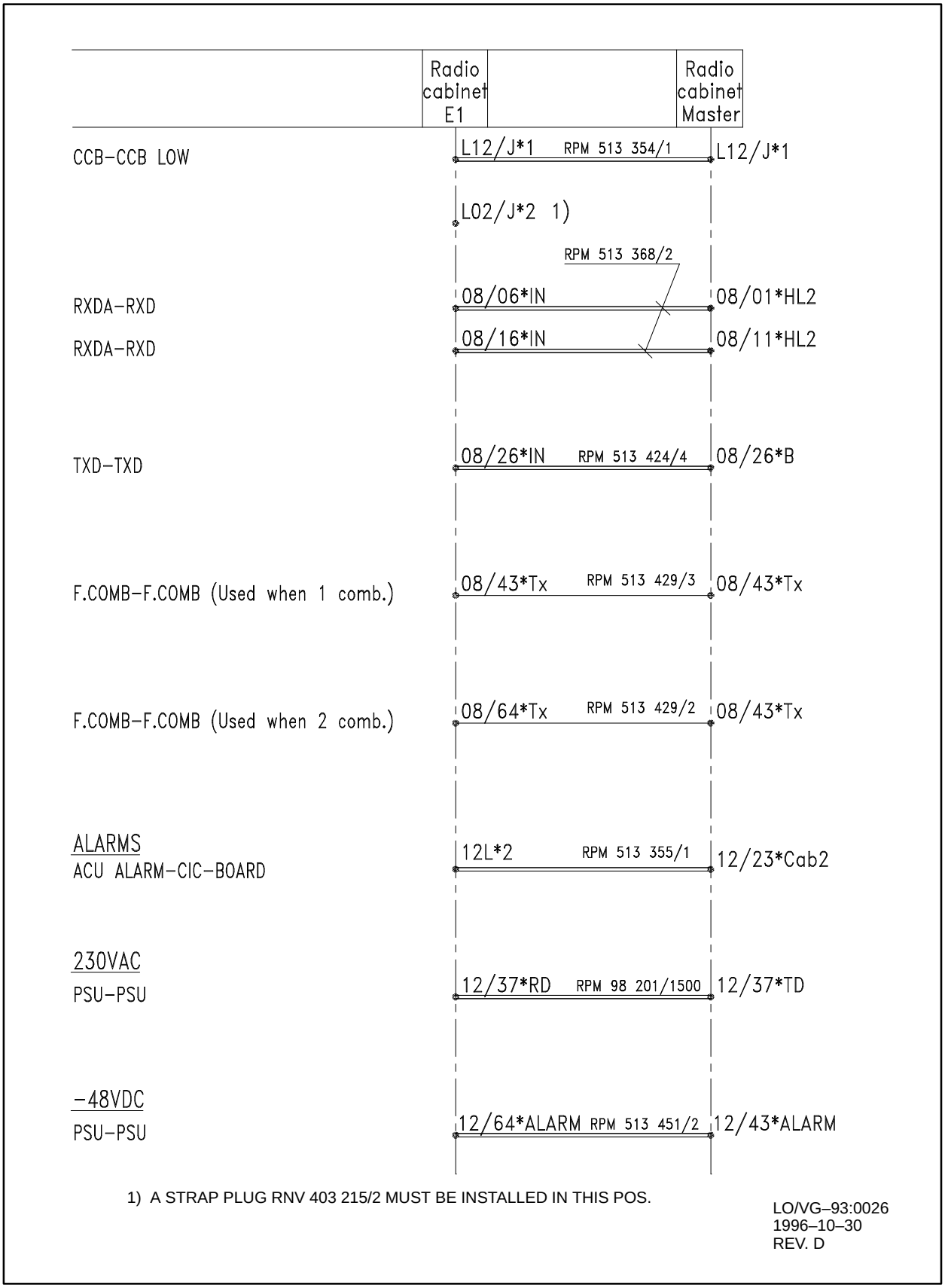


*Figure 14 Connection of Master to Extension Cabinet, left*

# External Cabling

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| figure 13 | External alarm number and connection of cable RPM 513 338 to Distribution Frame | 16 |

# 1 External cabling

## 1.1 External cables

*Table 1*

| Cable type | Product number | Qty |
|---|---|---|
| LIB Bus | RPM 513 336/500 | According to site |
| LIB Bus | RPM 513 336/6500 | specification |
| External alarms | RPM 513 338 | |
| PCM Transmission 75 ohm | RPM 513 339 | |
| PCM Transmission 120 ohm | RPM 513 349 alt. RPM 513 698/15000 | |
| Power system (230V AC) | | |
| BIM-DISTR | TFK 100 510/08 | |
| PSU-BIM | BMY 105 045/1 | |
| PSU-PSU | RPM 98 201/1500 | |
| PSU-PSU | RPM 98 201/500 | |
| PSU-PSU | RPM 98 201/10000 | |
| Alarm-EFU | TSR 202 0111/15000 | 1) |
| EFU-DF | TSR 211 0203/15000 | 1) |
| Alarm-RTP | TFK 250 201/08 | 2) |
| RTP-DF | TSR 211 0203/1500 | 2) |

1) when EFU is used

2) when RTP is used

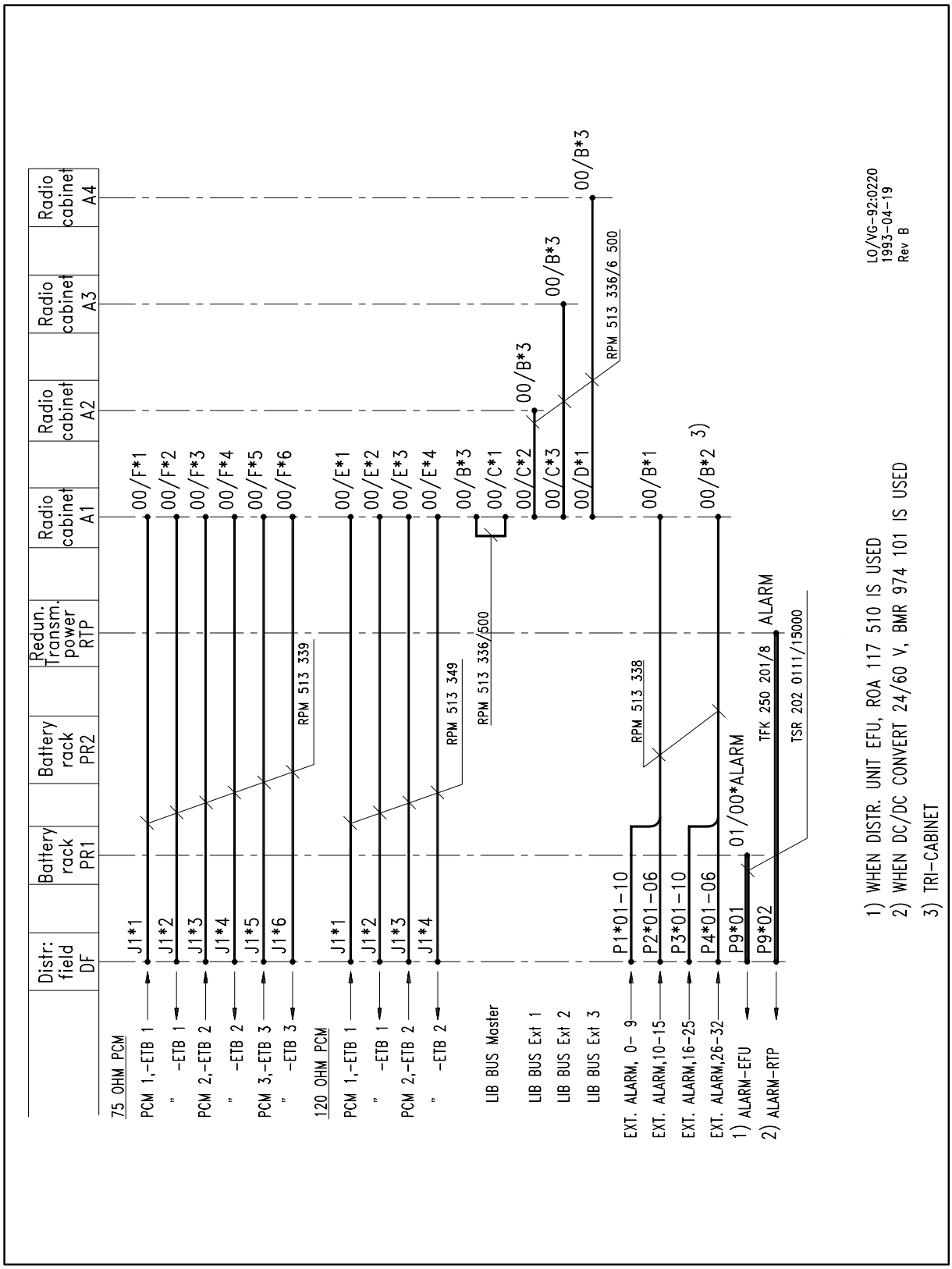


*Figure 1 Signal cabling, 1 cell configuration*

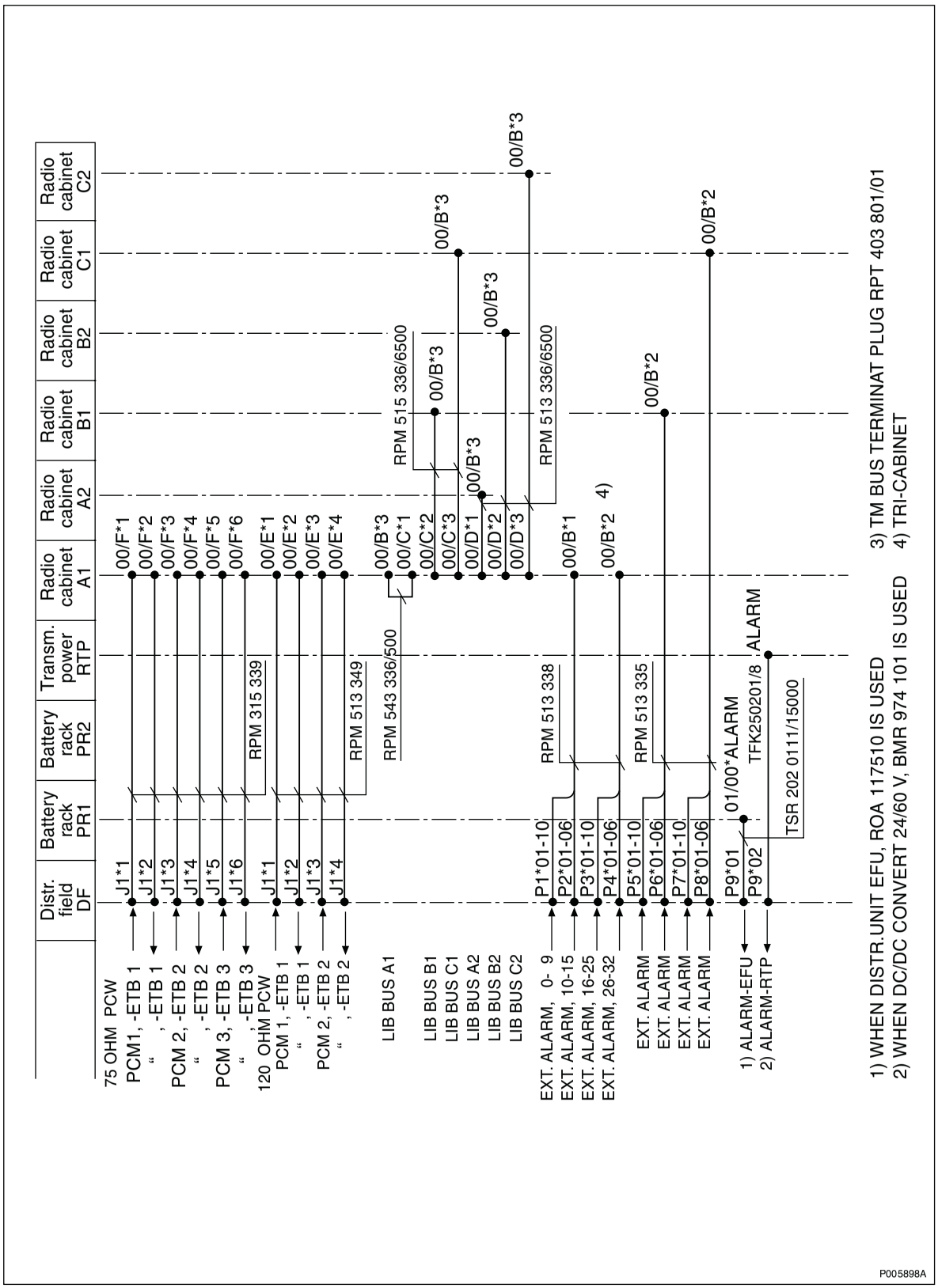


*Figure 2 Signal cabling, 3 cell configuration*

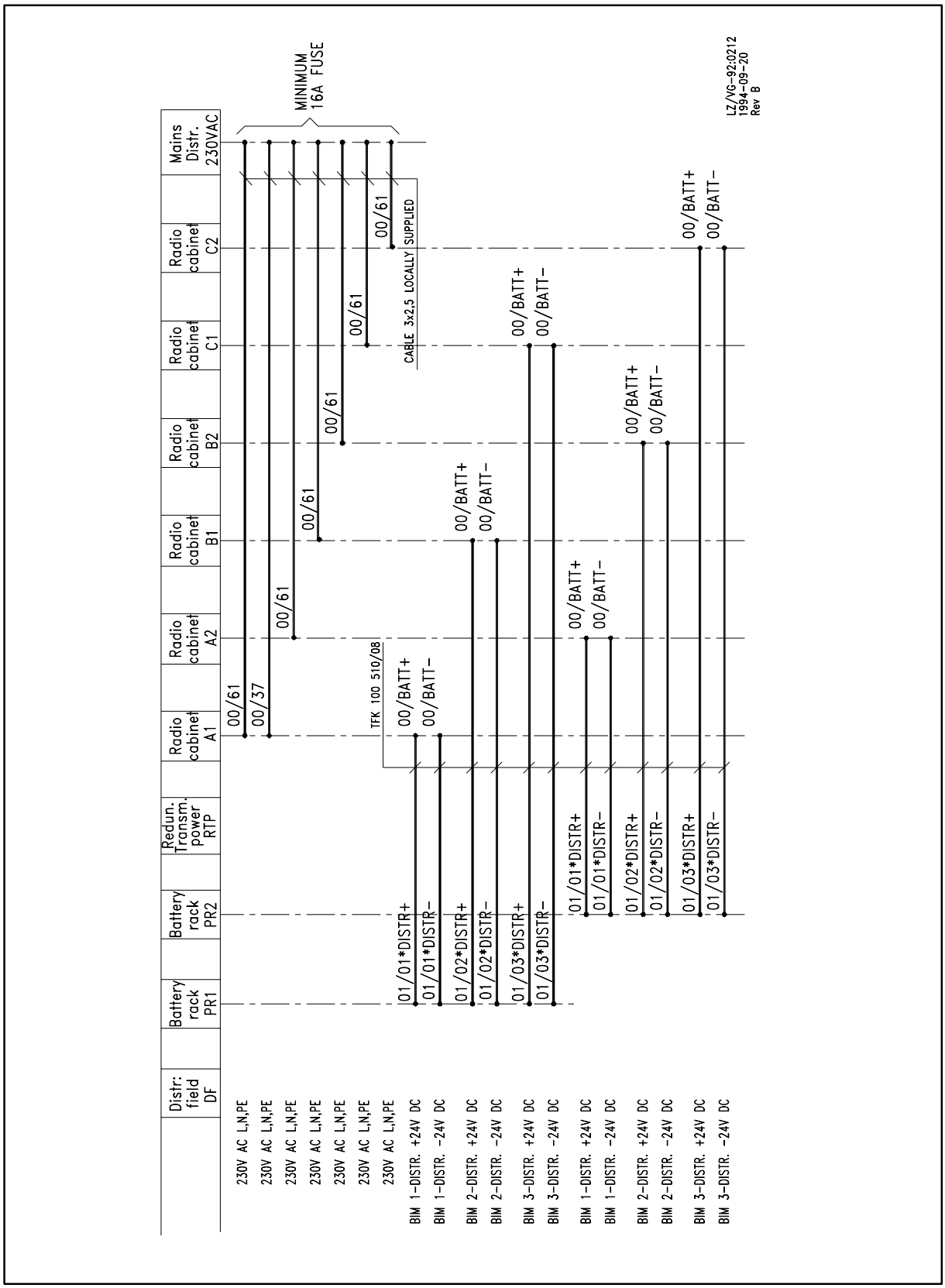


*Figure 3 External Power supply 230V AC*

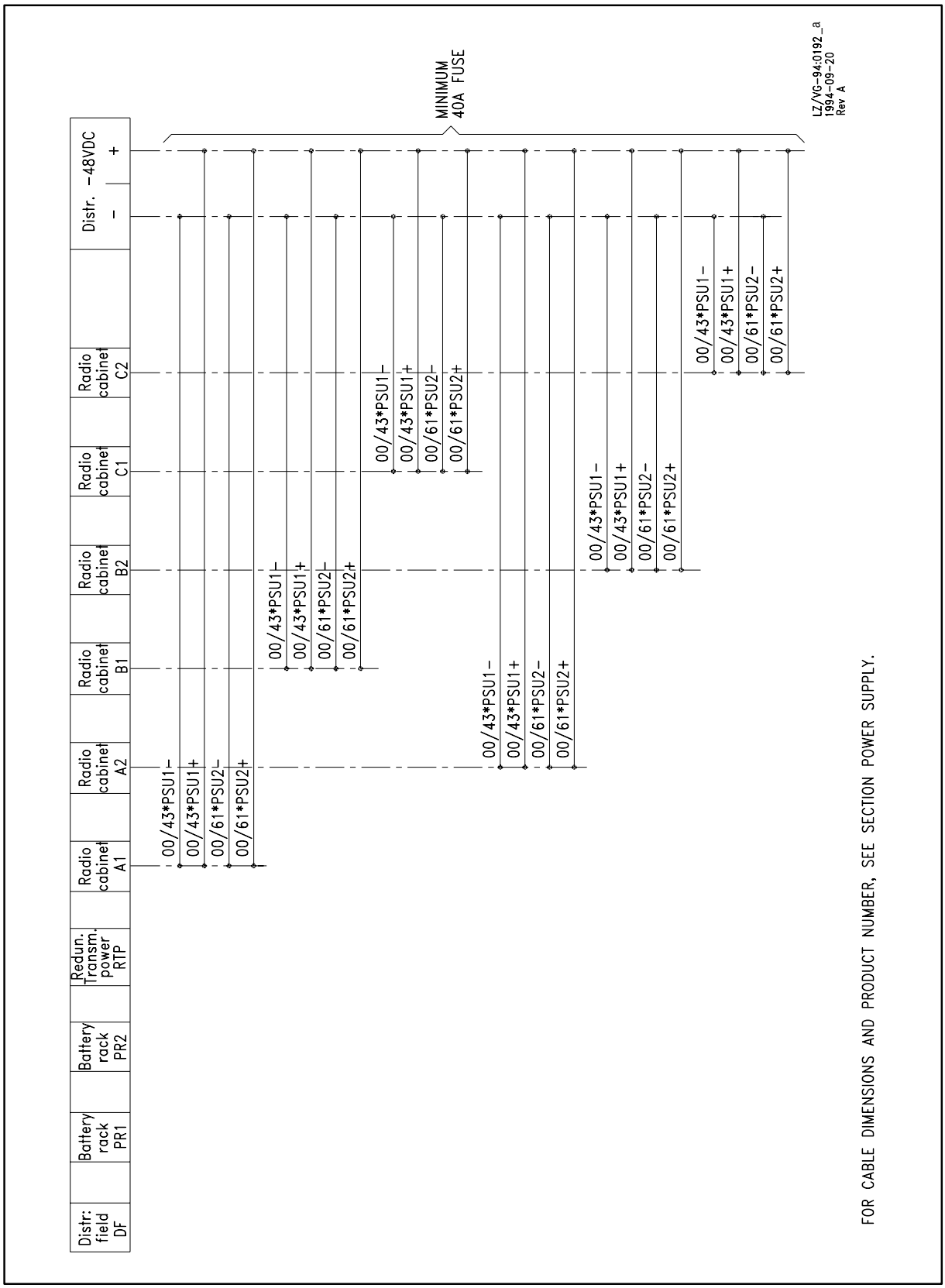


*Figure 4 External Power supply -48V DC*

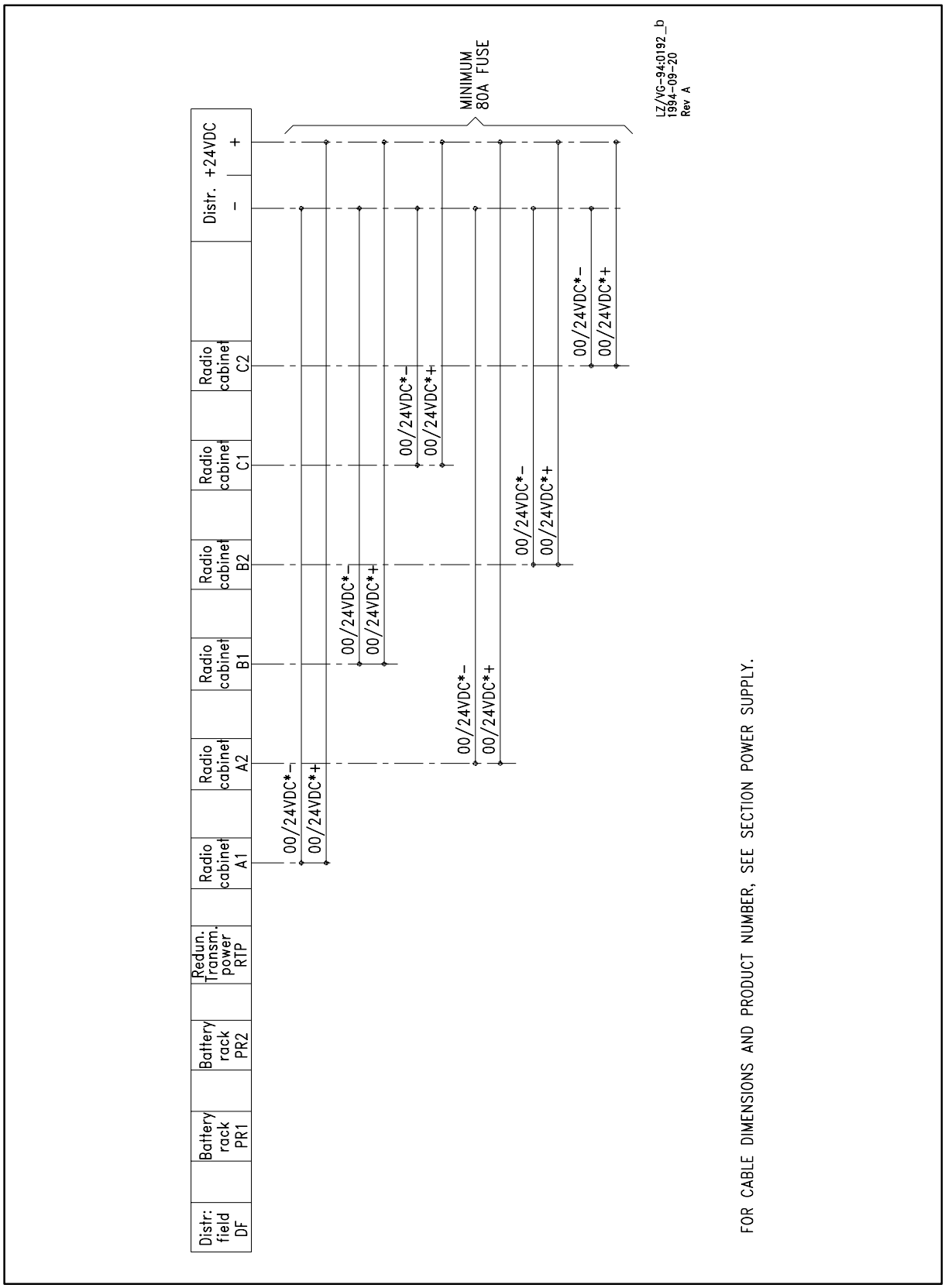


*Figure 5 External Power supply +24V DC*

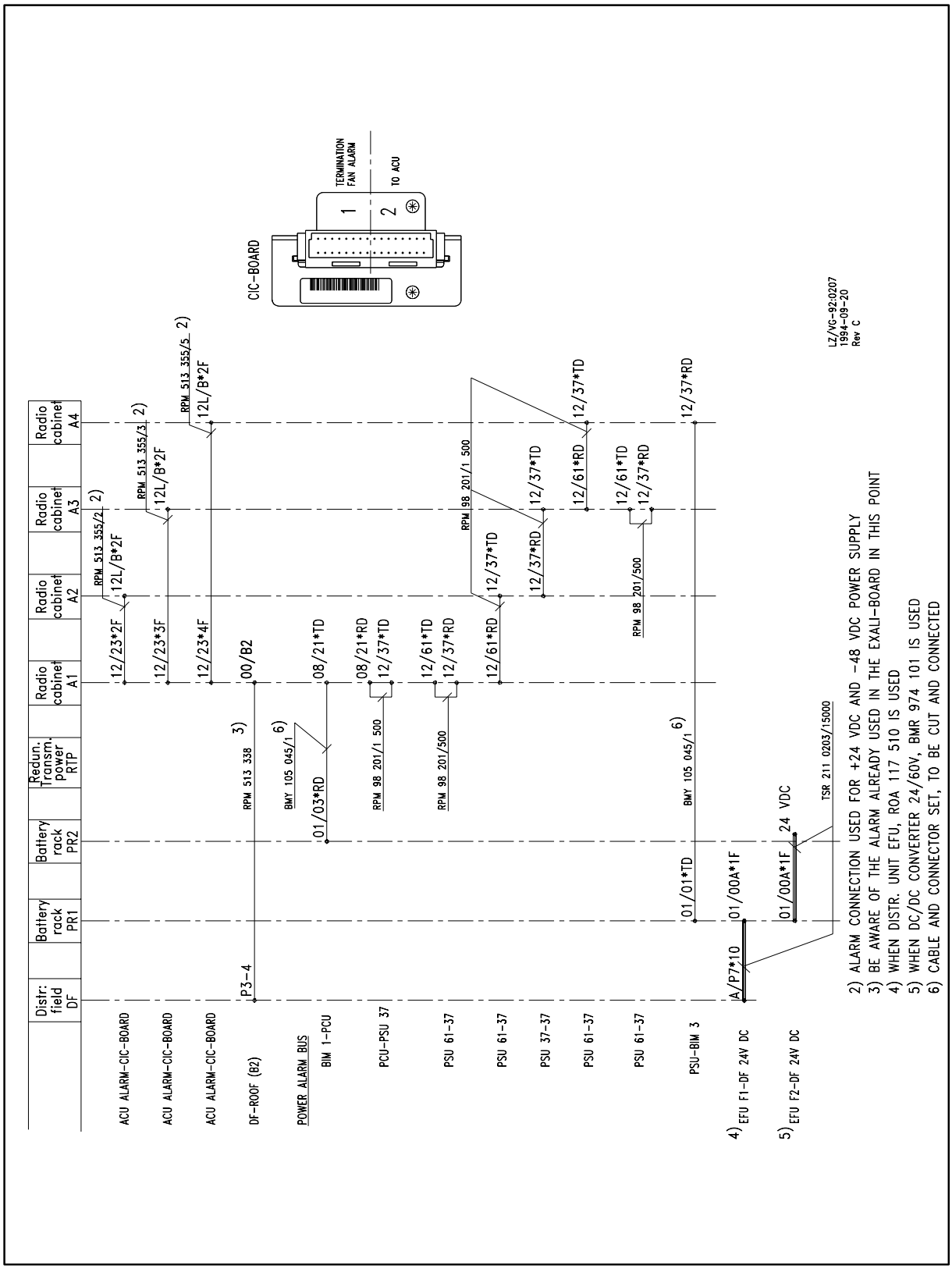


*Figure 6 Alarm cabling 230V AC (1 cell site)*

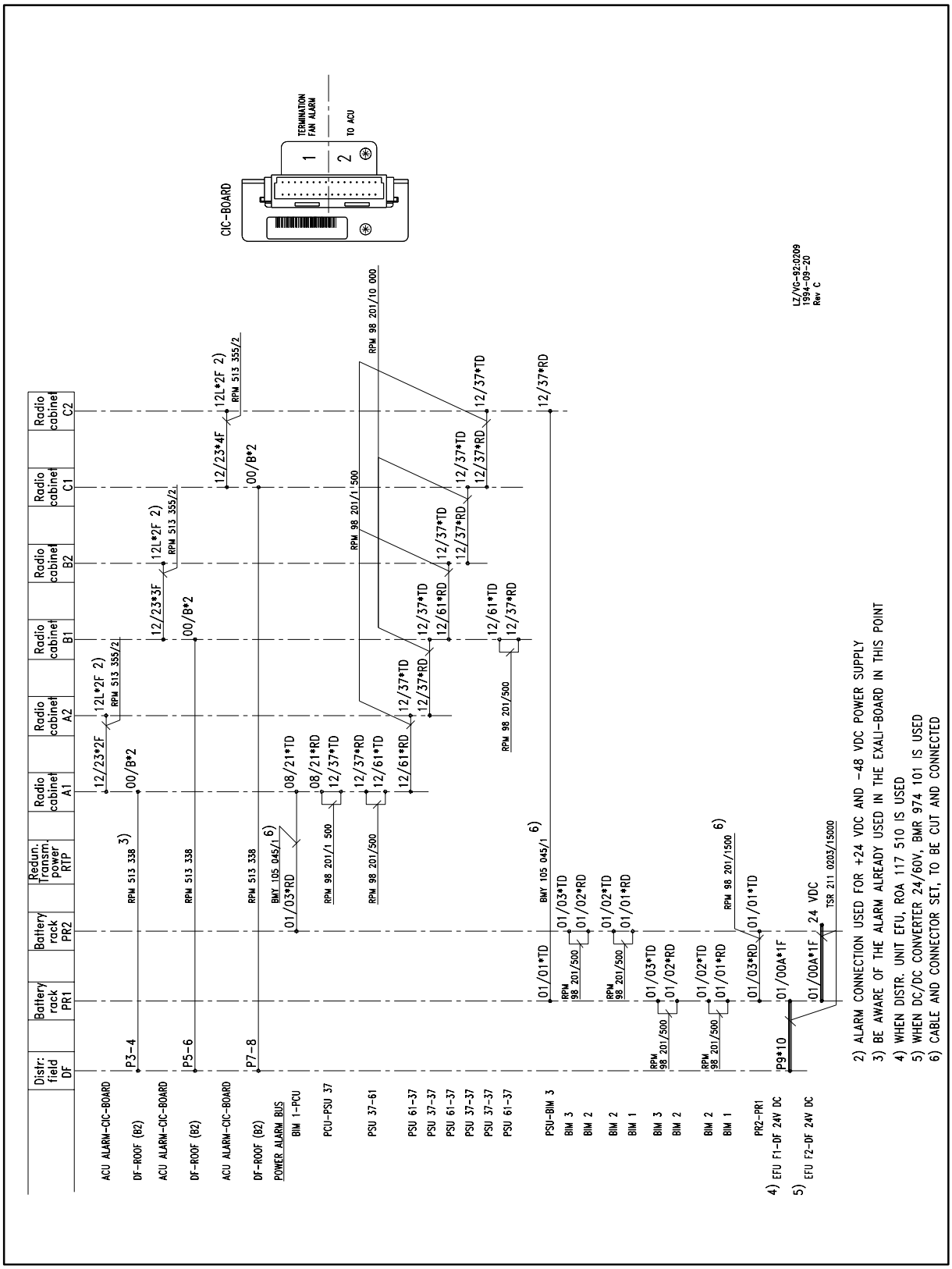


*Figure 7 Alarm cabling 230V AC (sector site)*

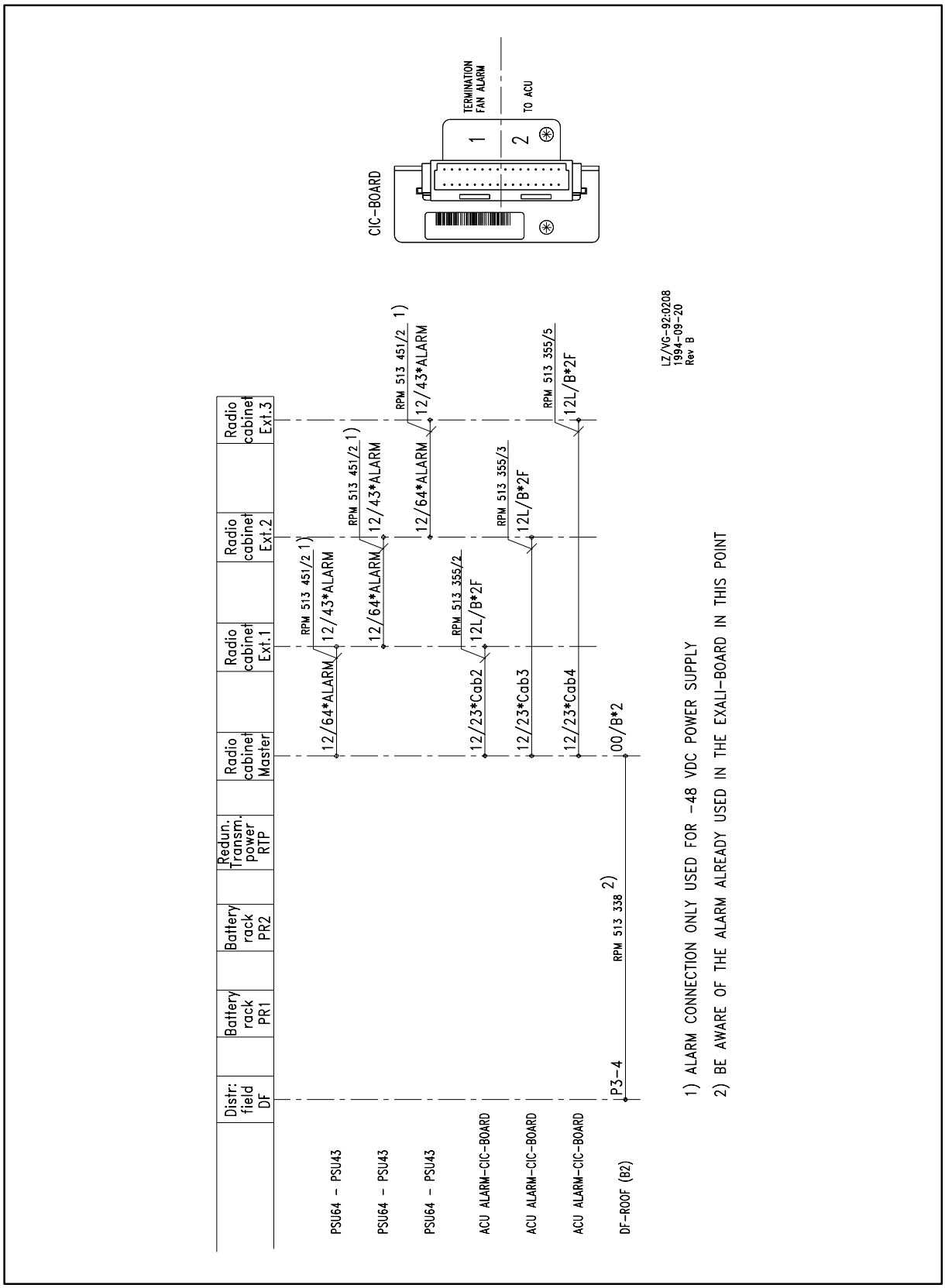


*Figure 8 Alarm cabling -48V DC and +24V DC (1 cell site)*

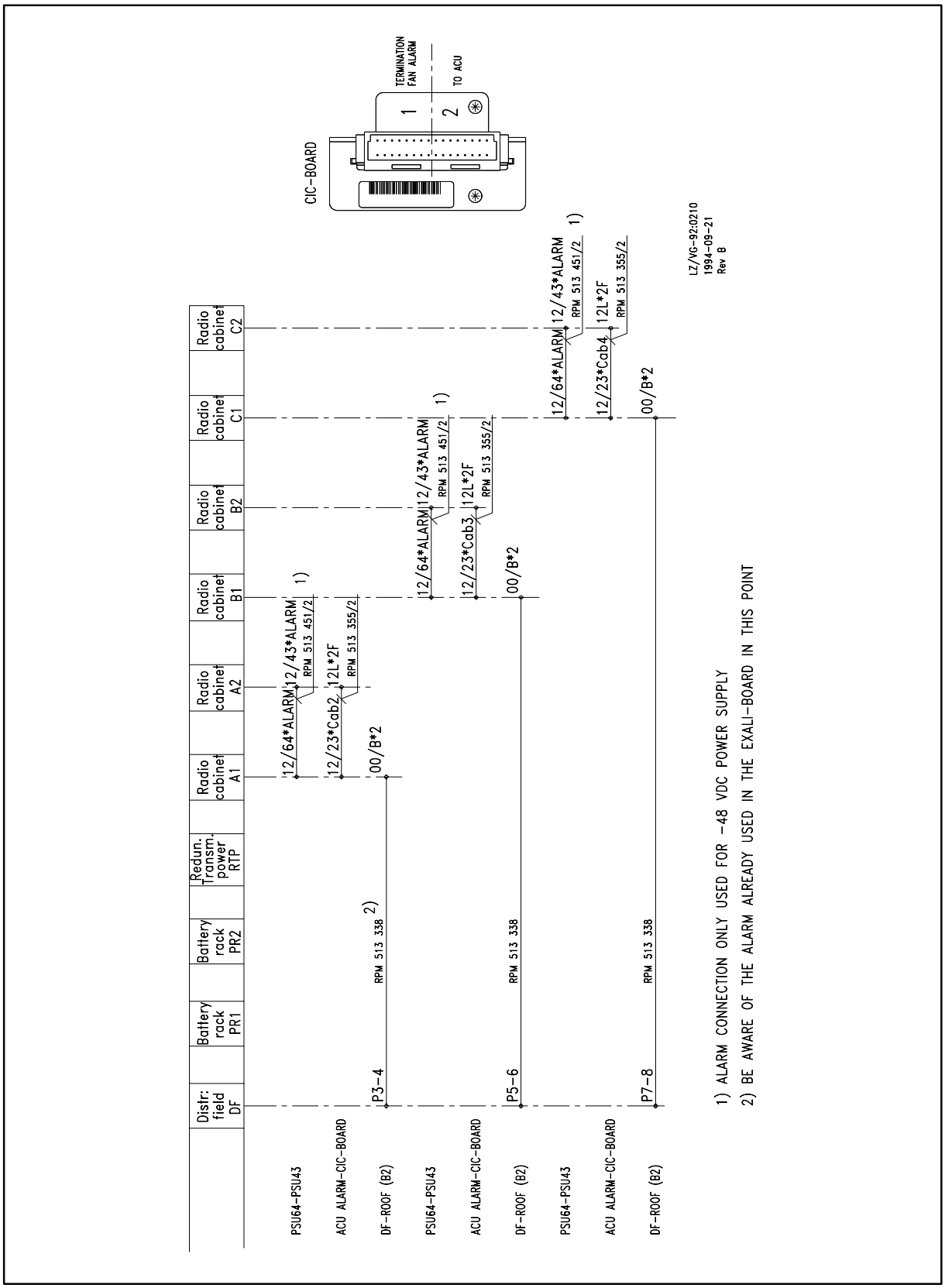


*Figure 9 Alarm cabling -48V DC and +24V DC (sector site)*

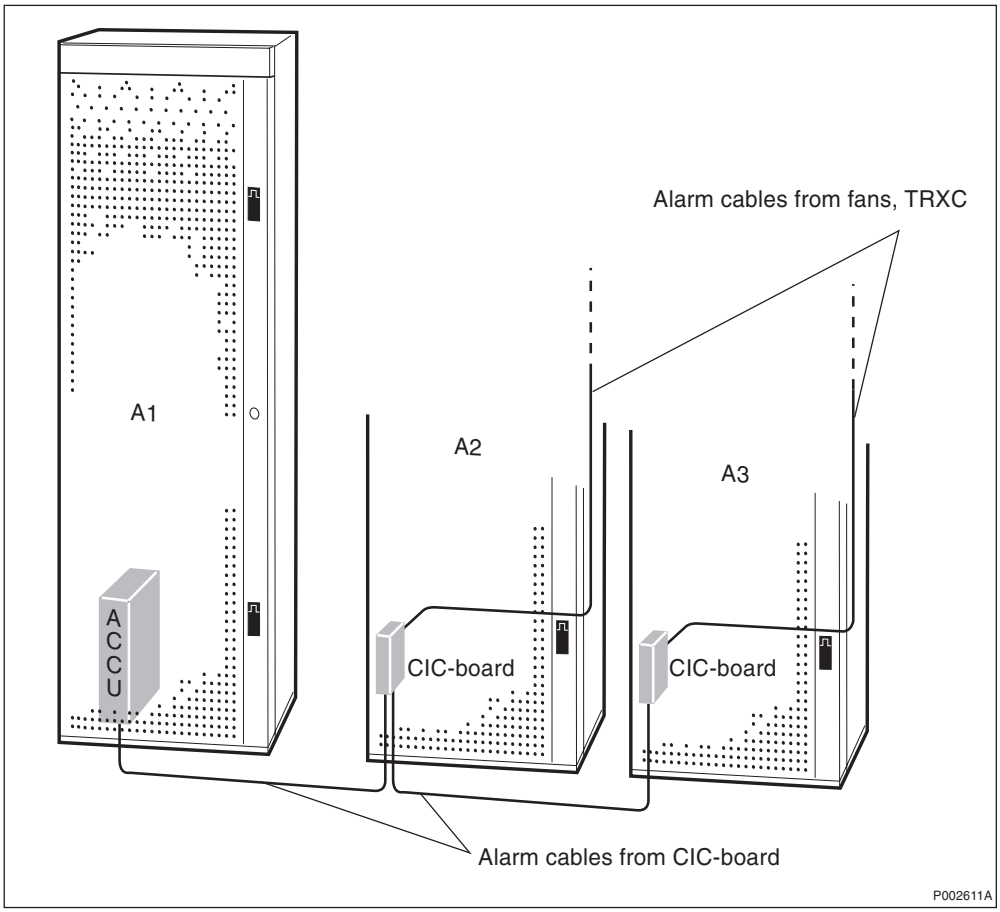


*Figure 10 Alarm connections between ACU and CIC board*

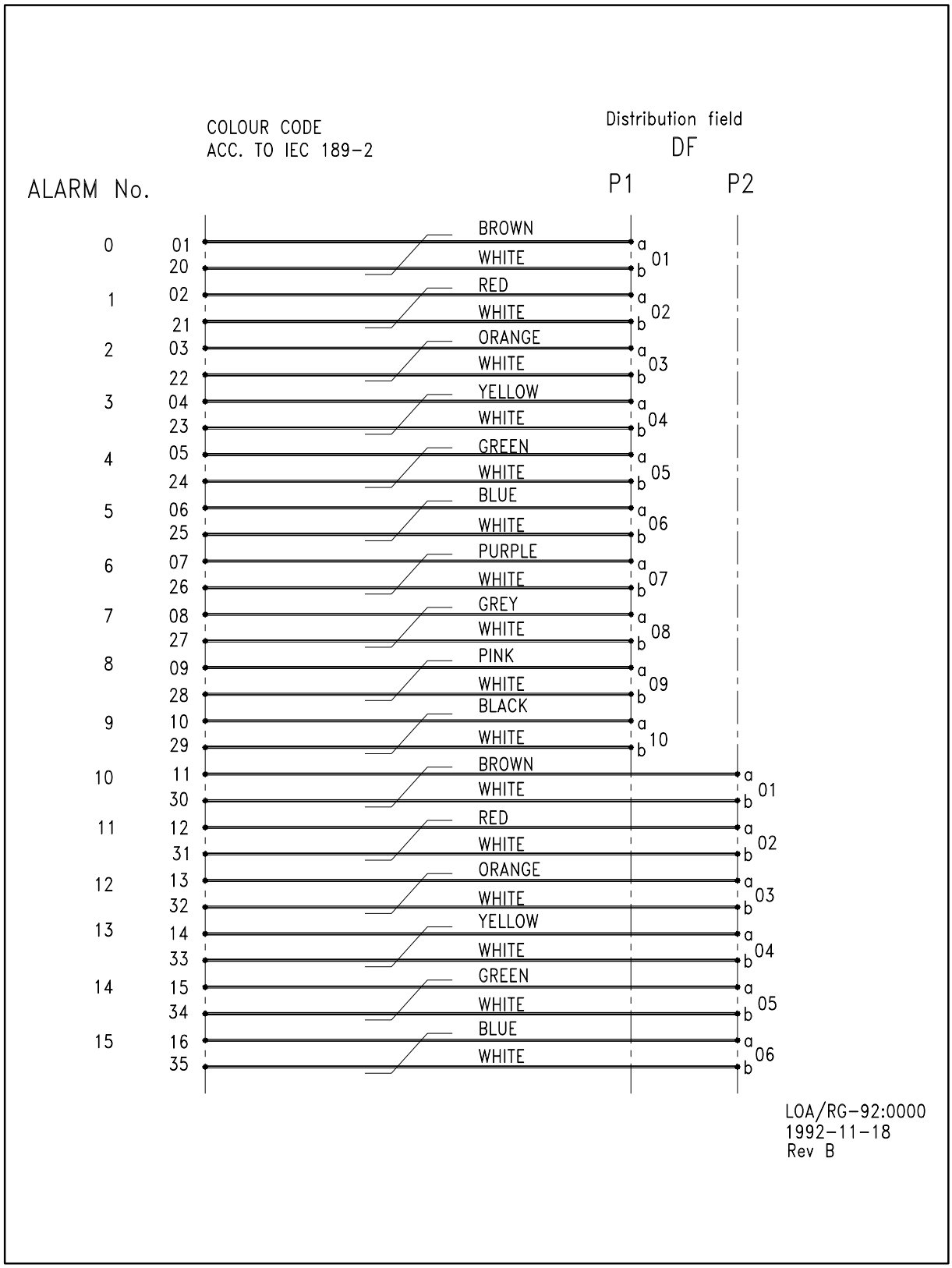


*Figure 11 External alarm number and connection of cable RPM 513 338 to Distribution Frame*

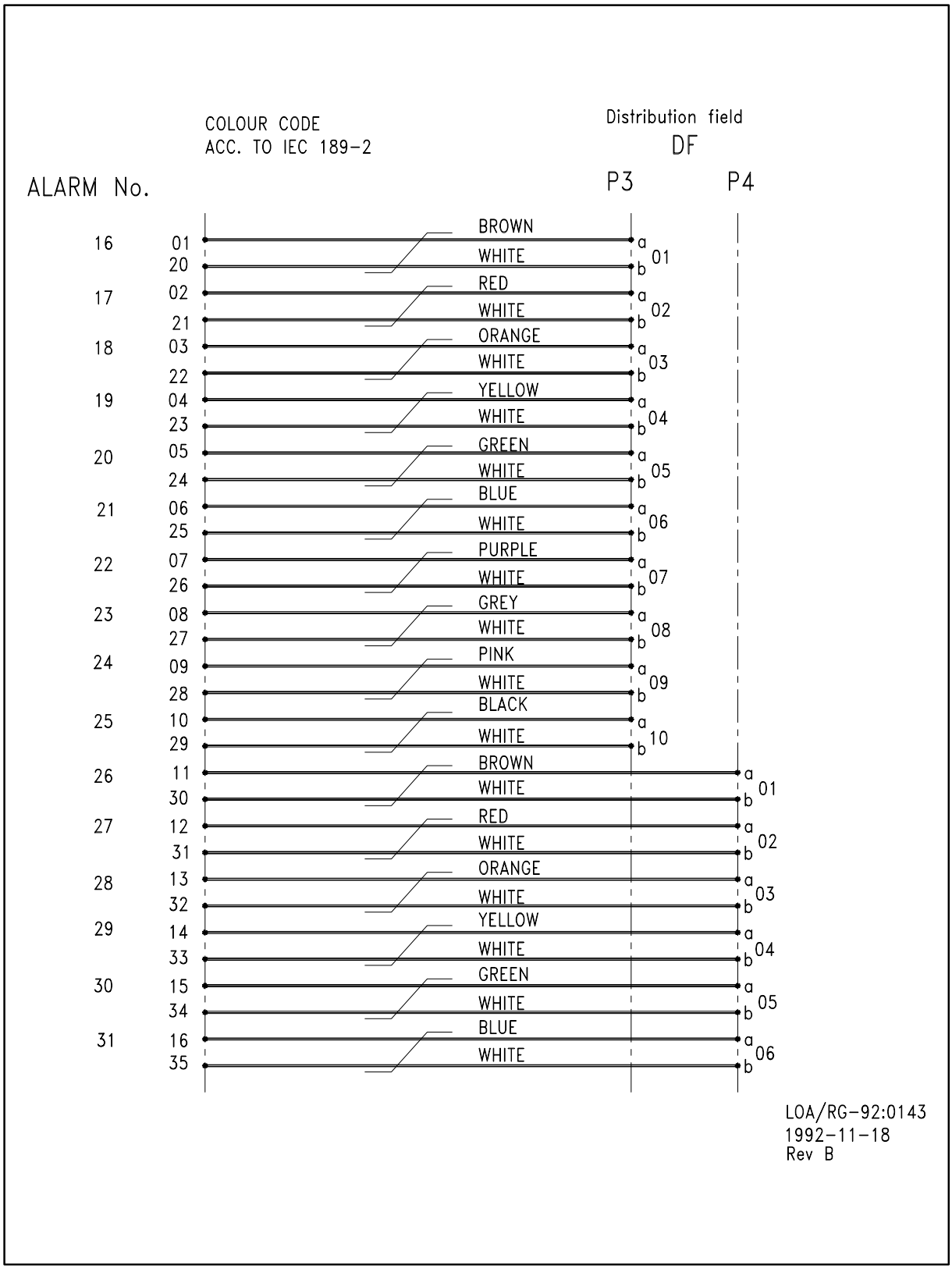


*Figure 12 External alarm number and connection of cable RPM 513 338 to Distribution Frame*

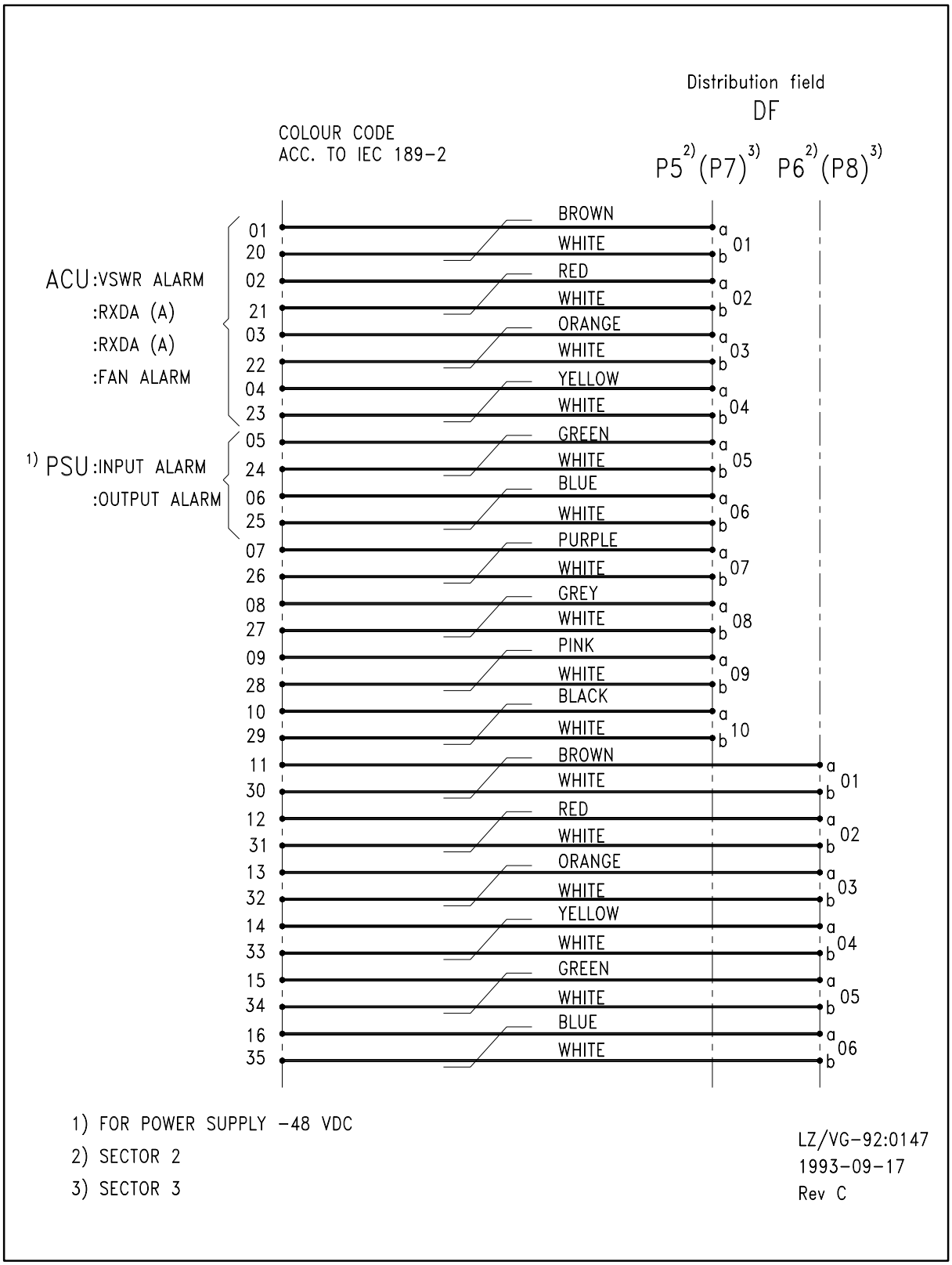


*Figure 13 External alarm number and connection of cable RPM 513 338 to Distribution Frame*

| Uppgjord — *Prepared* | Faktaansvarig — *Subject responsible* | Nr — *No.* | | |
|---|---|---|---|---|
| ERA/LZ/TG PIAH | | 102 01-COH 109 2015/1 Uen | | |
| Dokansv/Godk — *Doc respons/Approved* | Kontr — *Checked* | Datum — *Date* | Rev | File |
| ERA/LZ/TGC (ERABVN) | | 1998-01-30 | A | |

# Labelling

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**1 Labelling 2**

# 1 Labelling

Before cabling a cabinet, attach remaining labels to the cables for the TRI and external cables.

1. Identify the cable by the Product code sign, which has been mounted on the cable at the factory, (4) in figure 1.

2. Find correponding cable type product code on the label sheet.

3. Remove POS. label pairs and fold labels around label center lines.

4. Put a label into the Label holder type 860 1839, (1) in figure 1.

   Make sure, when putting the label in the holder, that the upper side of the label holder shows the position where to connect the connector and that the opposite side of the label shows where to find the other end of the cable.

5. Clamp label holder to cable using Cable clamp set 103 15, (2) in figure 1.

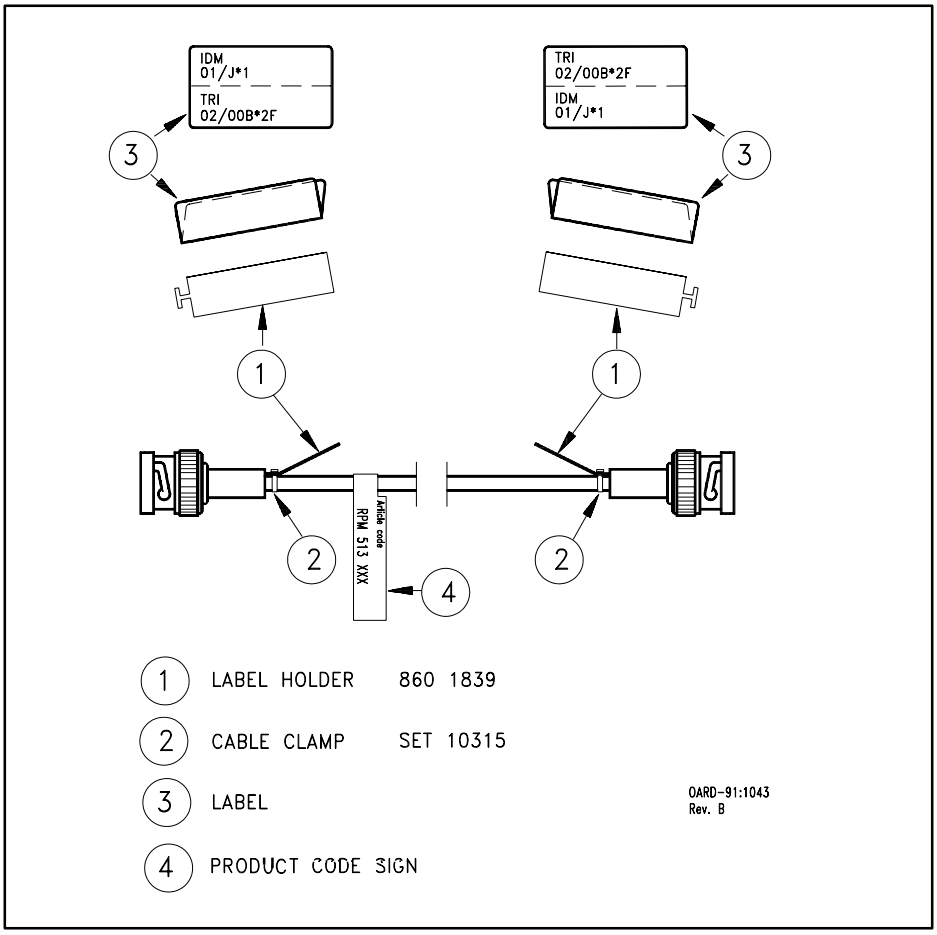


*Figure 1 Attaching labels on a cable*

# Co-siting

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# 1 Co-siting panel

## 1.1 Co-siting panel layout

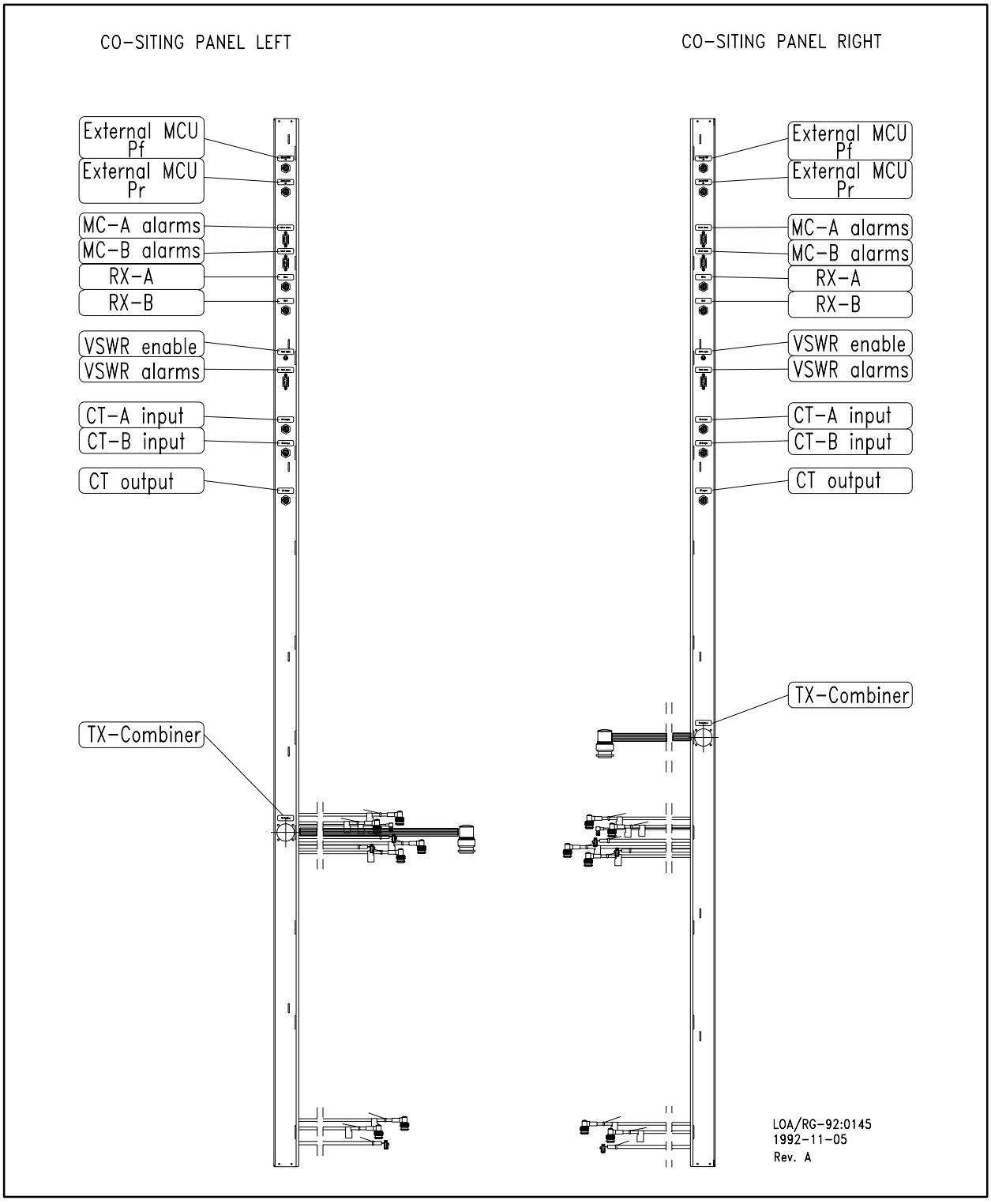


*Figure 1 Co-siting panel layout*

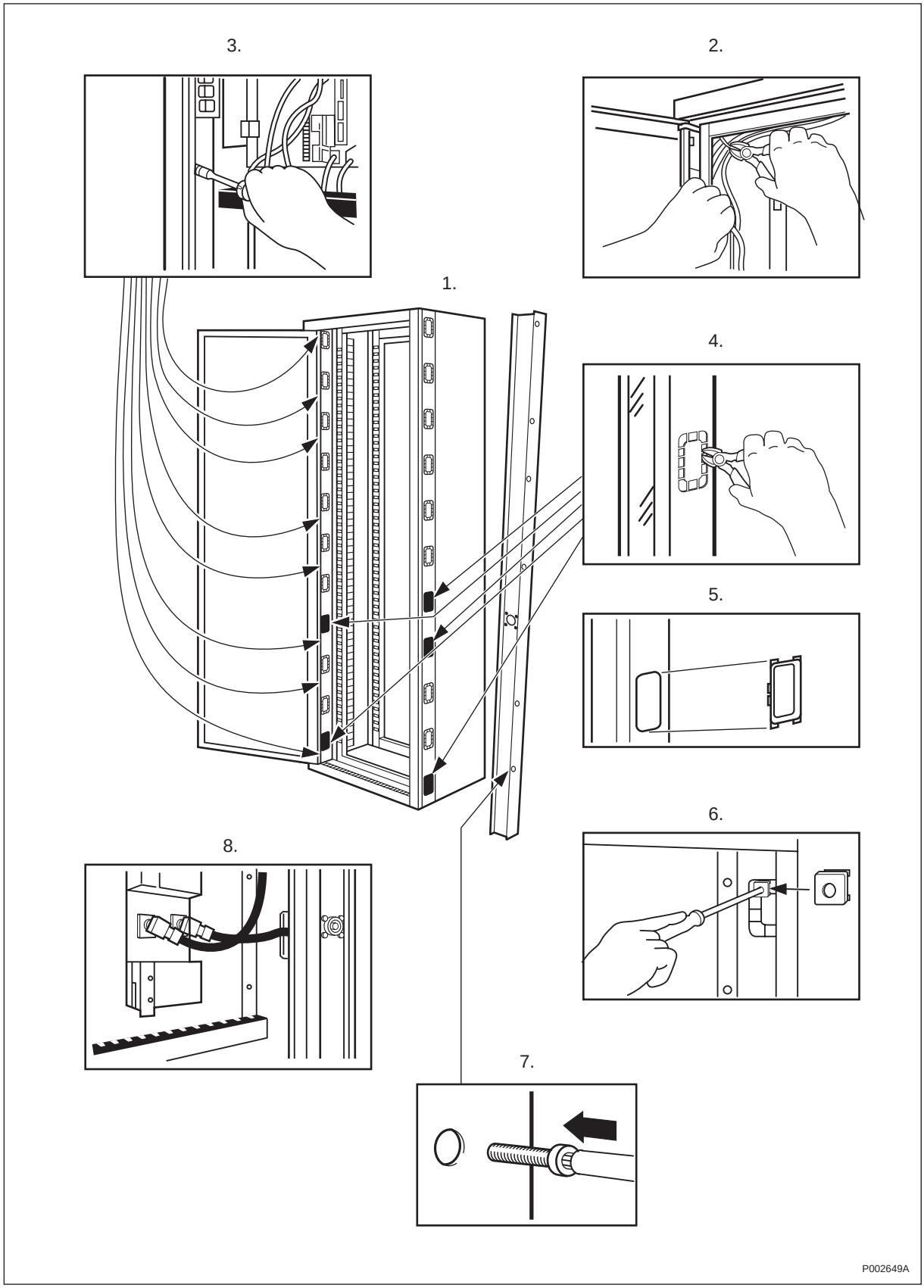


*Figure 2 Co-siting panel installation*

## 1.2 Co-siting panel installation

**DANGER**

High voltage (more than 200V) is used in the operation of this equipment. Direct contact with mains power can be fatal, and indirect contact via damp items may also be fatal.

**Note** Verify that the external AC mains supply is switched OFF before connecting the AC mains cable.

Cabinet Left and Right is defined as seen from the front of the cabinet.

1. Cut off straps holding the cables together - picture 2 in figure 2.
2. Loosen 16 nuts on inside of left protection plate - picture 3.
3. Open the four lowest holes in the frame, black indicated in picture 2, using a sidecutter as shown in picture 4.
4. Mount a protective frame - picture 5.
5. Open an extra hole for the combiner cable on the side where the co-siting panel will be mounted (in figure 2, picture 1 this hole is indicated on the right side).
6. Mount basket nuts in some of the holes not used for cabling, corresponding to the holes in the co-siting panel as indicated in figure 1.
7. Nuts shall be mounted from inside the cabinet - picture 6.
8. Mount the panel with screws, one for each hole in the panel, according to picture 7.
9. After the combiner is mounted, connect the cable to the co-siting panel as shown in picture 8.

# 2 RBS co-siting TACS

## 2.1 Principle layout

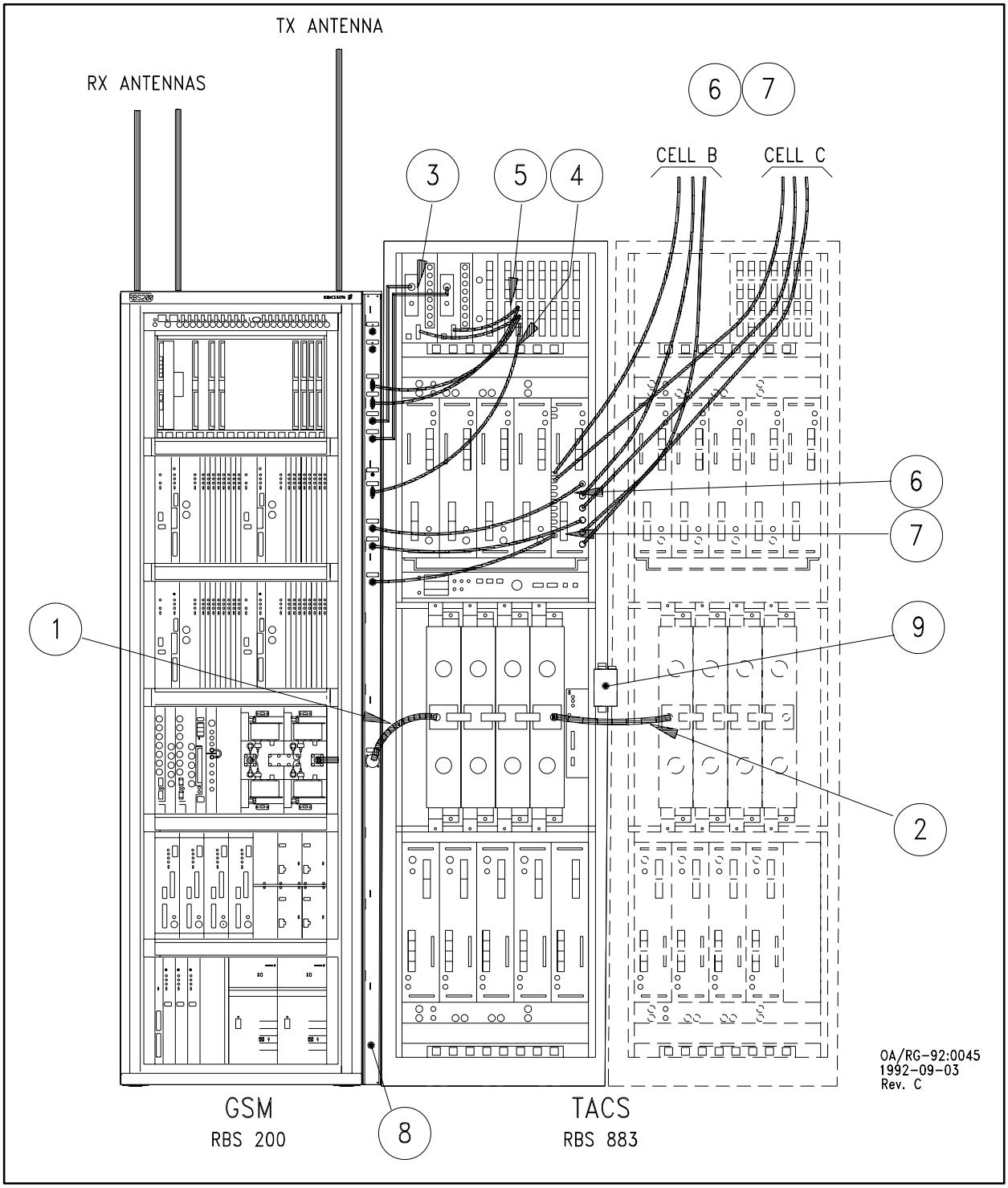


*Figure 3 RBS 200 cabinet BDE 201 162/– co-siting TACS 883*

## 2.2 TACS 883 - Specifications

*Table 1 Materials according to drawing OA/RG-92:0045 on page 6*

| Item | Unit | Description | Product no. | Notes |
|---|---|---|---|---|
| | for Allgon combiners in TACS | | | |
| 1 | Combiner | Cable, right | RPM 513 436/1 | |
| | Combiner | Cable, right | RPM 513 436/2 | |
| | Combiner | Cable, left | RPM 513 437/1 | |
| | for RSA combiners in TACS | | | |
| 1 | Combiner | Cable, right | RPM 513 438/1 | |
| | Combiner | Cable, left | RPM 513 438/2 | |
| | Combiner | Cable, right | RPM 513 438/3 | |
| | Combiner | Cable, right, ext. | RPM 513 438/4 | (Italy only) |
| | Combiner connection | End link, one comb. | RPM 113 12/01 | |
| | Combiner connection | T-link, two comb. | RPM 113 15/01 | |
| 2 | TACS combiner | Cable | RPM 513 429/4 | |
| 3 | RX 2 pcs. | Cable, 5m | RPM 513 459/1 | |
| | | Attenuator 10dB | 6810.17A | (Suhner) |
| | | Angle N/N | 53 N-50-0-1/133 | (Suhner) |
| 4 | VSWR alarm | Cable, 5m | RPM 513 440/1 | |
| 5 | MC alarms | Cable, 5m | RPM 513 439/1 | |
| 6 | CT input | Cable, 5m | RPM 513 445/1 | |
| | | or 20m | RPM 513 102/ 19500 | |
| 7 | CT out | Cable 5m | RPM 513 445/1 | |
| | + | Attenuator 6dB | 6806.26A | (Suhner) |
| | + | Angle adapters | 53 TNC-50-0-1 | (Suhner) |
| | or TACS standard cable 20m without attenuator | | RPM 513 102/ 19500 | |
| 8 | Co-panel | left | NTM 201 632/01 | |
| | Co-panel | right | NTM 201 632/02 | |
| 9 | PMU | kit | NTM — —/- | |
| | low power alarm (RSA comb) | including: | | |
| | | adaptor | 31N-4195-50-12/ 139 | |

| | | | |
|---|---|---|---|
| Cable with: | Connector | 4195 male angle | |
| | Cable | RG400/U 450mm | |
| | Connector | N male angle | (Suhner) |

## 2.3 Cabling diagram

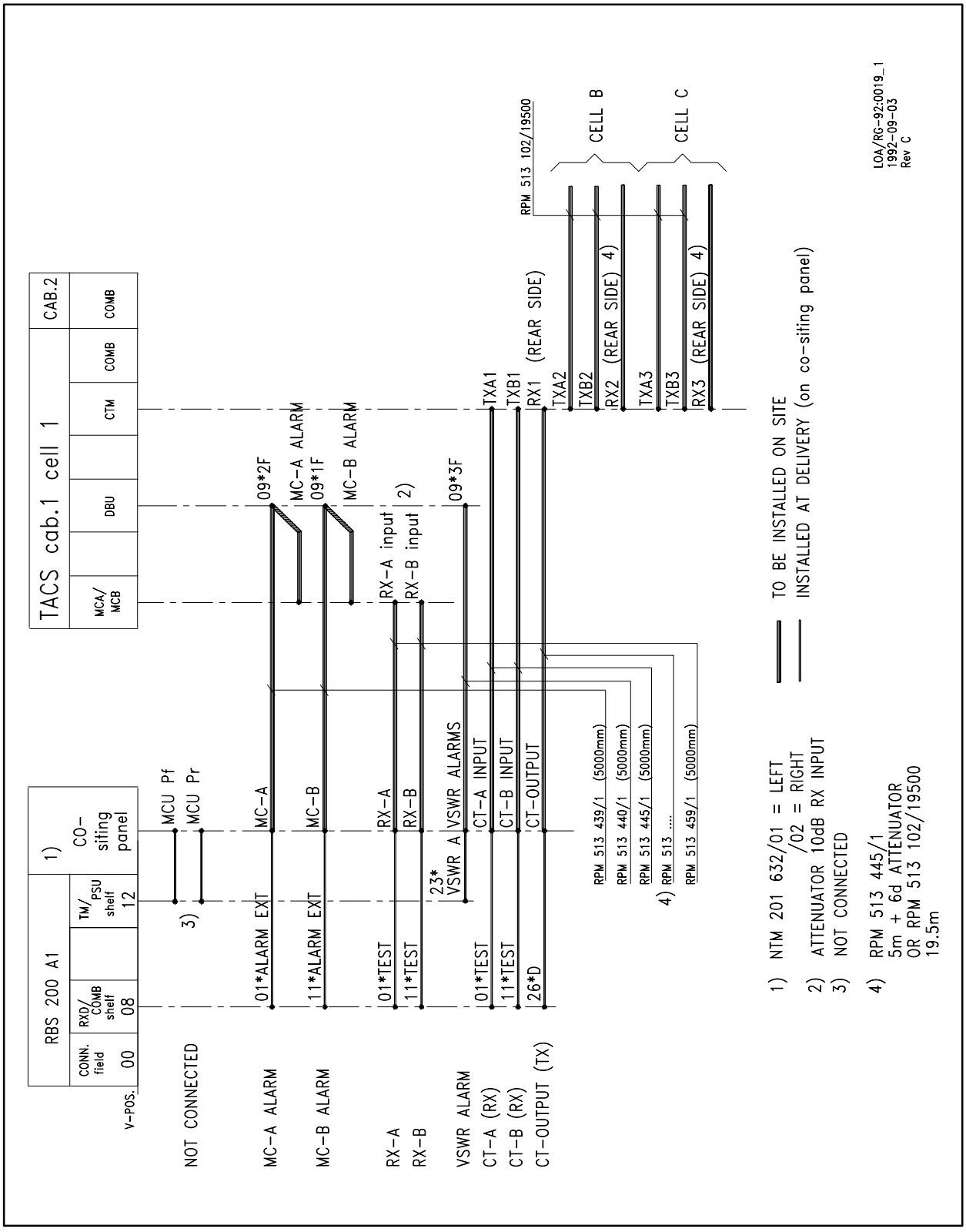


*Figure 4 RBS 200 cabinet BDE 201 162/– co-siting TACS 883*

## 2.4 PMU low power alarm cabling diagram

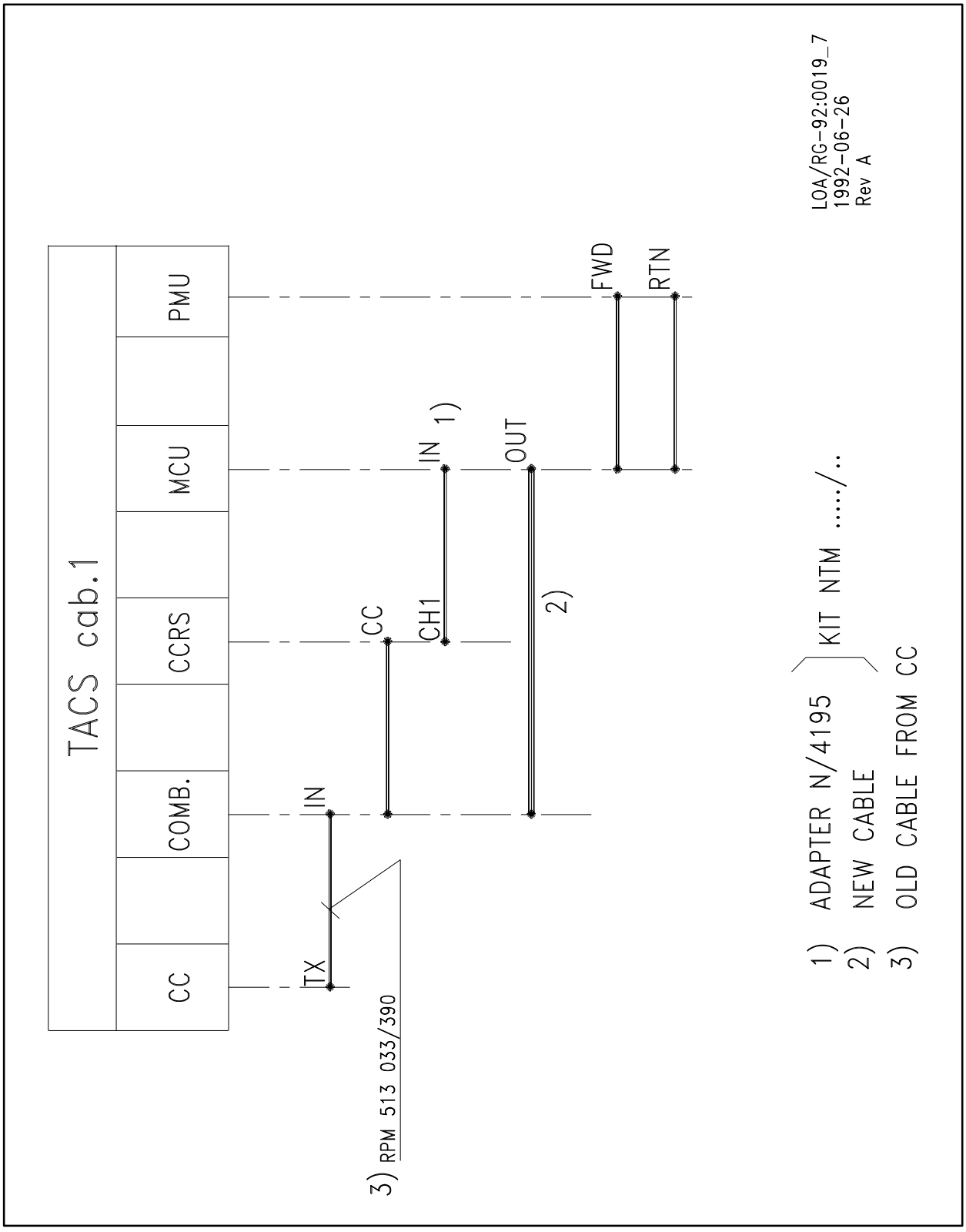


*Figure 5 RBS 200 cabinet BDE 201 162/– co-siting TACS 883*

## 2.5 Mechanical position of TACS MCU

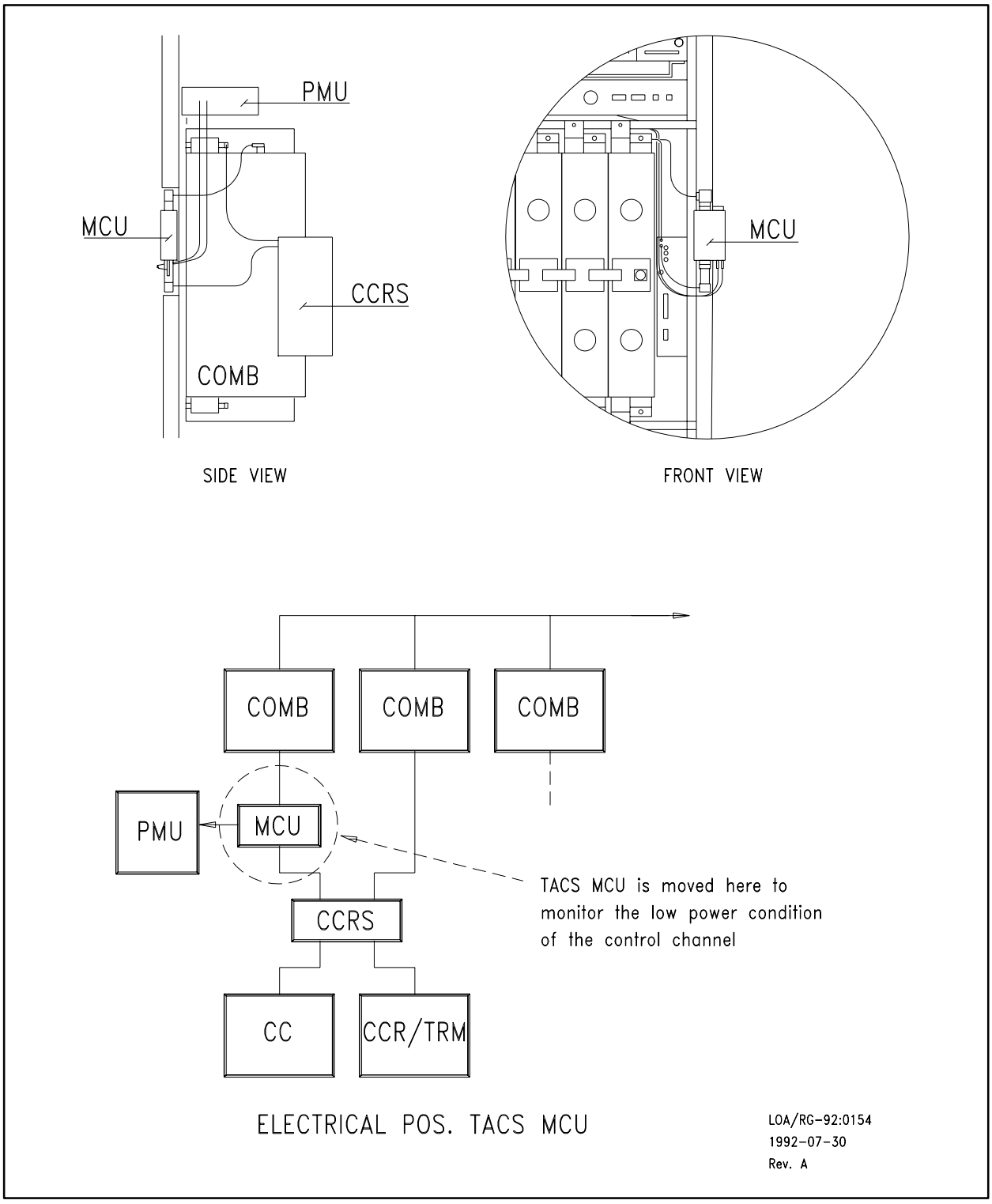


*Figure 6 TACS MCU for low power alarm*

# 3 RBS co-siting TACS/ETACS

## 3.1 Principle layout

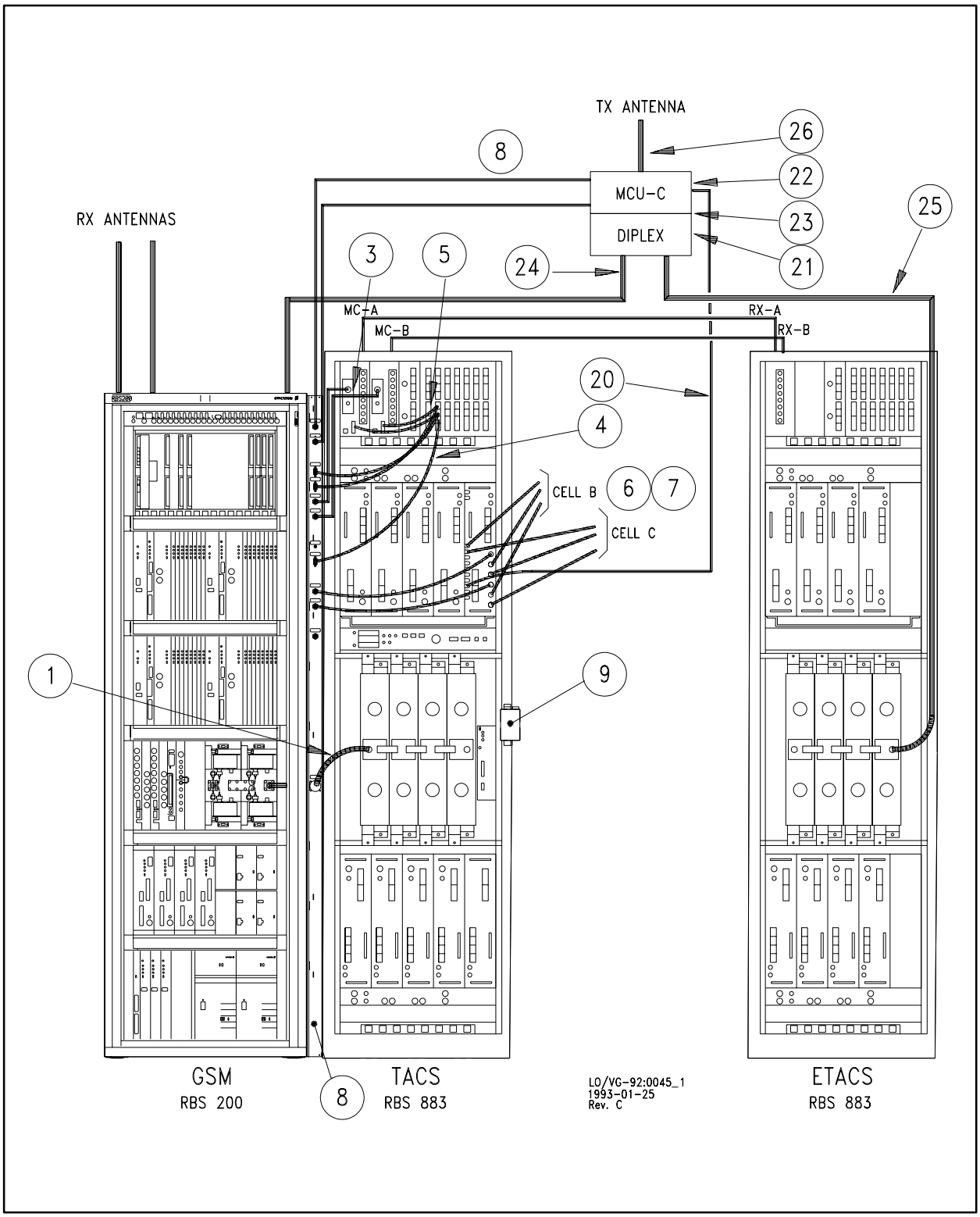


*Figure 7 RBS 200 cabinet BDE 201 162/– co-siting TACS/ETACS*

## 3.2 TACS 883 - Specifications

*Table 2 Material according to drawing OA/RG-92:0045, page 12.*

| Item | Unit | Description | Product no. | Notes |
|---|---|---|---|---|
| | TACS 883 | | | |
| | for Allgon combiners in TACS | | | |
| 1 | Combiner | Cable, right | RPM 513 436/1 | |
| | Combiner | Cable, right | RPM 513 436/2 | |
| | Combiner | Cable, left | RPM 513 437/1 | |
| | for RSA combiners in TACS | | | |
| 1 | Combiner | Cable, right | RPM 513 438/1 | |
| | Combiner | Cable, left | RPM 513 438/2 | |
| | Combiner | Cable, right | RPM 513 438/3 | |
| | Combiner | Cable, right, ext. | RPM 513 438/4 | (Italy only) |
| | Combiner connection | End link, one comb. | RPM 113 12/01 | |
| | Combiner connection | T-link, two comb. | RPM 113 15/01 | |

## 3.3 ETACS 883

*Table 3 Material for ETACS*

| Item | Unit | Description | Product no. | |
|---|---|---|---|---|
| 3 | RX 2pcs. | Cable, 5m | RPM 513 459/1 | |
| | | Attenuator 10dB | 6810.17A | (Suhner) |
| | | Angle N/N | 53 N-50-0-1/133 | (Suhner) |
| 4 | VSWR alarm | Cable, 5m | RPM 513 440/1 | |
| 5 | MC alarms | Cable, 5m | RPM 513 439/1 | |
| 6 | CT input | Cable, 5m | RPM 513 445/1 | |
| | | or, 20m | RPM 513 102/19500 | |
| 7 | CT out | Cable, 5m | RPM 513 445/1 | |
| | + | Attenuator 6dB | 6806.26A | (Suhner) |
| | + | Angle adapters | 53 TNC-50-0-1 | (Suhner) |
| | or TACS standard cable | | | |
| | 20 m without attenuator | | RPM 513 102/19500 | |

| | | | | |
|---|---|---|---|---|
| 8 | Co-panel, | left | NTM 201 632/01 | |
| | Co-panel, | right | NTM 201 632/02 | |
| 9 | PMU | kit | NTM–/- | |
| | low power alarm (for RSA comb) including: | | | |
| | | adaptor | 31N-4195-50-12/139 | |
| | Cable with: | Connector | 4195 male angle | |
| | | Cable | RG400/U, 450mm | |
| | | Connector | N male angle | (Suhner) |

Diplexer for ETACS is used.

*Table 4*

| Item | Unit | Description | Product no. |
|---|---|---|---|
| 20 | Cable, 2m | RPM 513 370/6 | MCU Pf/Pr 3pcs. CT output |
| 21 | Filter | Unspecified | Diplexer |
| 22 | Measure coupler | KRY 121 02/01 | MCUC (GSM) |
| 23 | Cable | RPM— —/- | MCU-Diplexer, antenna jumper |
| 24 | Cable | RPM— —/- | Diplexer-GSM, antenna jumper |
| 25 | Cable | RPM— —/- | Diplexer ETACS antenna jumper |
| 26 | Cable | RPM— —/- | MCU-feeder, antenna jumper |

## 3.4 ETACS 881

*Table 5 Material according to drawing OA/RG-92:0019, page 20*

| Unit | Description | Product no. | Comments |
|---|---|---|---|
| Attenuator, 10dB | Cable, 6500mm | RPM 513 459/2<br>6810.17A | RX (Suhner) |
| | Cable, 6500mm | RPM 513 613/1 | MC alarms |
| Co-siting panel, left | | NTM 201 632/01 | |
| Co-siting panel, right | | NTM 201 632/02 | |

### 3.5 Cabling diagram

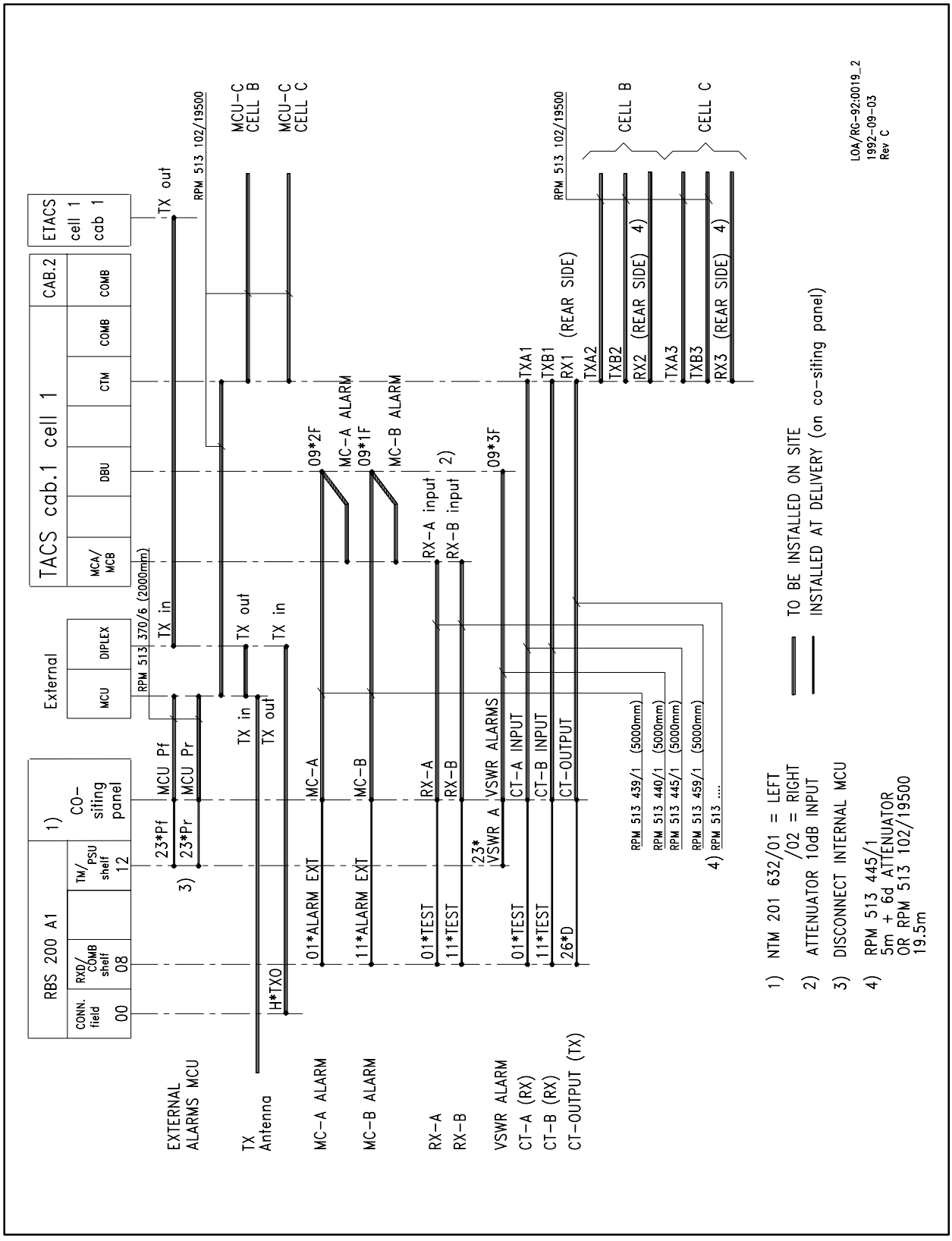


*Figure 8 RBS 200 cabinet BDE 201 162/– co-siting TACS/ETACS*

### 3.6 Low power alarm cabling diagram

- Refer to figure 5.

### 3.7 Mechanical position of TACS MCU

- Refer to figure 6.

# 4 Combiner connection

## 4.1 Cabling diagram

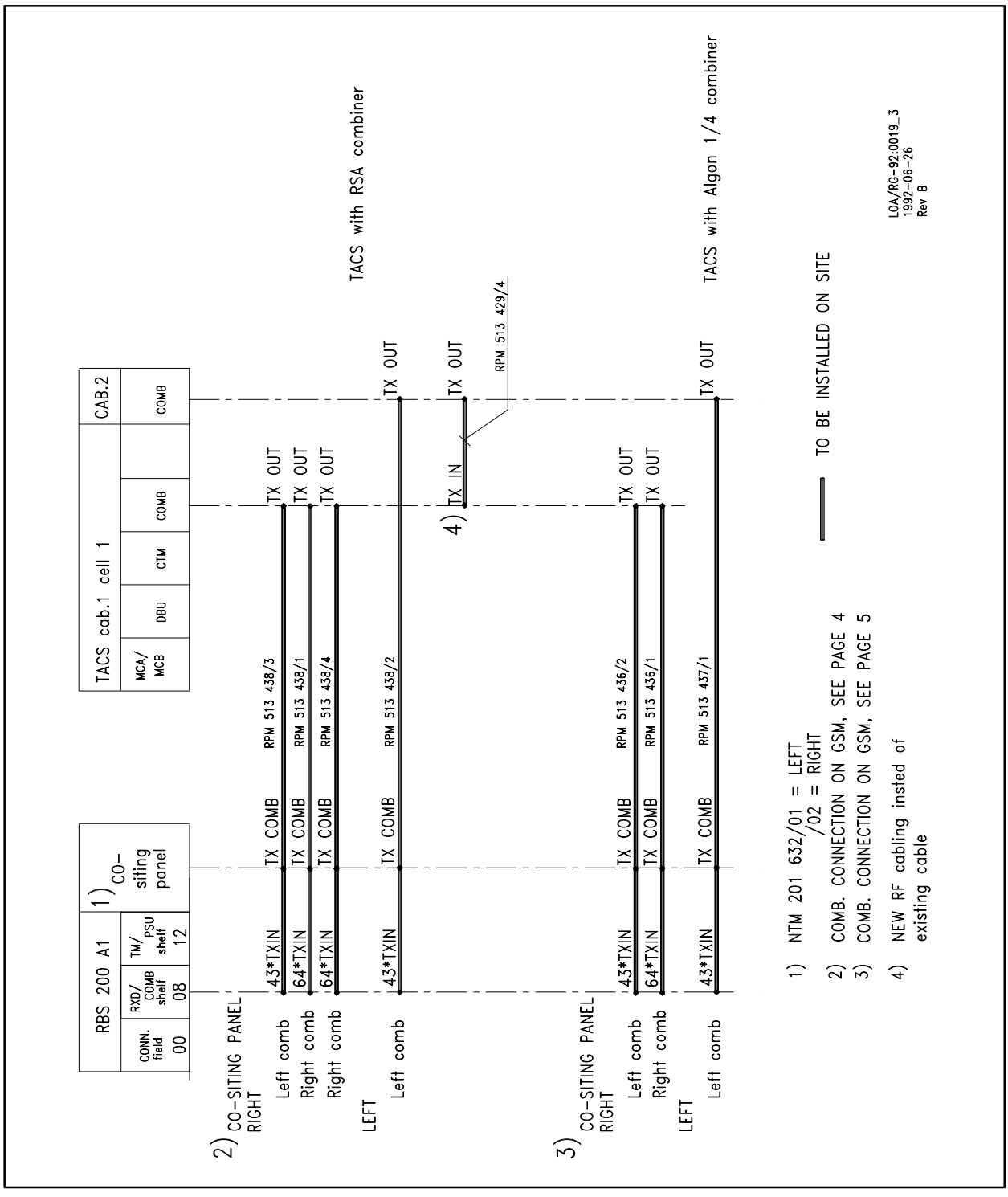


*Figure 9 RBS 200 cabinet BDE 201 162/– co-siting TACS: RSA or Allgon 1/4 combiner*

## 4.2 4.2 Combiner allocations and connections

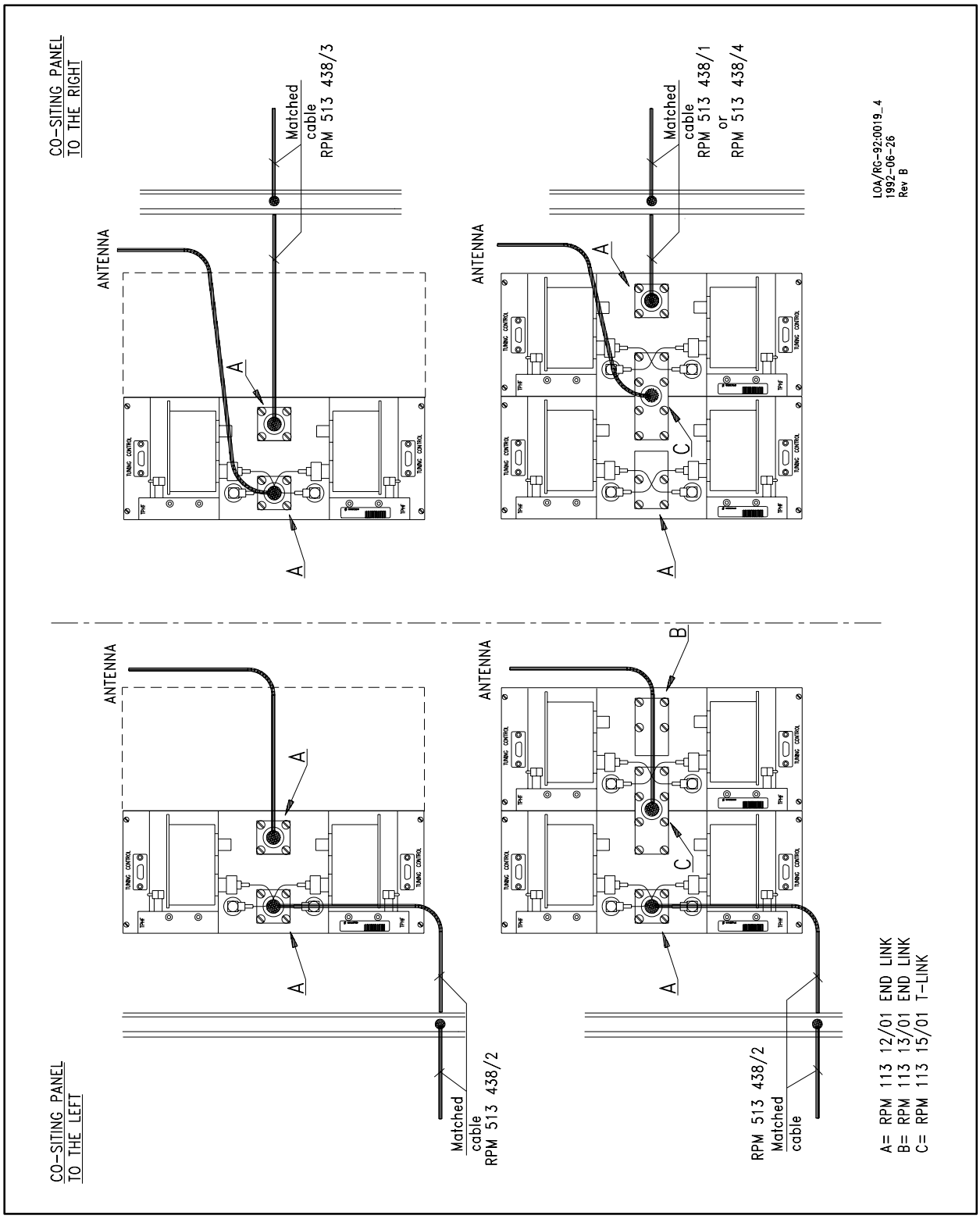


*Figure 10 RBS 200 cabinet 201 162/– co-siting TACS: RSA combiners*

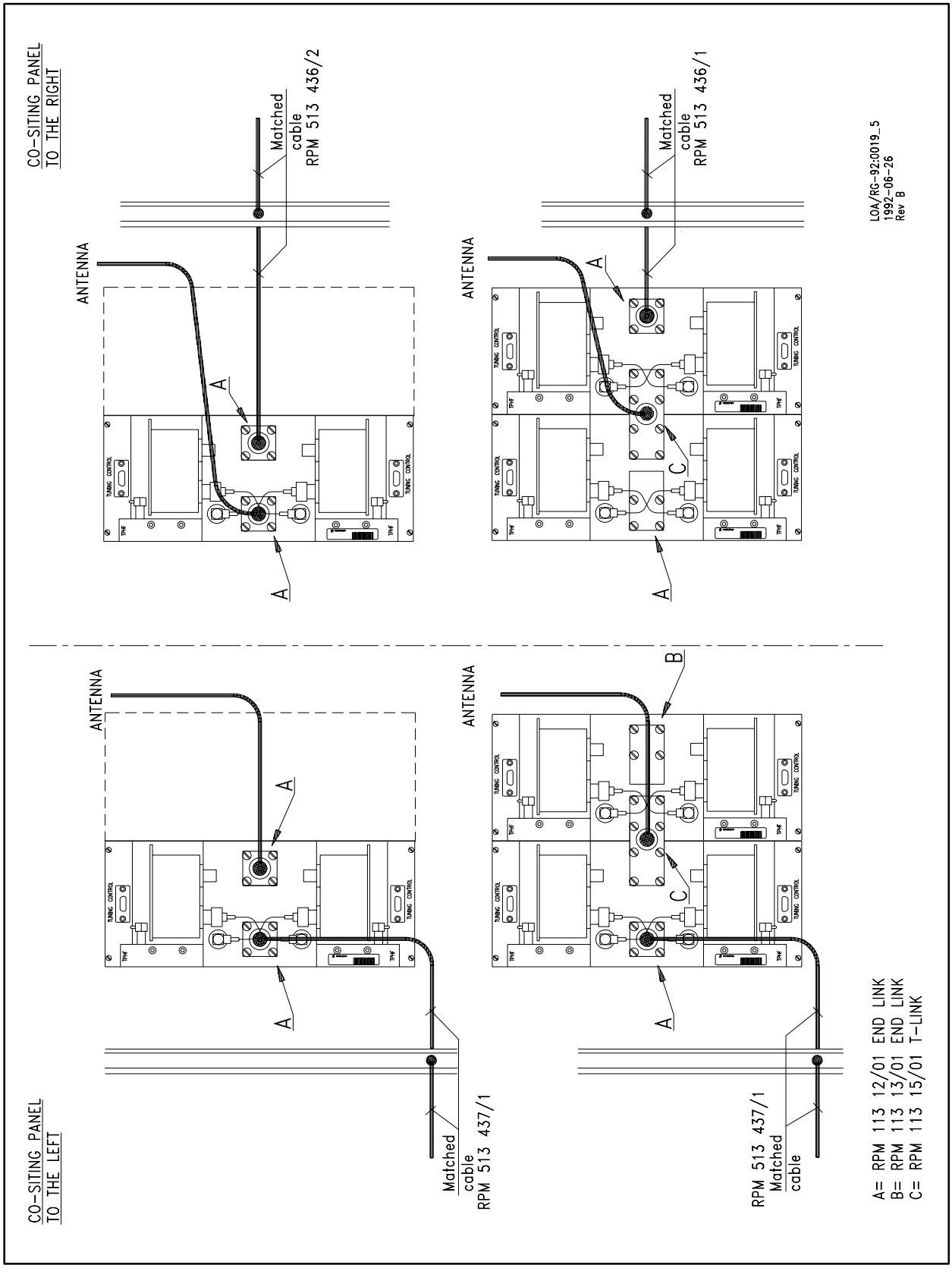


*Figure 11 RBS 200 cabinet 201 162/– co-siting TACS: Allgon 1/4 combiners*

# 5 RBS co-siting TACS

## 5.1 Cabling diagram

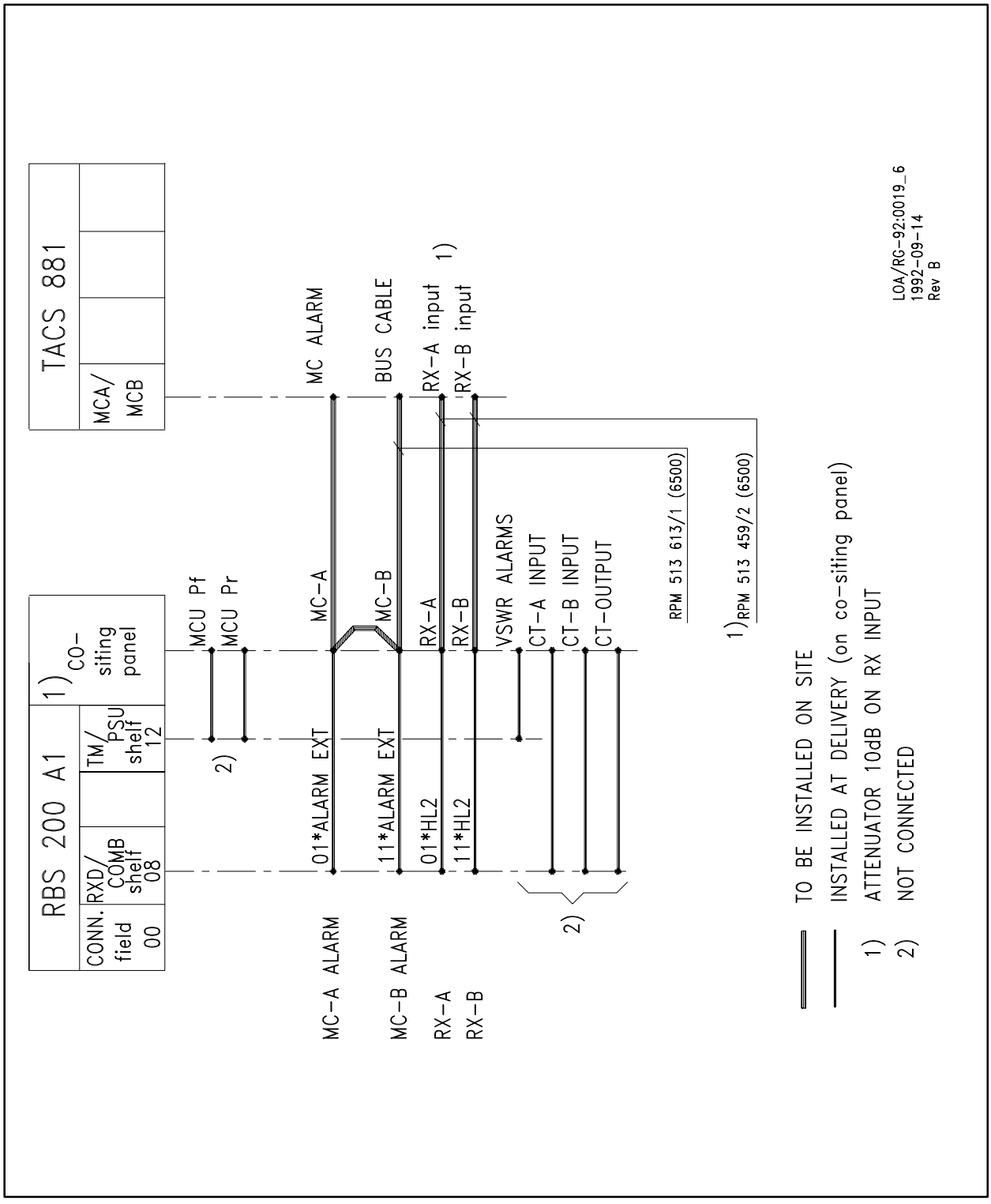


*Figure 12 RBS 200 cabinet BDE 201 162/– co-siting TACS 881*

ERICSSON

*CAPTION LIST*

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|---|---|---|
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# Connection of TRI

RBS 200
Installation Manual

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| Uppgjord — *Prepared* | Faktaansvarig — *Subject responsible* | Nr — *No.* | | |
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| ERA/LZ/LI SNOW | | 6/1531-COH 109 2015/11 Uen | | |
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| ERA/LZ/TGC (ERABVN) | | 1998-01-30 | A | |

# TRI Magazine BFL 119 71/1

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# 1

## 1.1 TRI magazine BFL 119 71/1

The magazine contains equipment for communication between the radio equipment on site and the Base Station Controller (BSC).

The TRI magazine is designed in conventional BYB mechanics with additional brackets and cover to fit the 19" cabinet mechanics.

The magazine is delivered as a completely mounted unit, and is equipped as shown in the table below. See also figure 1.

The TRI magazine shall be installed in the cabinet in position 02.

When TRI is not used, a dummy front SDK 107 61/06 shall be mounted (cabinet B1 and C1).

*Table 1 Summary of units included in the magazine*

| Product number | Designation | Quantity |
|---|---|---|
| ROF 137 7882/1 | DC/DC converter | 1 |
| ROF 131 4445/1 | STRP board | 1 - 2 |
| ROF 131 995/2 | EMPC board | 1 |
| ROF 137 7846/1 | ETB board | 1 - 4 |
| ROF 137 7870/1 | RTT board | 1 - 6 |
| ROF 137 7856/2 | Time Switch TSW3 | 1 |
| ROF 131 4254/1 | V.24 interface | 1 |
| ROF 131 4255/1 | Alarm board EXALI | 1 |
| TSR 204 0201/500 | Bus cable | 1 - 2 |
| RNV 991 223/004 | Terminator strap | 1 - 2 |
| RNV 991 712/001 | Reset strap | 1 |
| RNV 321 0111 | Adress strap | 1 |

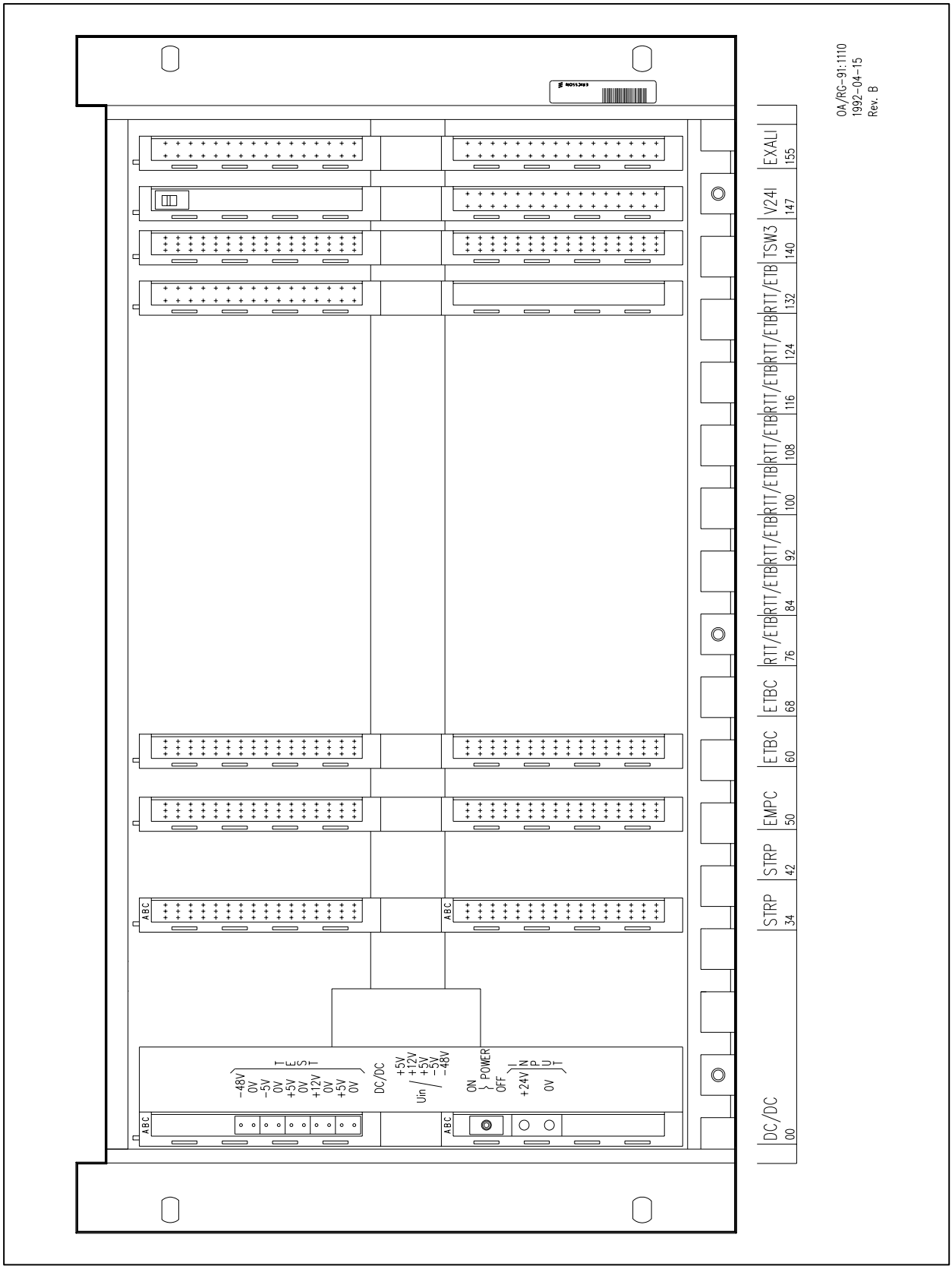


*Figure 1 The TRI magazine equipped*

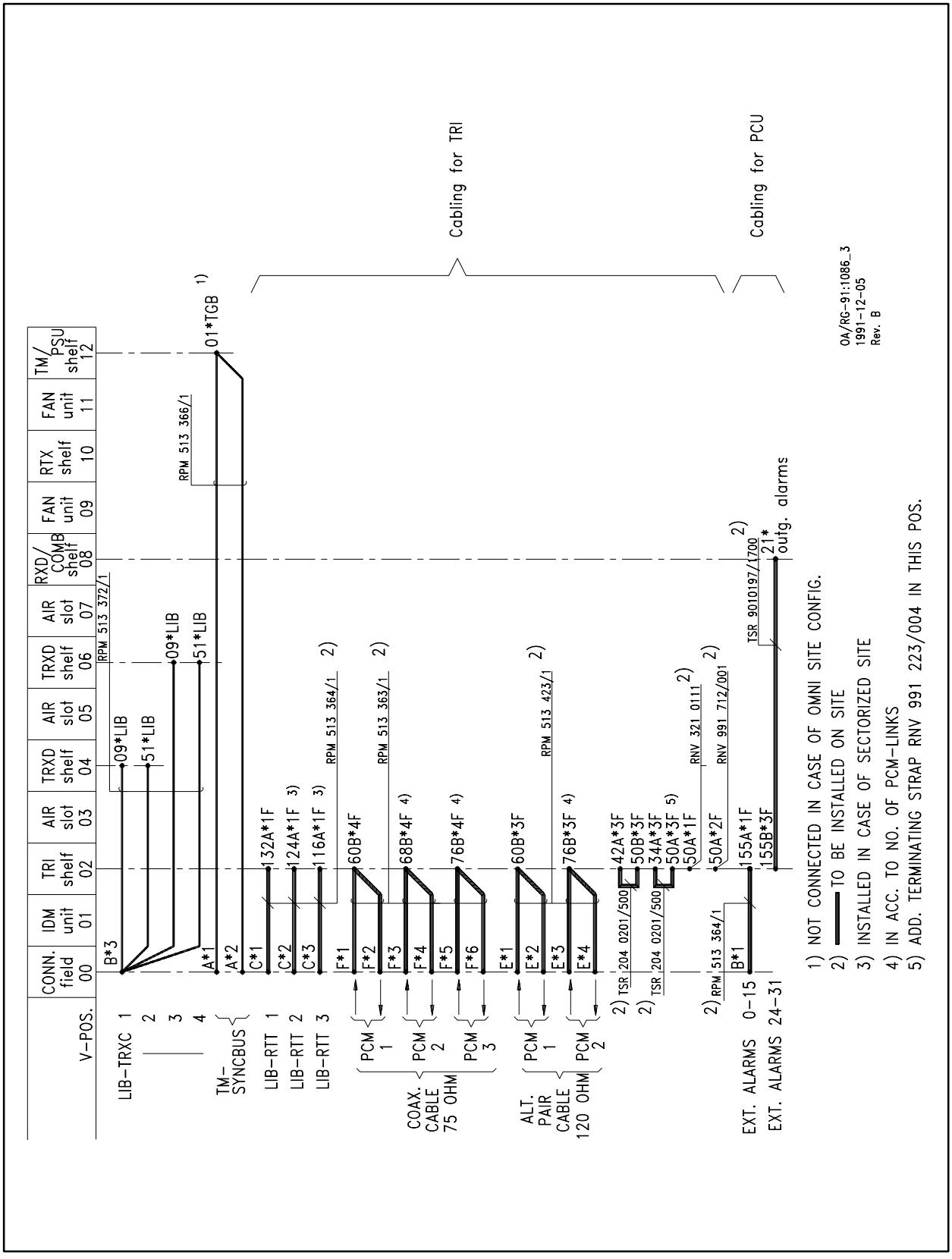


*Figure 2 Signal cabling diagram*

# Connection of a Second TRI

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# 1 Introduction

This document describes the installation of a second TRI (Transmission Radio Interface) in RBS 200 and RBS 205.

Installation of the first TRI is described in the G-module for RBS 200 and RBS 205.

One TRI can handle up to 24 TRXs (Transceivers) which corresponds to 6 cabinets. The hardware configuration of a cabinet will in reality allow connection of six cabinet to one TRI.

If more than six cabinets will be installed, a second TRI must be installed in master cabinet B1. TRI-1 and TRI-2 will together have capacity for up to 48 TRXs or 12 cabinets. Two different configuration cases are described: one with up to 36 TRXs and one with up to 48 TRXs.

The two TRIs are connected as two separate EMG (Extension Module Group)to the BSC (Base Station Controller).

The solution in this document is based on the condition that the site has three TGs (Transceiver Groups or Cells).

The TRXs are distributed between the two TRIs in such a way that a TRI fault will not stop the traffic for a whole TG.

# 2 Block Diagrams

## 2.1 Cabinet Layout with Two TRIs

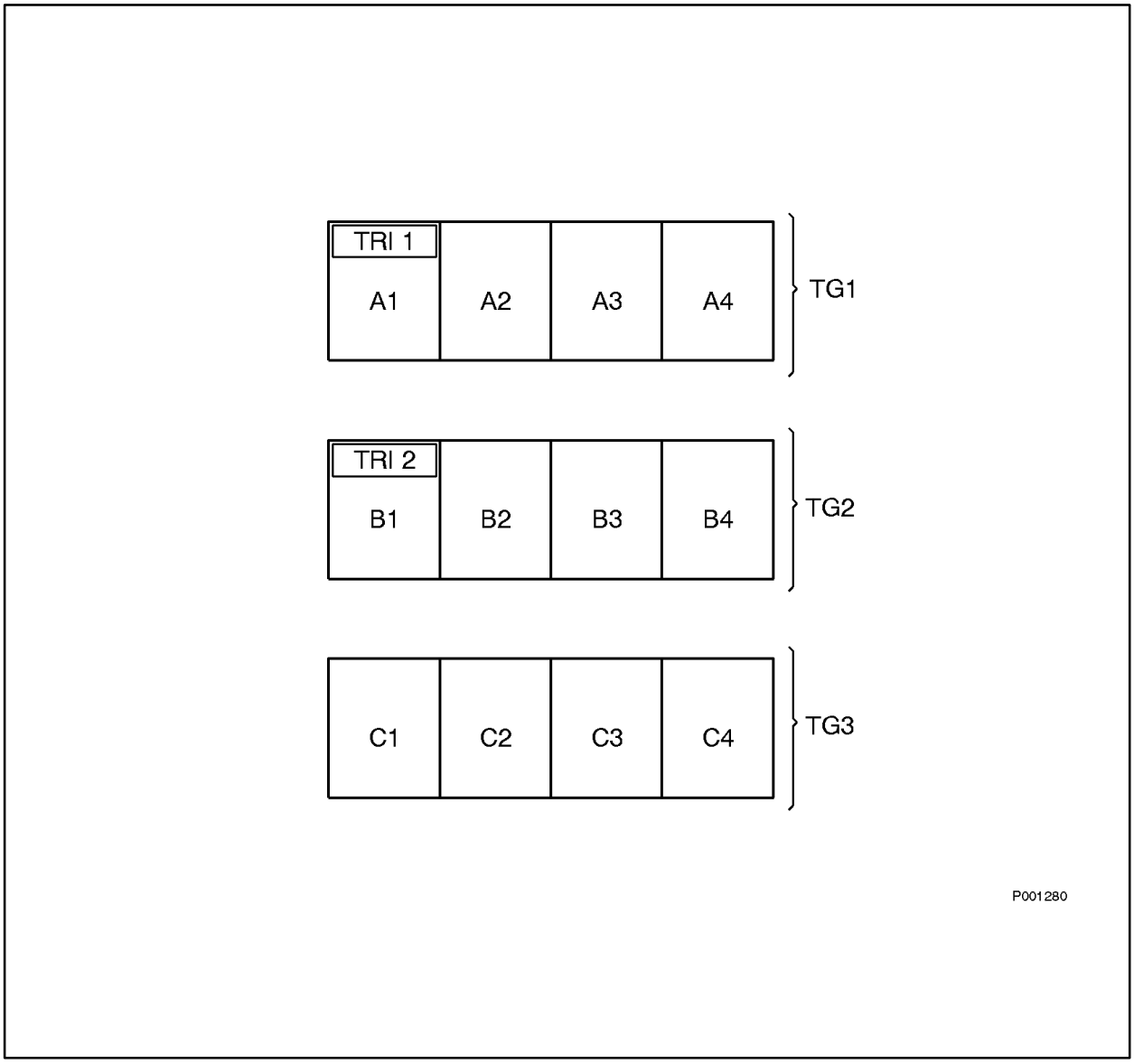


*Figure 1 Cabinet layout*

## 2.2 TRI Connections

The block diagram in figure 2 shows how up to 36 TRXs can be connected to two TRIs.

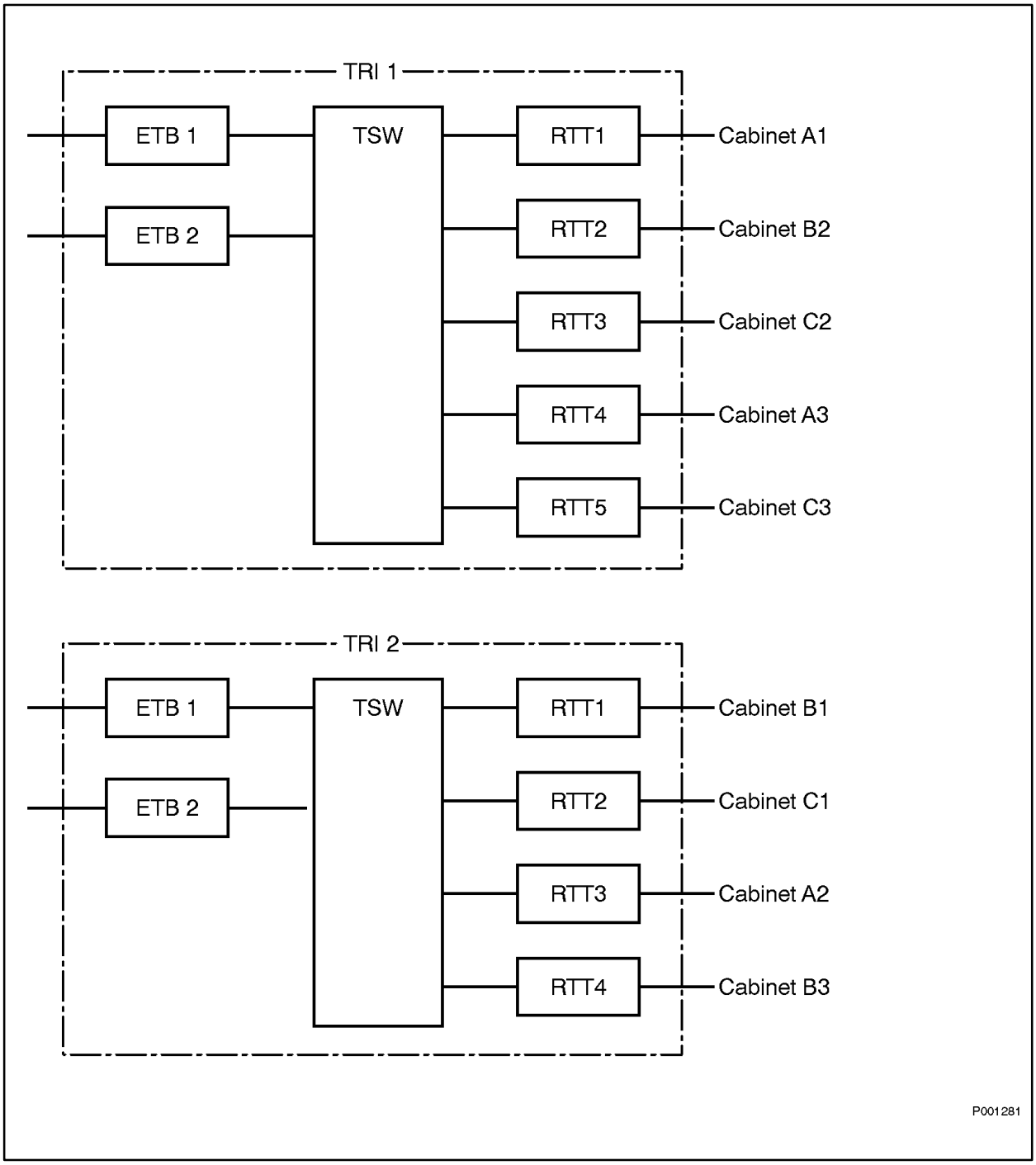


*Figure 2 Block diagram 36 TRX*

The block diagram in figure 3 shows how up to 48 TRXs can be connected to two TRIs.

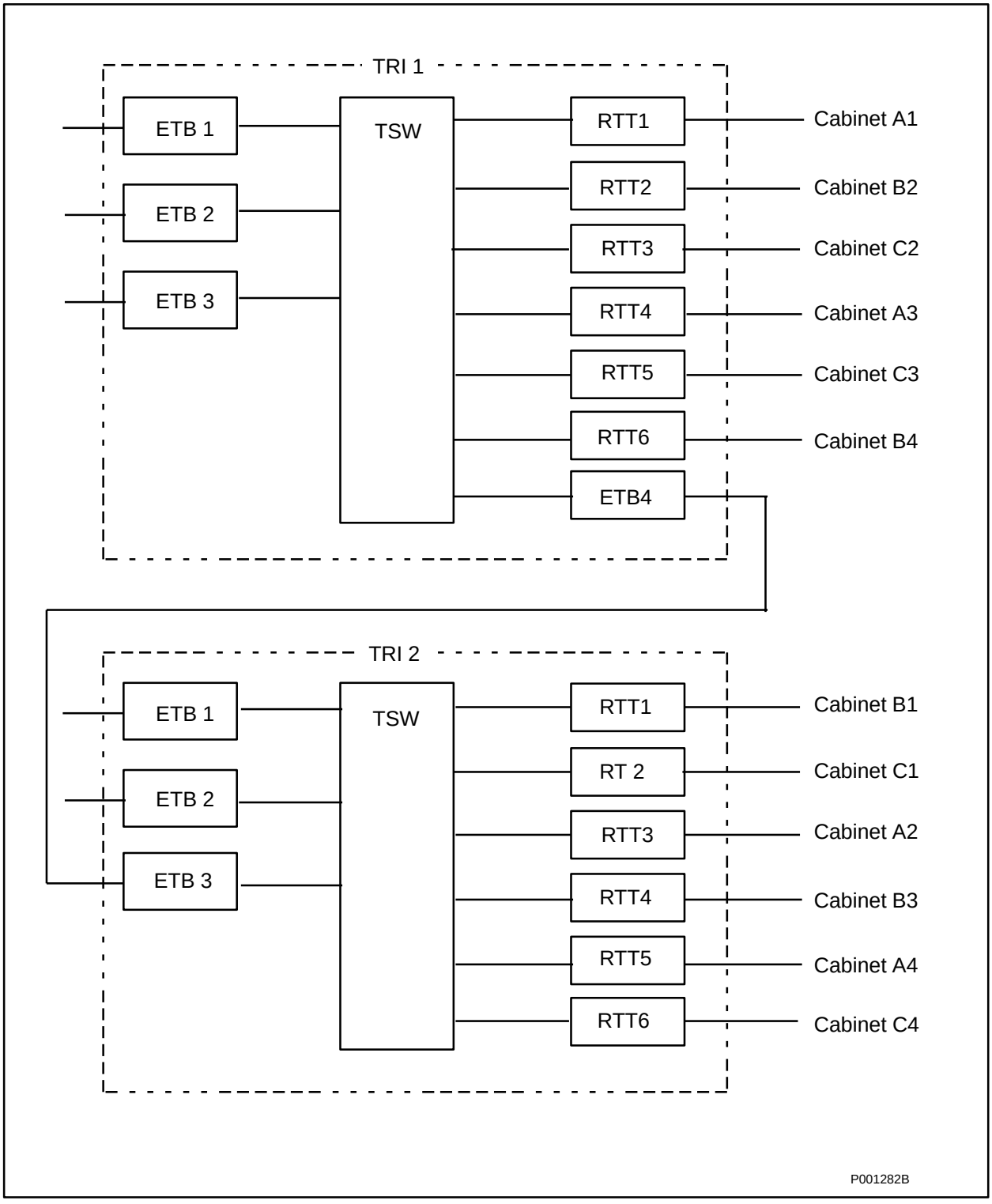


*Figure 3 Block diagram 48 TRX*

The ETB4 in TRI-1 and ETB3 in TRI-2 must not be connected as synchronisation inlet. The ETBs at the two first device positions in the two TRIs are used as synchronisation inlets.

## 2.3 Connections for TRI with LAPD Concentrators

The block diagram in figure 4 shows how up to 36 TRXs can be connected to two TRIs when LAPD concentration is used.

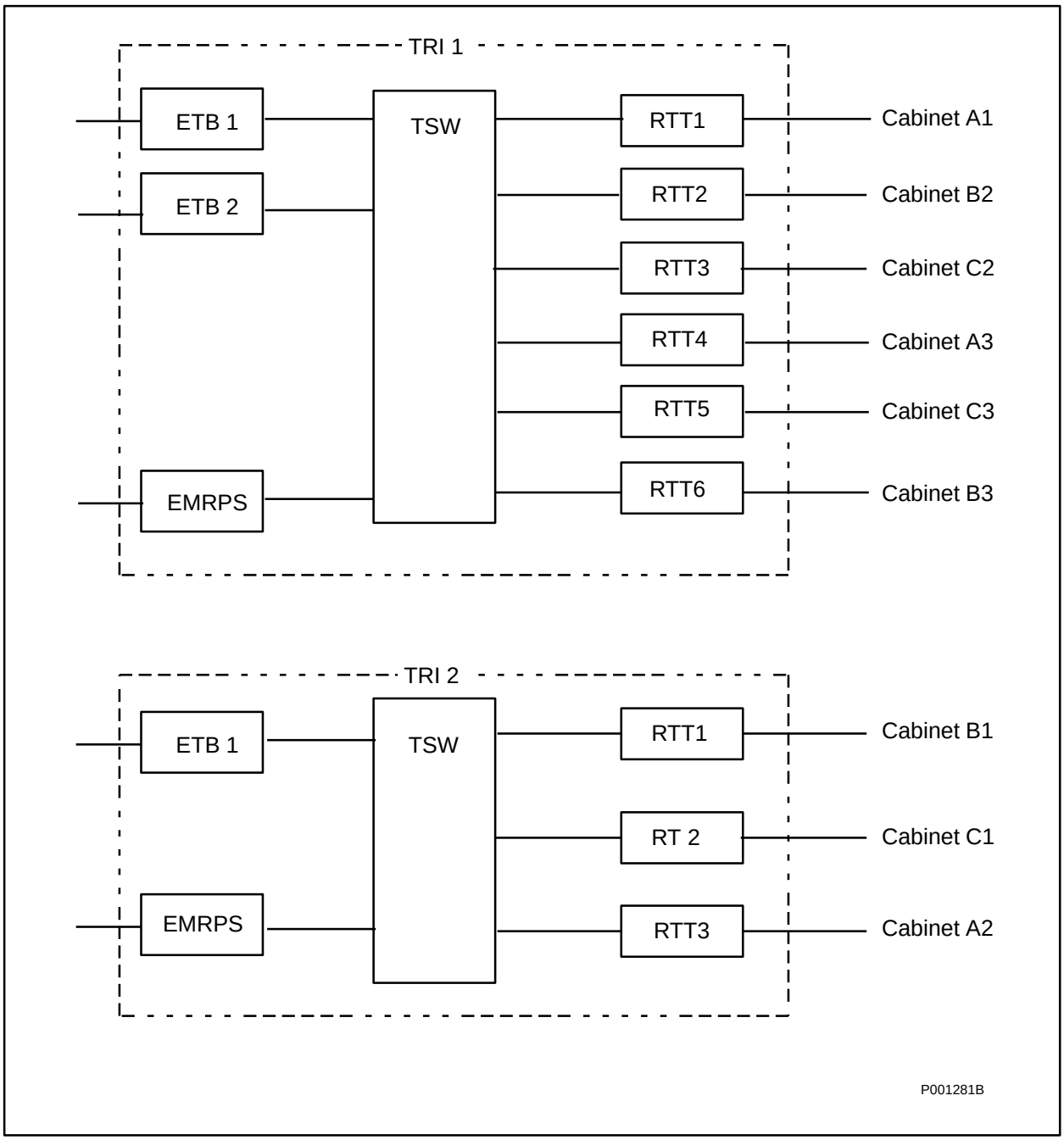


*Figure 4 Block diagram 36 TRX*

The block diagram in figure 5 shows how up to 48 TRXs can be connected to two TRIs when LAPD concentration is used.

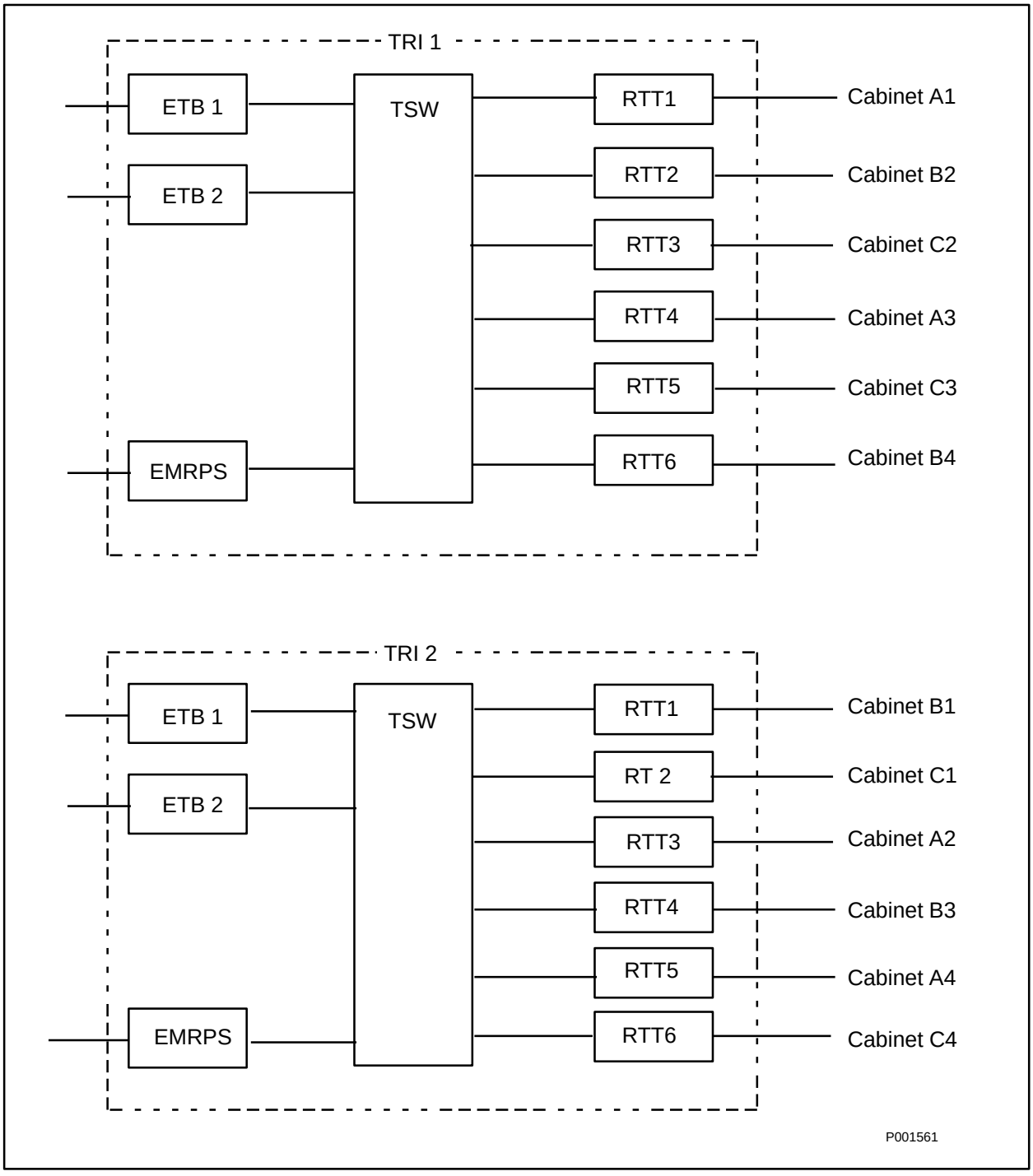


*Figure 5 Block diagram 48 TRX*

# 3 Installation

The TRI magazine is delivered as a basic unit BFD 747 504/11 together with a number of units according to the capacity needs.

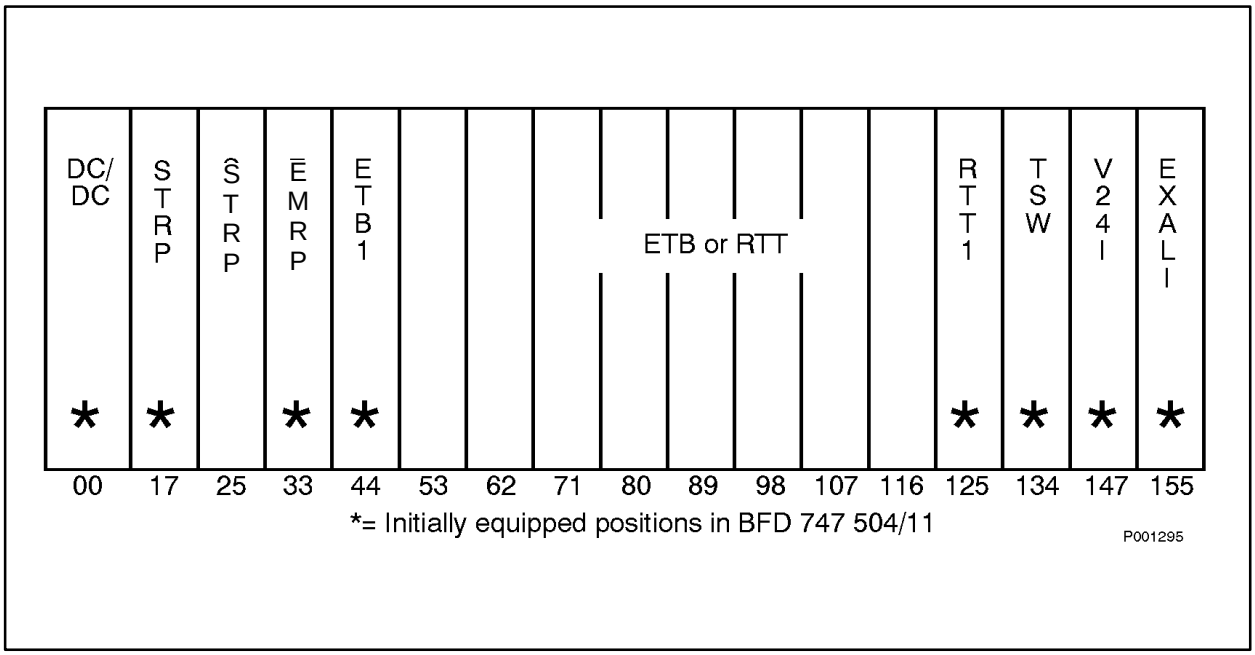


*Figure 6 TRI magazine*

Insert delivered boards in the vacant positions according to figure 6. RTT 1 is the board in position 125. Remaining RTT boards are inserted from position 116 and onwards to the left. RTT 2 is in position 116, RTT 3 is in position 107, and so on.

ETB 1 is the board in position 44. Remaining ETB boards are inserted from position 53 and onwards to the right.

Install TRI 1 in master cabinet A1 and install TRI 2 in master cabinet B1.

Connect signal cables according to the cabling diagrams, figure 7 and figure 8.

Note that for the 48 TRX alternative, the number of PCM lines will make it necessary to replace one of the connection boxes at the top of the cabinet.

In the case of 75 ohm coaxial transmission line, the box in position E of cabinet A1 must be removed and replaced with connection box SXK 107 2435/1.

In the 120 ohm balanced pair transmission line alternative, the box in position F of both cabinets A1 and B1 must be removed and replaced with connection box SXK 107 2436/1.

## 3.1 Cabling Diagram for TRI 1

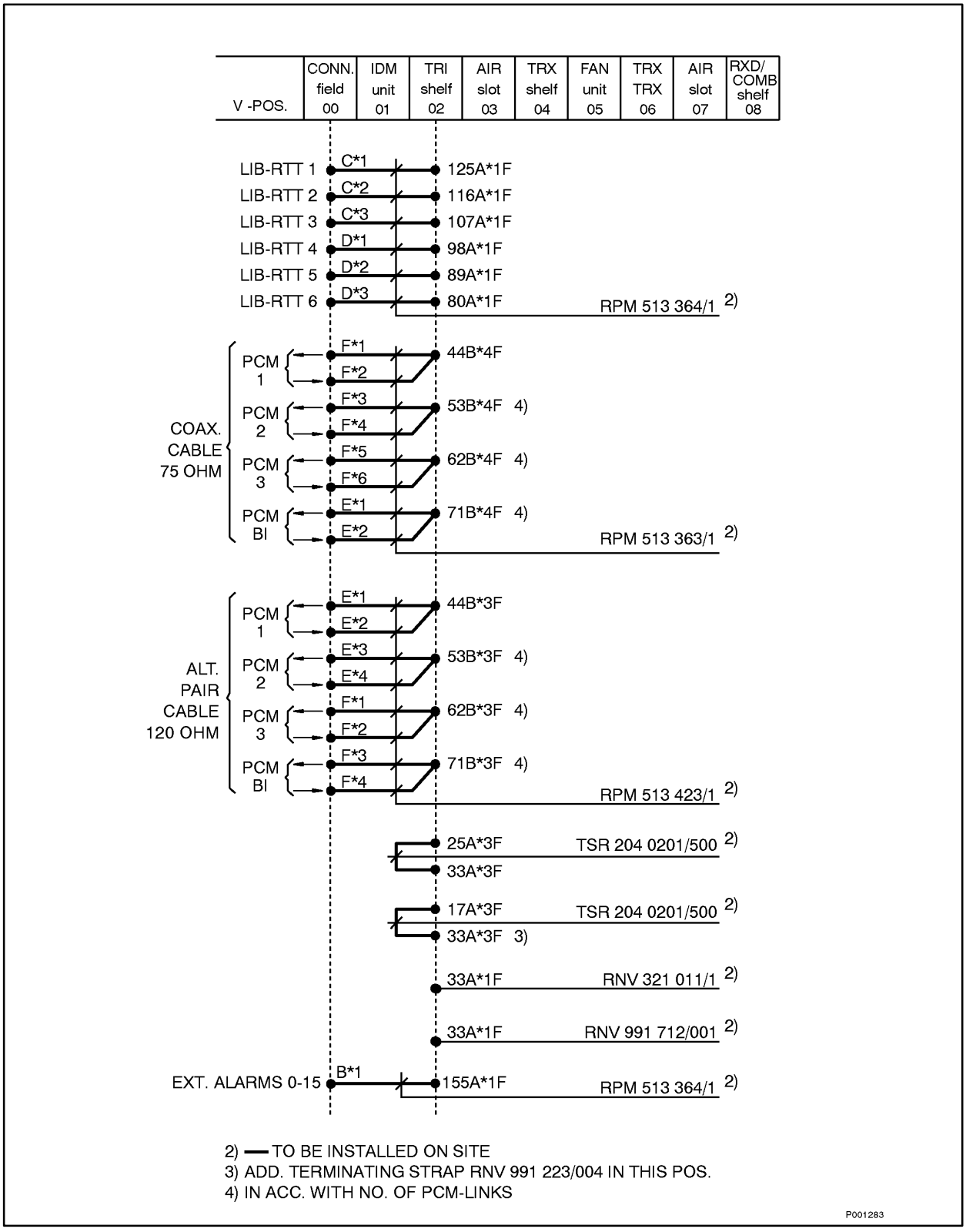


*Figure 7 Cabling diagram for TRI 1*

## 3.2 Cabling Diagram for TRI 2

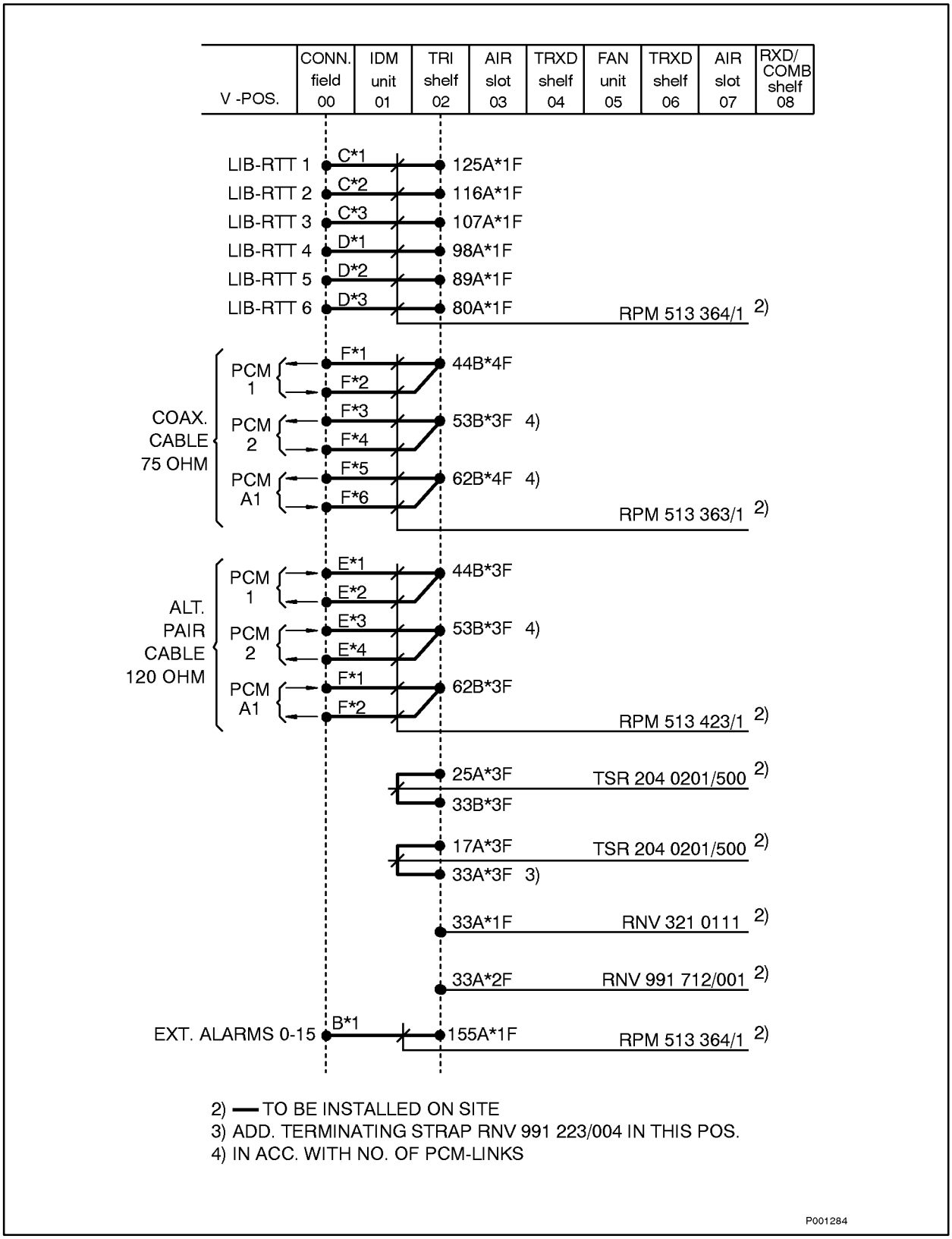


*Figure 8 Cabling diagram for TRI 2*

## 3.3 Cabling between Cabinets

Install cables between cabinets according to: Cabling diagram: LIB-BUS and PCM, figure 9 and Cable layout drawing: LIB-BUS, figure 10.

### 3.3.1 Cabling for 48 TRX

If the site consists of 48 TRX (16 cabinets) install PCM cables between cabinet A1 and B1 according to: Cabling diagram: LIB-BUS and PCM, figure 9 and Cable layout drawing: LIB-BUS figure 10.

The PCM cable consists of cable RPM 513 339 or RPM 513 349 depending on type of transmission line (unbalanced or balanced system). The cable is delivered with a connector in one end and is unconnected in the other end.

Solder a connector (RPT 158 53 for RPM 513 339, or RPT 403 08/03 for RPM 513 349) to the unconnected end. Connect the cables between cabinet A1 and B1 according to: Cabling diagram: LIB-BUS and PCM, figure 9.

### 3.3.2 Transmission Line Connection

Install supplied PCM cable connector holders (SXA 120 165 for RPM 513 339, or SXA 120 164 for RPM 513 349) in Distribution Frame (DF).

Connect PCM cables between DF and connection field 00 on cabinet A1 and B1. Terminals are indicated on diagram: Cabling diagram for TRI 1, figure 7and Cabling diagram for TRI 2, figure 8.

## 3.4 Cabling Diagram: LIB-BUS and PCM

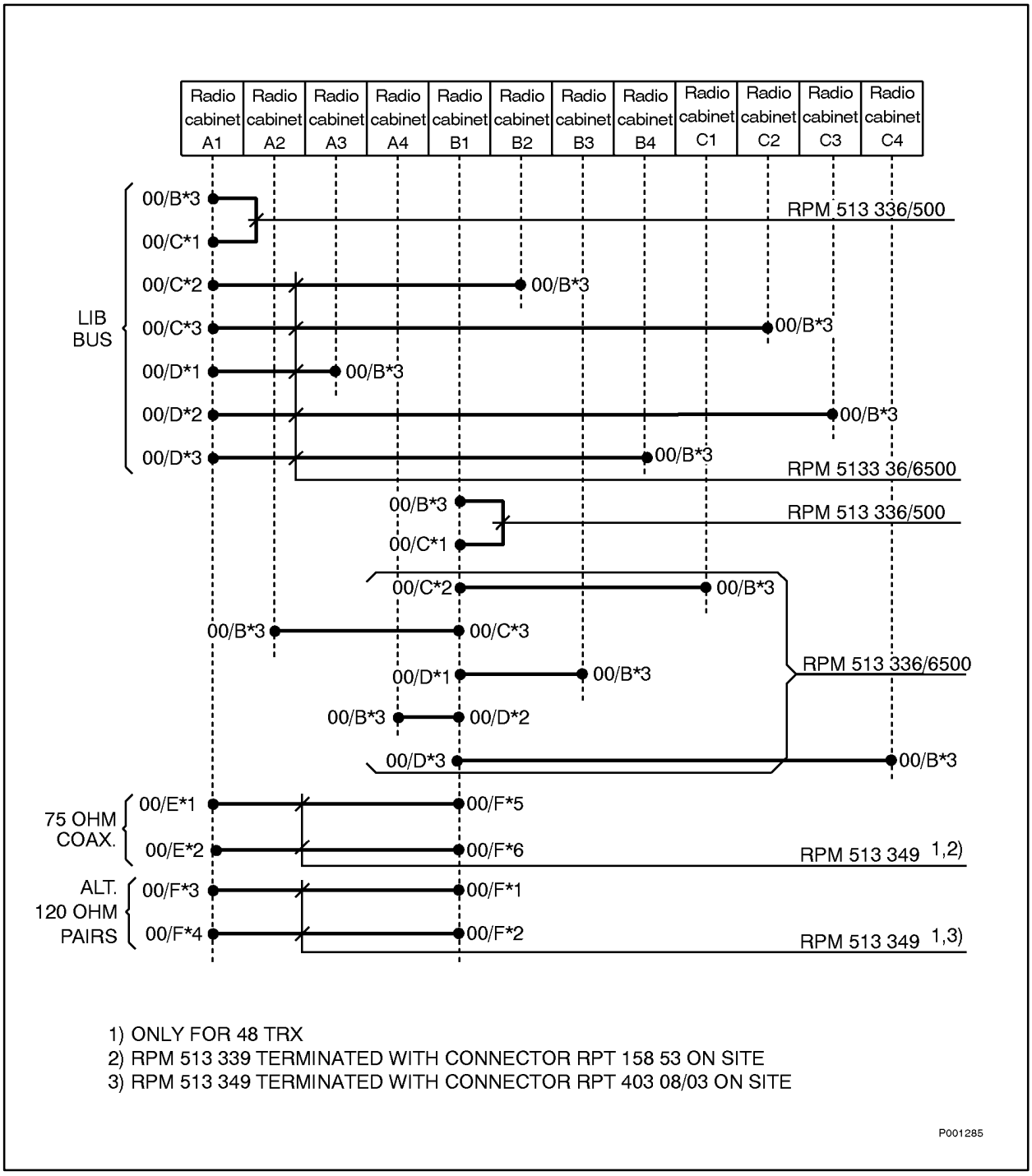


*Figure 9 Cabling diagram: LIB-bus and PCM*

## 3.5 Cable Layout Drawing: LIB-BUS

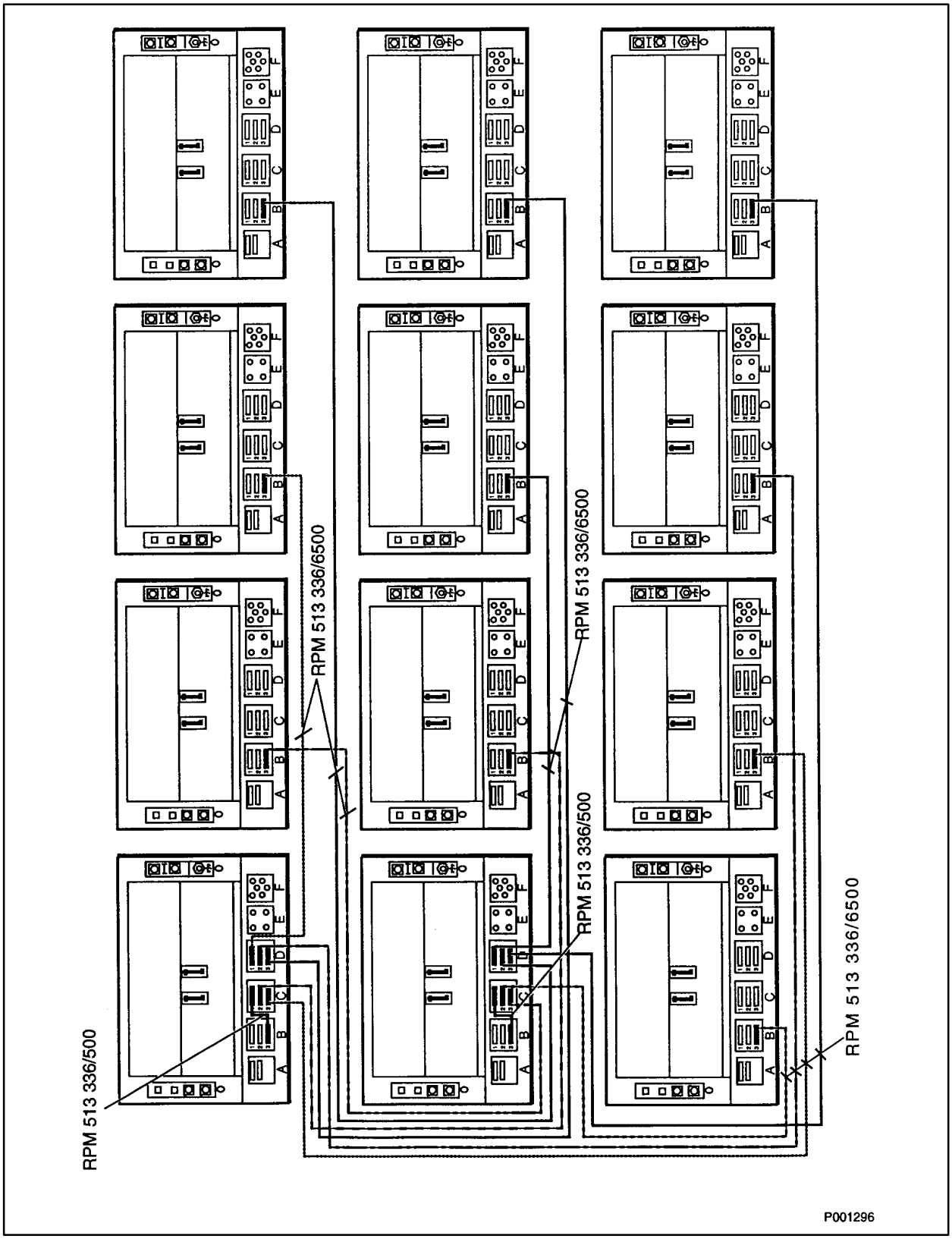


*Figure 10 Cable layout drawing: LIB-bus*

# 4 Installation of TRI with LAPD Concentration

The TRI magazine is delivered as a basic unit BFD 747 504/11 together with a number of units according to the capacity needs.

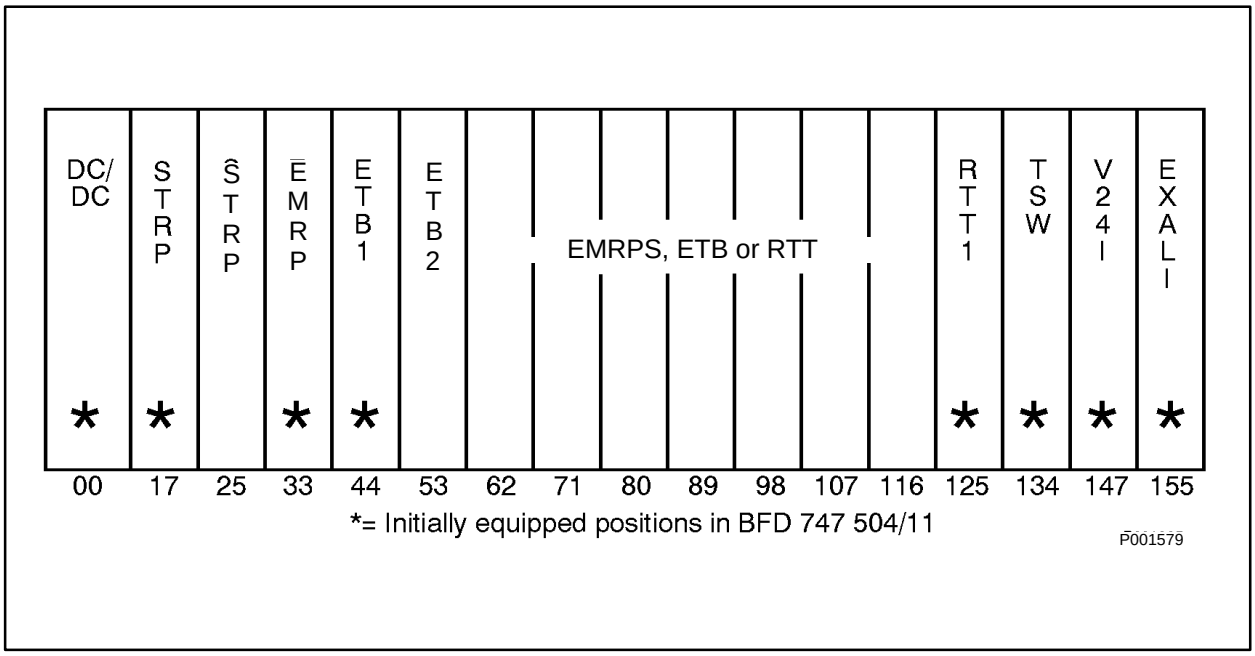


*Figure 11 TRI magazine*

Insert delivered boards in the vacant positions according to the picture. RTT 1 is the board in position 125. Remaining RTT boards are inserted from position 116 and onwards to the left. RTT 2 is in position 116, RTT 3 is in position 107, and so on.

ETB 1 is the board in position 44. Remaining ETB boards are inserted from position 53 and onwards to the right.

EMRPS can be inserted in any position between 62 and 125. It is normally inserted in position 62.

Install TRI 1 in master cabinet A1 and install TRI 2 in master cabinet B1.

Connect signal cables according to the cabling diagrams, figure 12 and figure 13.

## 4.1 Cabling Diagram for TRI 1 with LAPD Concentration

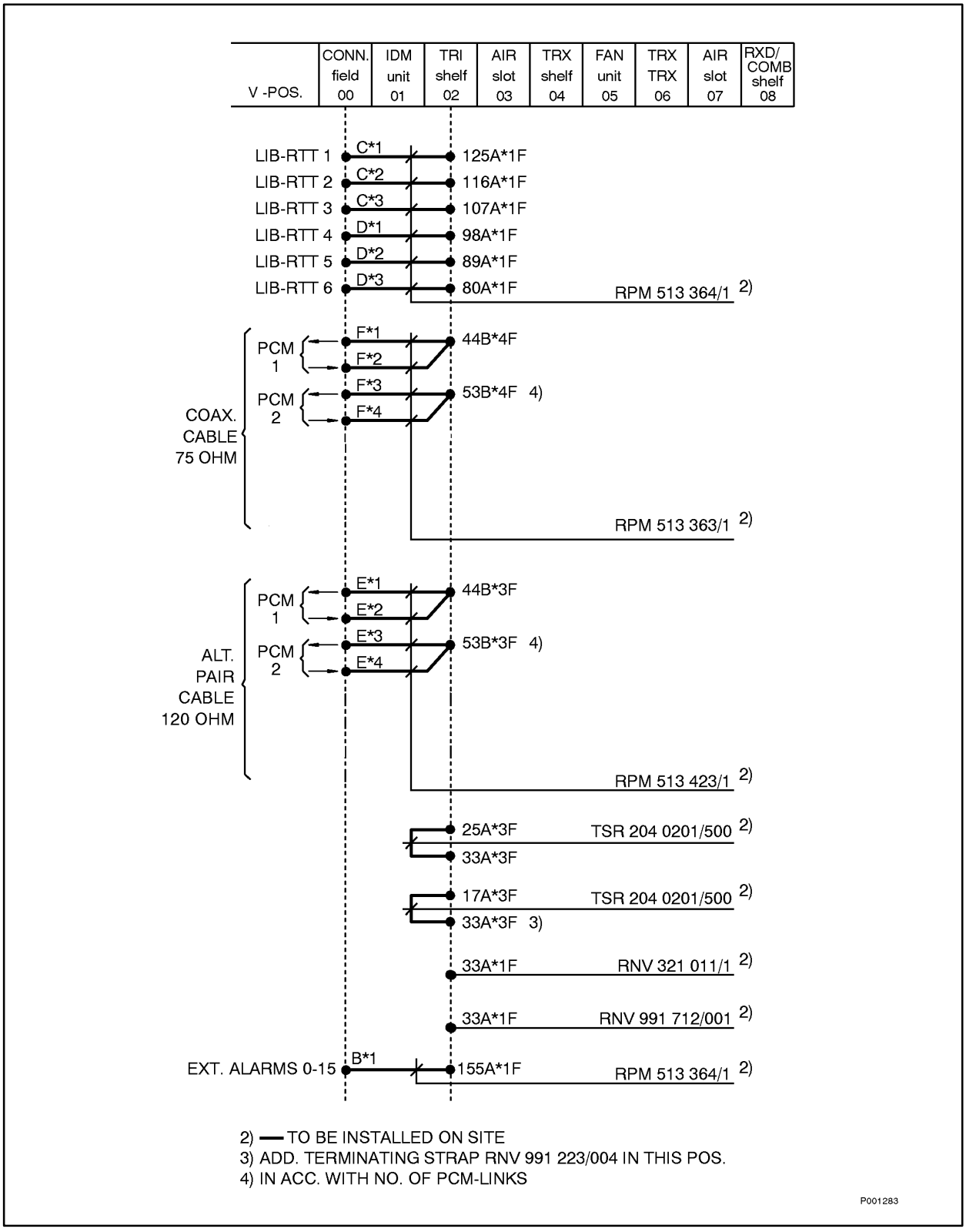


*Figure 12 Cabling diagram for TRI 1 with LAPD concentration*

## 4.2 Cabling Diagram for TRI 2 with LAPD Concentration

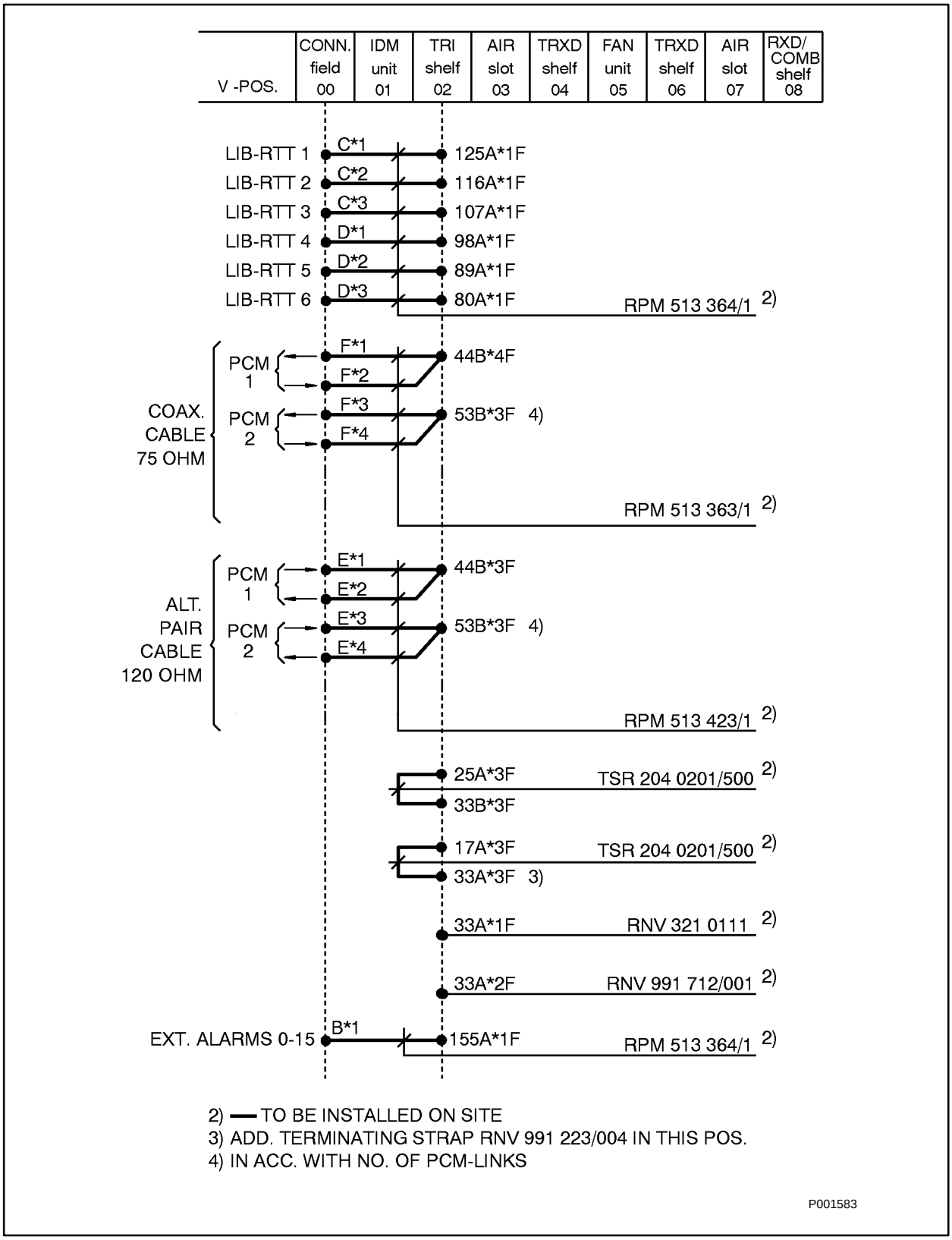


*Figure 13 Cabling diagram for TRI 2 with LAPD concentration*

## 4.3 Cabling between Cabinets

Install cables between cabinets according to: Cabling diagram: LIB-BUS and PCM with LAPD concentration, figure 14.

### 4.3.1 Transmission line connection

Install supplied PCM cable connector holders (SXA 120 165 for RPM 513 339, or SXA 120 164 for RPM 513 349) in Distribution Frame (DF).

Connect PCM cables between DF and connection field 00 on cabinet A1 and B1. Terminals are indicated on diagram: Cabling diagram for TRI 1 with LAPD concentration, figure 12 and Cabling diagram for TRI 2 with LAPD concentration, figure 13.

## 4.4 Cabling Diagram: LIB-BUS and PCM with LAPD Concentration

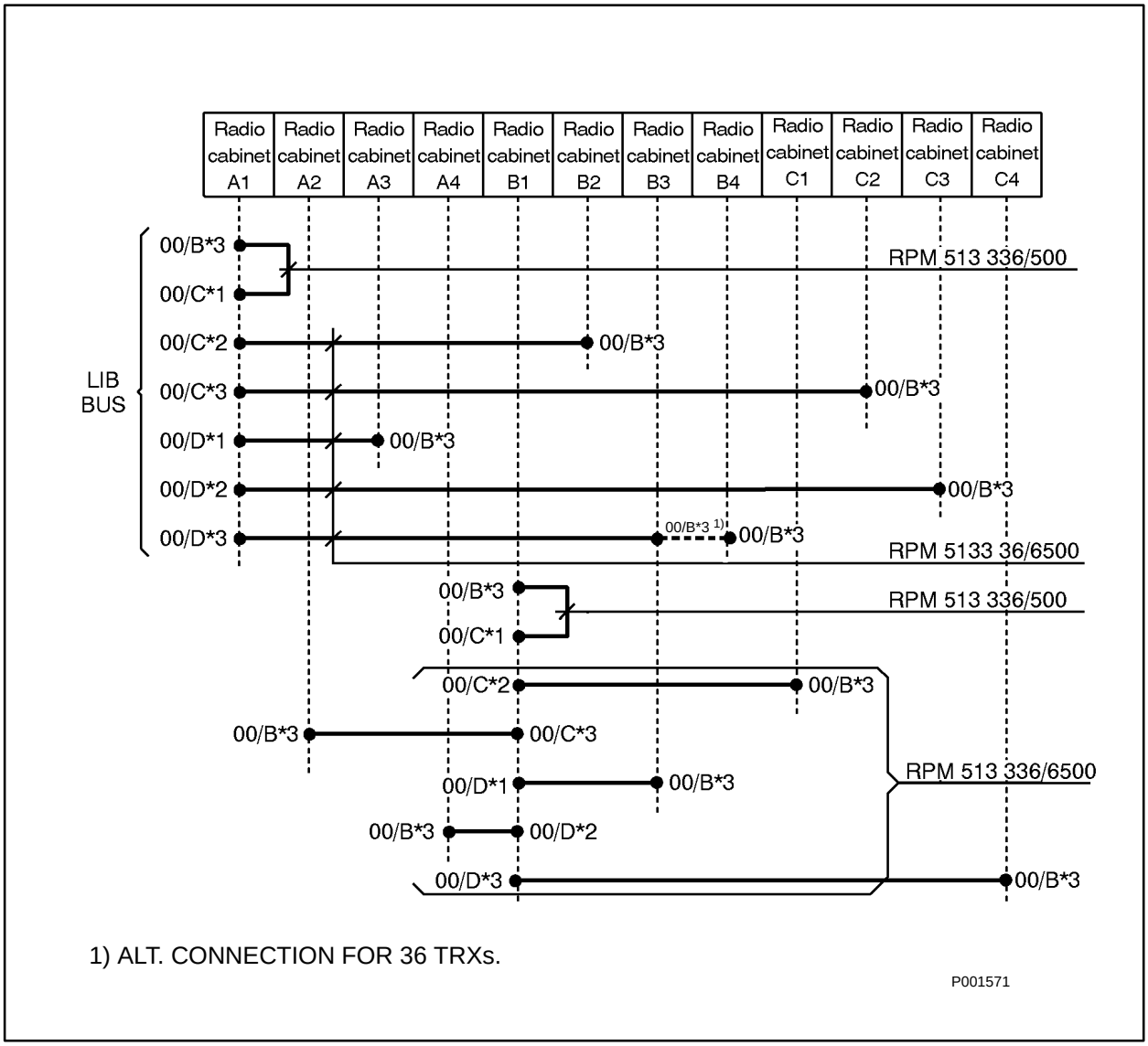


*Figure 14 Cabling diagram: LIB-bus and PCM with LAPD concentration*

# Installation Strapping Instructions

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# 1 Installation Strapping Instructions

It is important that all units included in the RBS 200 are strapped correctly before the power to the cabinet is turned on. All units should be strapped during the installation phase. It is recommended to carry out the strapping in the sequence described in this document.

The RBSis strapped using the following methods:

- Miniature DIP switches
- U-link straps
- Strapping plugs

## 1.1 Miniature DIP switches

A DIP switch contains a number of switch segments. For strapping purposes, DIP switches with two, four or eight switch segments are used. The switch segments can be moved between the ON and OFF positions, see figure 1.

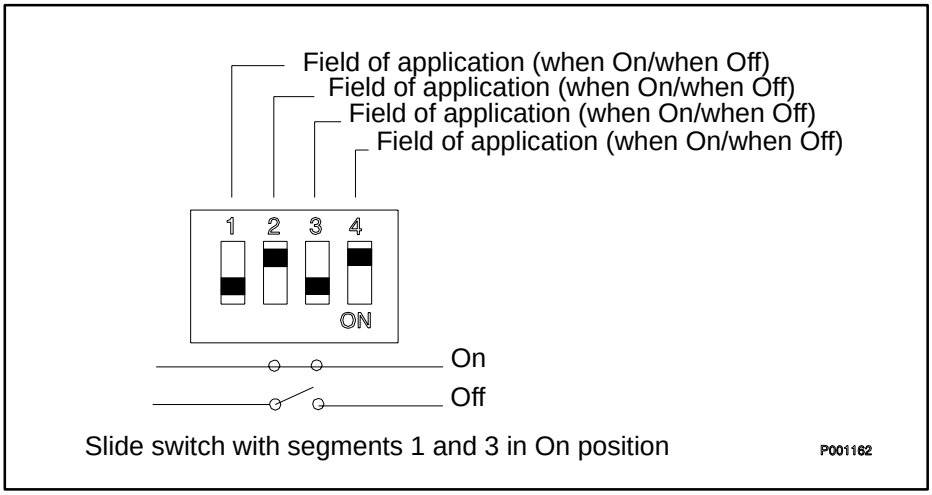



*Figure 1 DIP switch*

## 1.2 U-links

A second method of strapping the RBS is a position having three pins. A U-link is used to connect two neighbouring pins together (see figure 2).

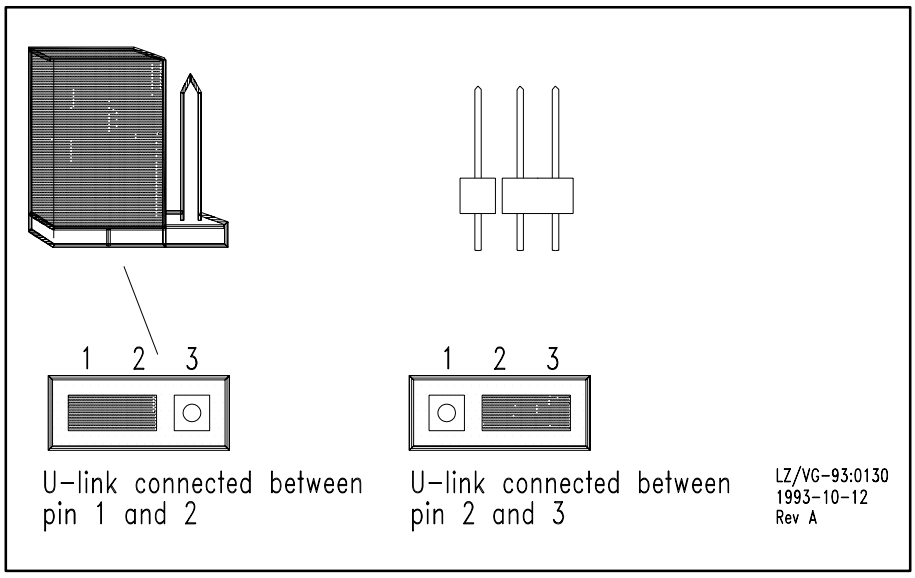



*Figure 2 The U-link*

## 1.3 Strapping Plugs

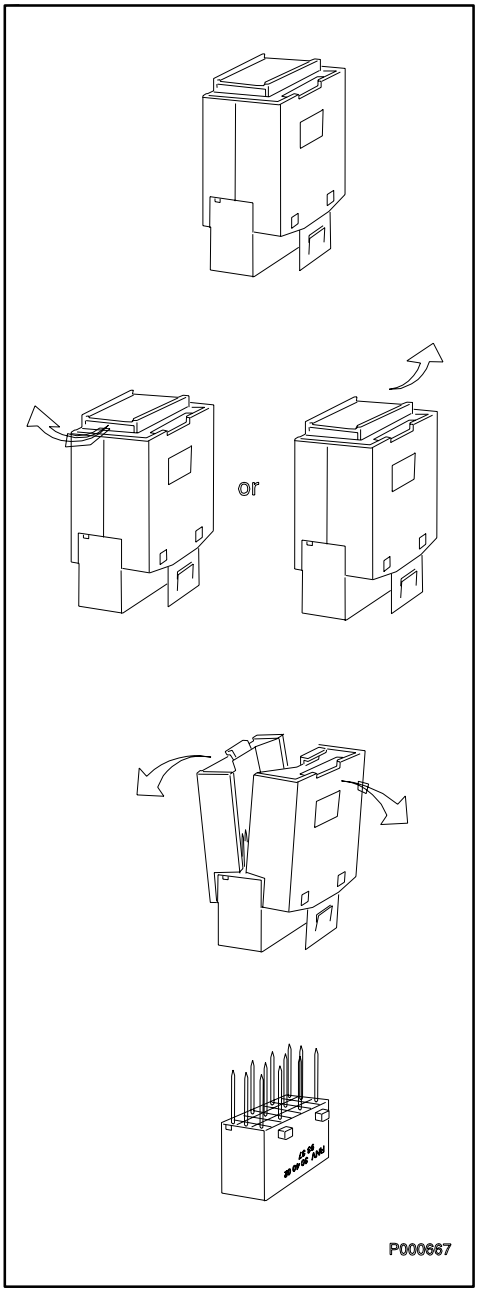
Three different kinds of strapping plugs are used when strapping the RBS.

- Address plug (RNV 991 03/n)
- Reset and Supervision plug (RNV 991 712/001)
- EMRPB terminator plug (RNV 991 223/004)

## 1.4 Address Plug RNV 991 03/n

Different addresses are obtained by changing the last character "n" of the product number RNV 991 03/n to a value between 1 and 32. These values corresponds to addresses 0-31 as seen in figure 5, figure 6, figure 7, figure 8.

### 1.4.1 Opening the Strapping Plug




1. Slide off the top cover in either direction, depending on how it was mounted in place.
2. Bend apart the cover±halves.
3. The fork contact unit is ready for strapping.

*Figure 3 Opening the strapping plug*

### 1.4.2 Checking the Wiring

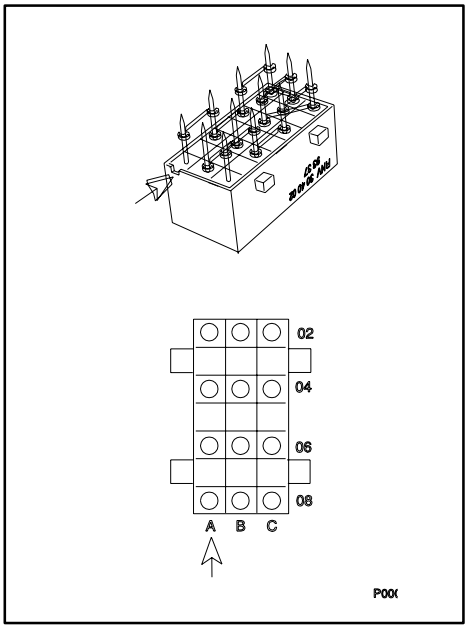



*Figure 4 Strapping plug pin configuration*

**1** Hold fork contact unit with notch turned towards you (see arrow in figure 4.

**2** Turn the fork contact unit until you see the wiring and notch is pointing downwards.

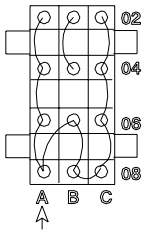
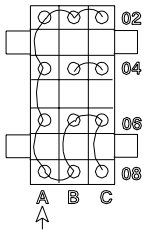
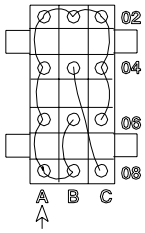
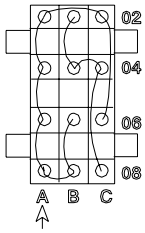
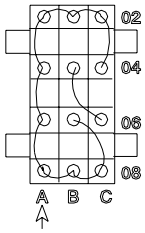
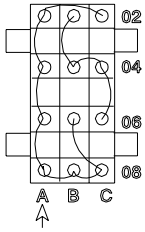
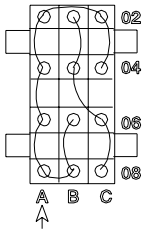
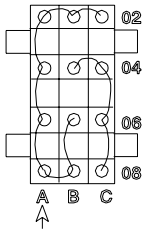
**3** Find correct wiring diagram and verify that product number on label corresponds to the wiring. The notch is marked with an arrow in the circuit diagrams. See wiring diagrams, figure 5, figure 6, figure 7, figure 8.

### 1.4.3 Closing the Strapping Plug

To close the Strapping plug, see previous section on "Opening the Strapping Plug" and reverse the procedure.

### 1.4.4 Wiring Diagrams

**Note** Wiring may not always appear as in diagram. Make sure pin to pin connections are the same as in diagram.

| Product No. | Circuit diagram | Logical address | Product No. | Circuit diagram | Logical address |
|---|---|---|---|---|---|
| RNV 991 03/1 |  | 0 | RNV 991 03/5 |  | 4 |
| RNV 991 03/2 |  | 1 | RNV 991 03/6 |  | 5 |
| RNV 991 03/3 |  | 2 | RNV 991 03/7 |  | 6 |
| RNV 991 03/4 |  | 3 | RNV 991 03/8 |  | 7 |



P000660

*Figure 5 Wiring addressess 0-7*

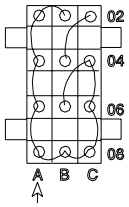
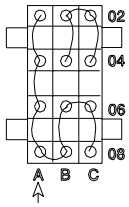
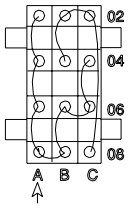
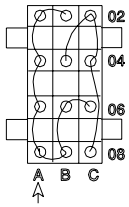
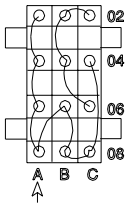
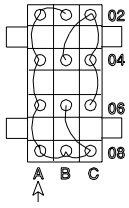
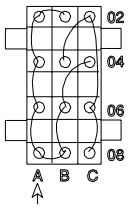
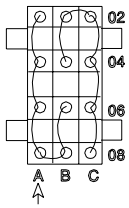
| Product No. | Circuit diagram | Logical address | Product No. | Circuit diagram | Logical address |
|---|---|---|---|---|---|
| RNV 991 03/9 |  | 8 | RNV 991 03/13 |  | 12 |
| RNV 991 03/10 |  | 9 | RNV 991 03/14 |  | 13 |
| RNV 991 03/11 |  | 10 | RNV 991 03/15 |  | 14 |
| RNV 991 03/12 |  | 11 | RNV 991 03/16 |  | 15 |



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*Figure 6 Wiring addressess 8-15*

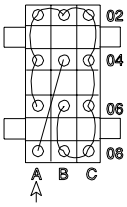
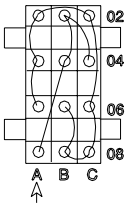
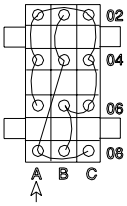
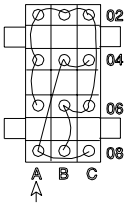
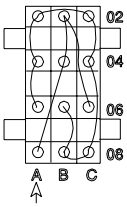
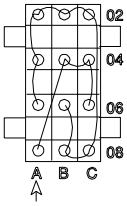
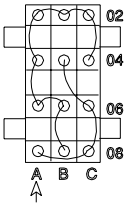
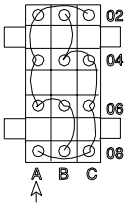
| Product No. | Circuit diagram | Logical address | Product No. | Circuit diagram | Logical address |
|---|---|---|---|---|---|
| RNV 991 03/17 |  | 16 | RNV 991 03/21 |  | 20 |
| RNV 991 03/18 |  | 17 | RNV 991 03/22 |  | 21 |
| RNV 991 03/19 |  | 18 | RNV 991 03/23 |  | 22 |
| RNV 991 03/20 |  | 19 | RNV 991 03/24 |  | 23 |

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*Figure 7 Wiring addressess 16-23*

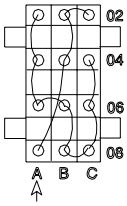
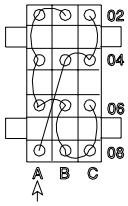
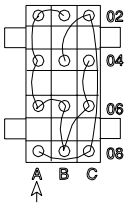
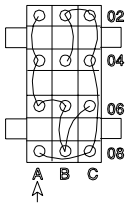
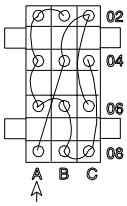
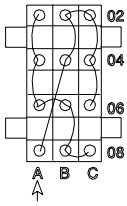
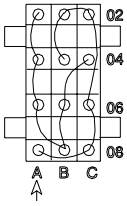
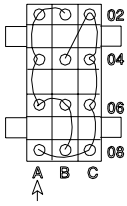
| Product No. | Circuit diagram | Logical address | Product No. | Circuit diagram | Logical address |
|---|---|---|---|---|---|
| RNV 991 03/25 |  | 24 | RNV 991 03/29 |  | 28 |
| RNV 991 03/26 |  | 25 | RNV 991 03/30 |  | 29 |
| RNV 991 03/27 |  | 26 | RNV 991 03/31 |  | 30 |
| RNV 99 1 03/28 |  | 27 | RNV 991 03/32 |  | 31 |



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*Figure 8 Wiring addressess 24-31*

## 1.5 Reset and Supervision Plug RNV 991 712/001

The Reset and Supervision plug (see figure 9) includes an LED that indicates the status of the supervised unit. It also has a 2-stage reset button that makes it possible to reset the unit.

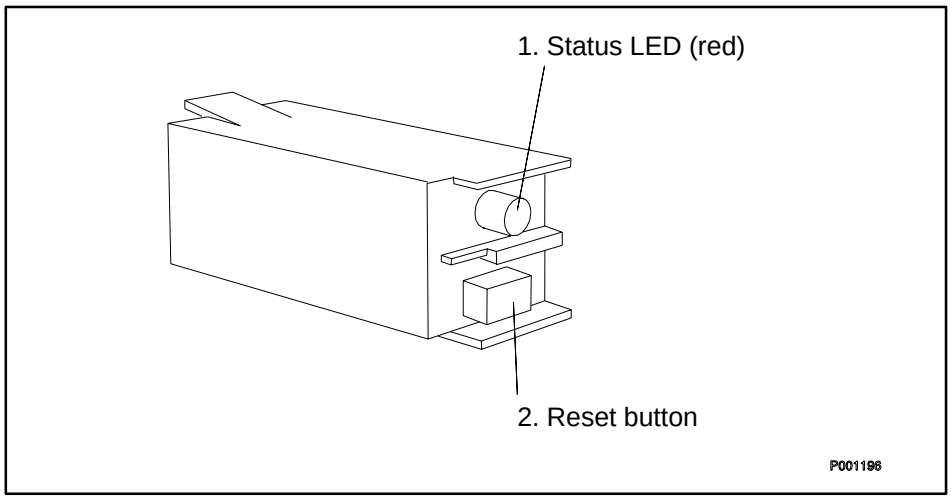


*Figure 9 Reset and Supervision Plug.*

## 1.6 EMRPB terminator Plug RNV 991 223/004

To terminate the EMRPB (Extension Module Regional Processor Bus) correctly, this terminator plug has to be used. It includes a number of resistors that are connected to each of the conductors that is part of the EMRPB.

## 1.7 Strapping the RTT, ROF 137 7870/1

The RTT board (Radio Transceiver Terminal) is equipped with a 2-position DIP switch. It is used to select between different PROM addresses. If all 32 time slots (TSs) are to be transmitted to the transceivers (TRXs), switch number 2 has to be in OFF position. Otherwise, time slots 16-31 will not be transmitted.

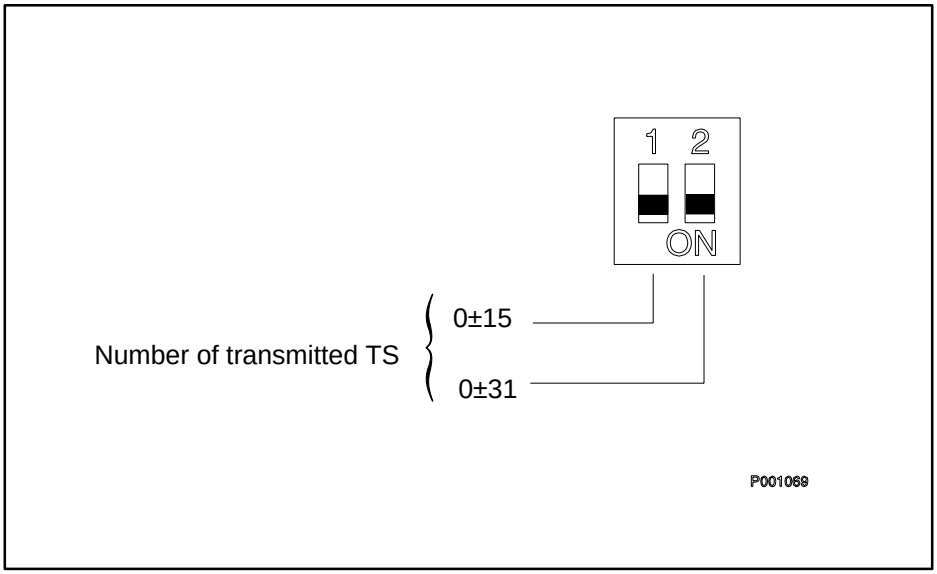


*Figure 10 RTT board DIP switch configuration.*

If no market requirements exist (see Market Dependent Special Instruction), set the switches according to figure 11.

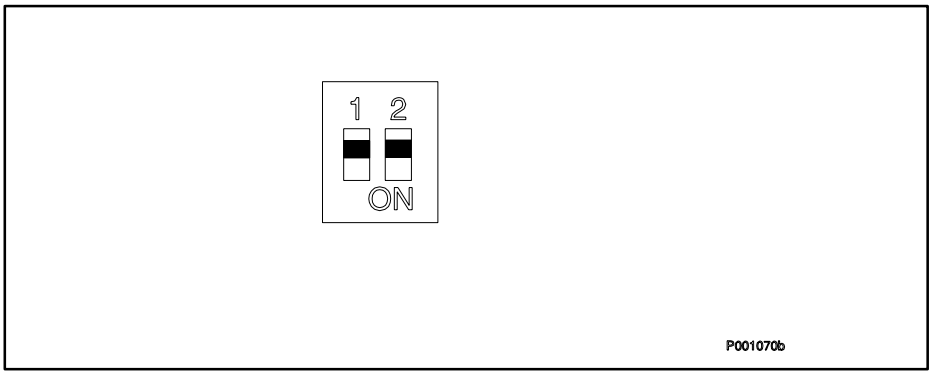


*Figure 11 Strapping the RTT.*

## 1.8 Strapping the ETB, ROF 137 7846/1

The allocation of the DIP-switch is shown in figure 12.

The Exchange Terminal Board (ETB) is equipped with a 4-position DIP switch. It connects either the outer conductor of a 120 ohm symmetrical pair cable or the screen of a 75 ohm coaxial cable to ground (GND) in both transmission directions.

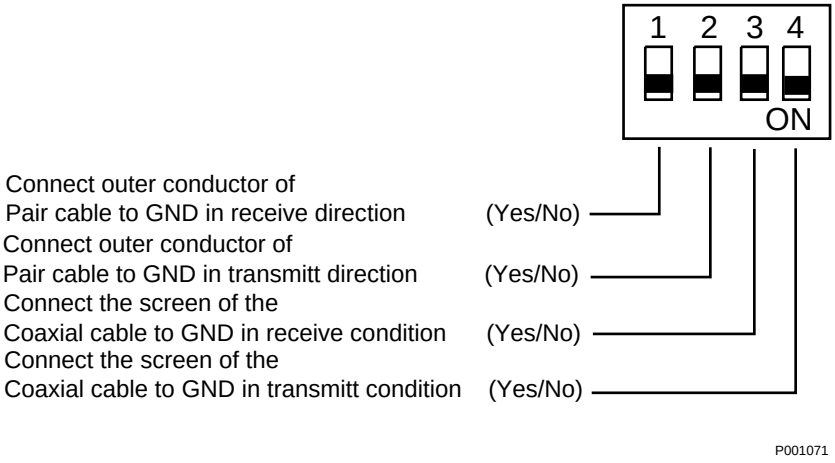


*Figure 12 ETB Rev. 1C, four DIP switch configuration.*

If no market requirements exist, the earth connection shall only be made in the "transmit" direction, and the DIP-switch set to the values shown in figure 13.

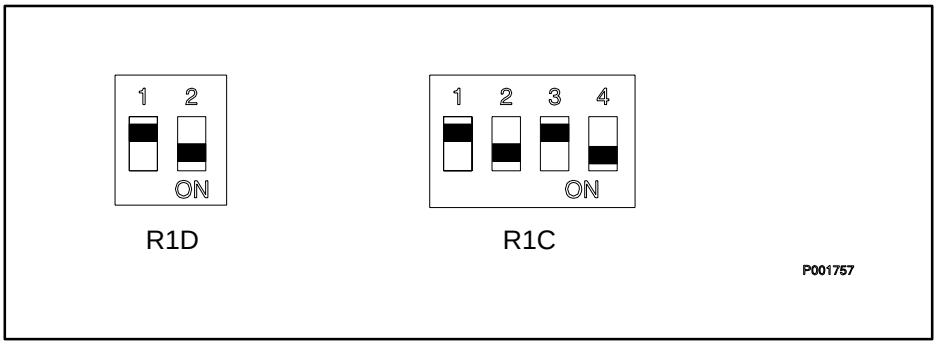


*Figure 13 Default setting of ETB DIP switches.*

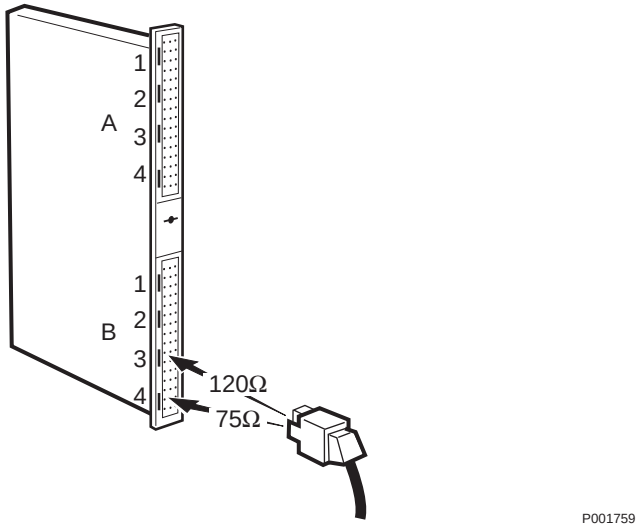


*Figure 14 Position of 75 Ω coaxial cable (B:4) and 120 Ω pair cable (B:3) respectively on the ETB board.*

## 1.9 Strapping the EMPC, ROF 131995/2

The Extension Module regional Processor Card (EMPC) is to be provided with front connected strapping plugs for the following functions:

- EMRP (Extension Module Regional Processor) address
- Reset and supervision
- Bus termination of EMRPB (EMRP Bus)

The strapping of the EMPC is described for a TRI without the EMRPS board, as well as for a TRI with the EMRPS board.

## 1.10 Strapping the EMPC, ROF 131 995/2 without EMRPS Board

The strapping of EMPC below is valid for a TRI equipped without an EMRPS board (LAPD concentration) and when redundant signalling is used.

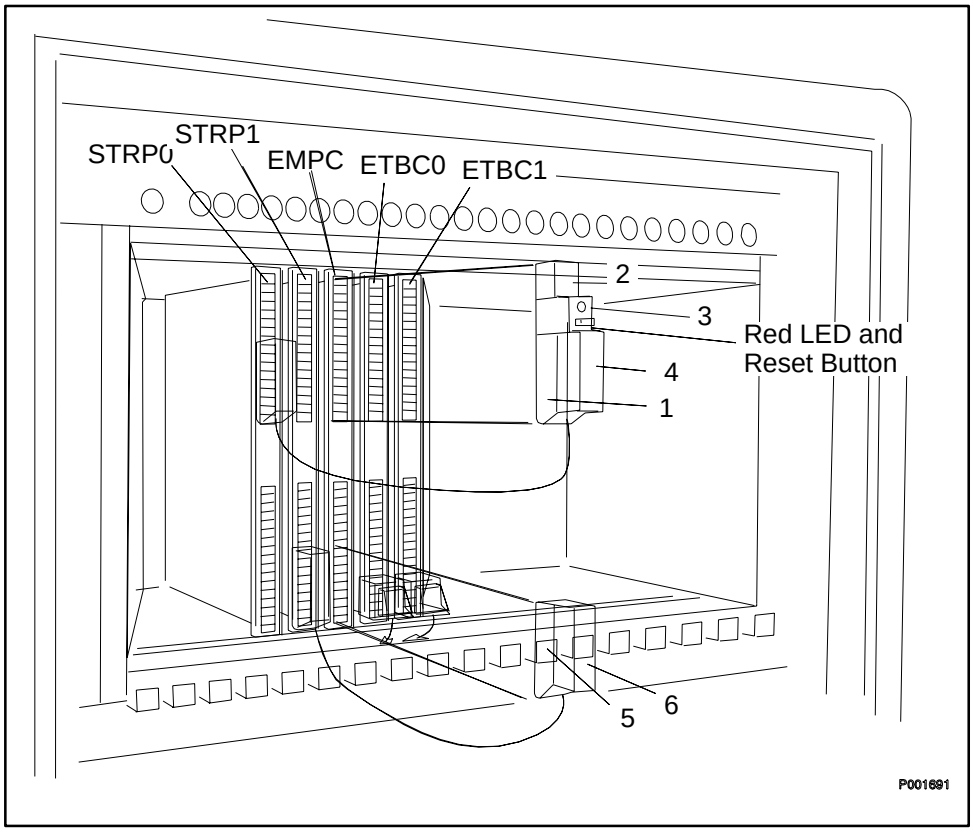


*Figure 15 Strapping EMPC without EMRPS board:*

**1** *EMRPB-A, TSR 204 0201/500*
**2** *Address strap, RNV 991 03/n, n=1-32*
**3** *Reset and Supervision strap, RNV 991 712/001*
**4** *EMRPB bus terminator, RNV 991 223/004*
**5** *EMRPB-B, TSR 204 0201/500, optional*
**6** *EMRPB bus terminator, RNV 991 223/004, optional.*

### 1.10.1 Strapping the EMPC address

The EMPC communicates with the BSC (Base Station Controller) through the STR (Signalling Terminal Remote) over the EMRPB and further on to time slot 16 in the G.703 interface. This communication requires a hard-wired address on the EMPC corresponding to the EM (Extension Module) value set by command `EXEPI` in the data transcript.

To set the address strapping plug, RNV 991 03 is used. Strapping versions RNV 991 03/n (n=1-32) correspond to addresses 0-31. For positioning of the strapping plug, see item 2 in figure 15.

Normally, strapping plug RNV 991 03/1 (n=1) is used, which corresponds to EM=0.

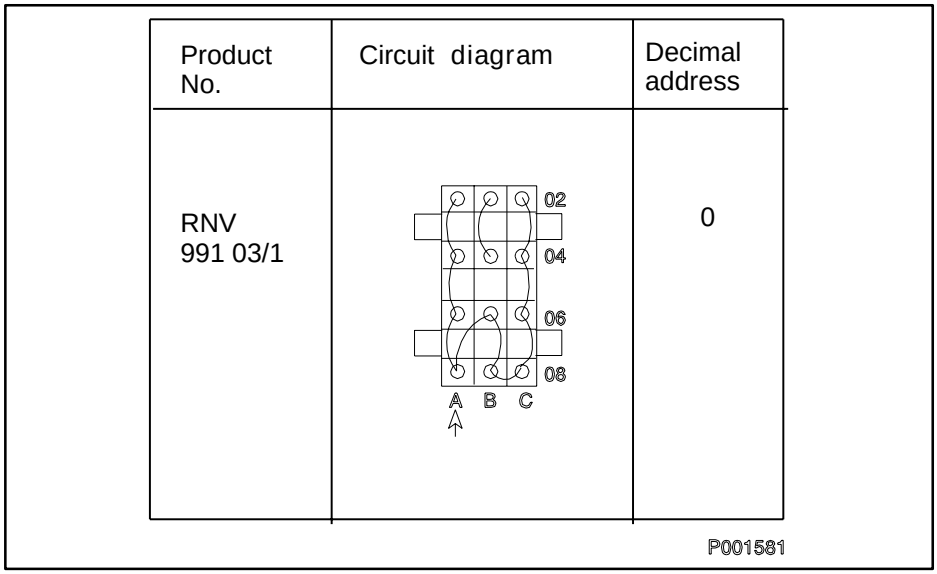


*Figure 16 Strapping plug RNV 991 03/1 without EMRPS board.*

### 1.10.2 Reset and supervision

A strapping plug, RNV 991712/001, is used for LED indication on working status and reset of the EMPC. For positioning of the strapping plug, see item 3 in figure 15.

### 1.10.3 Bus termination of EMRPB

EMPC communicates with STR0 via EMRPB-A and with STR1 via EMRPB-B, if redundant signalling is used. The TRI in Figure NO TAG is equipped for redundant signalling, STR1, ETB1 and EMRPB-B.

Each EMRPB is to be terminated by means of a strapping plug, RNV991223/004. For positioning of the strapping plugs, see items 4 and 6 in figure 15.

## 1.11 Strapping the EMPC, ROF 131 995/2 with EMRPS Board

The strapping of EMPC below is valid for a TRI equipped with an EM-RPS board (LAPD concentration) and when redundant signalling is used.

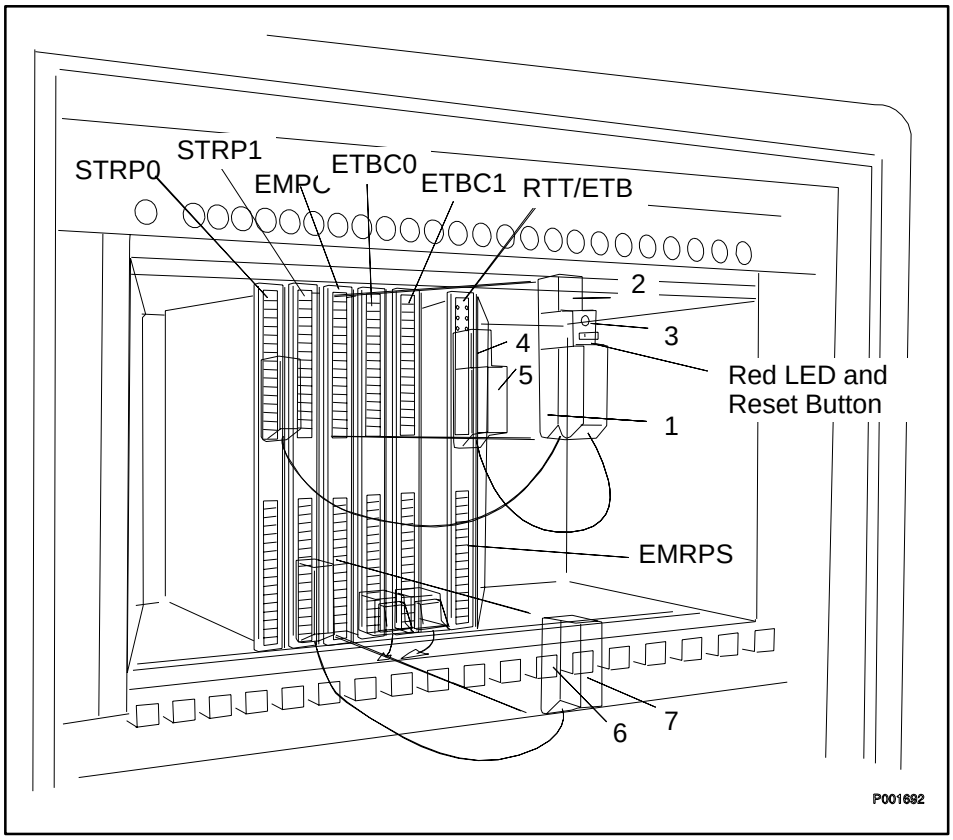


*Figure 17 Strapping EMPC with EMRPS board:*

**1** *EMRPB-A, TSR 204 0201/500*
**2** *Address strap, RNV 991 03/n, n=1-32*
**3** *Reset and Supervision strap, RNV 991 712/001*
**4** *Address strap, RNV 991 03/n, n=9-24*
**5** *EMRPB bus terminator, RNV 991 223/004*
**6** *EMRPB-B, TSR 204 0201/500, optional*
**7** *EMRPB bus terminator, RNV 991 223/004, optional.*

### 1.11.1 Strapping the EMRP address

The EMPC communicates with the BSC (Base Station Controller) through the STR (Signalling Terminal Remote) over the EMRPB and further on to time slot 16 in the G.703 interface. This communication requires a hard-wired address on the EMPC corresponding to the EM (Extension Module) value set by command `EXEPI` in the data transcript.

When the TRI is equipped with an EMRPS board, strapping plug, RNV 991 03 is also used to set the address for the EMRP. Strapping versions RNV 991 03/n (n=9-24) can be used which corresponds to EM addresses 8-23. For positioning of the strapping plug, see item 4 in figure 17. The EM value is set by a command in the data transcript.

Recommended value on strapping plug RNV 991 03/1 (n=1) is n=9, which corresponds to EM=8.

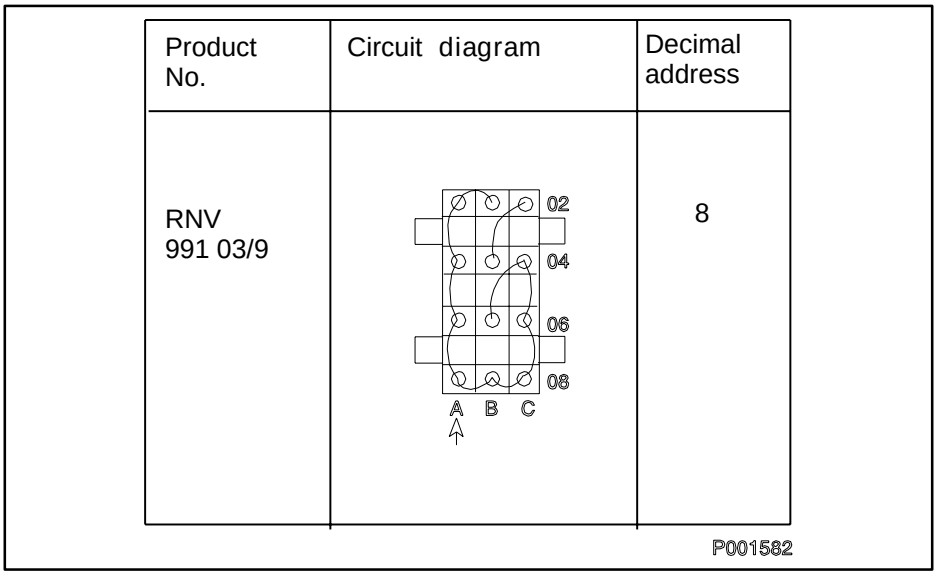


*Figure 18 Strapping plug RNV 991 03/9 when using LAPD.*

### 1.11.2 Reset and supervision

A strapping plug, RNV 991712/001, is used for LED indication on working status and reset of the EMPC. For positioning of the strapping plug, see item 3 in figure 17.

### 1.11.3 Bus termination of EMRPB

EMPC communicates with STR0 via EMRPB-A and with STR1 via EMRPB-B, if redundant signalling is used.

Each EMRPB is to be terminated by means of a strapping plug, RNV 991 223/004. For positioning of the strapping plugs, see items 5 and 7 in figure 17.

## 1.12 Strapping the Filter Combiner

Strapping information for the filter combiner can be found in the RBS 200, G-module, Chapter 3, section 0.

## 1.13 Torque Settings for the Antenna Connectors

Ensure that the antenna connectors are tightened to the specified torque using a torque wrench. For proper tools and the correct torque settings, see the connector suppliers recommended specifications.

## 1.14 Strapping of TRXD magazine, BFL 119 71/3

The TRXD (Transceiver Digital) magazine is provided with two separate backplanes, one per TRXD position. Each backplane is equipped with an 8-position DIP switch located as shown in figure 19.

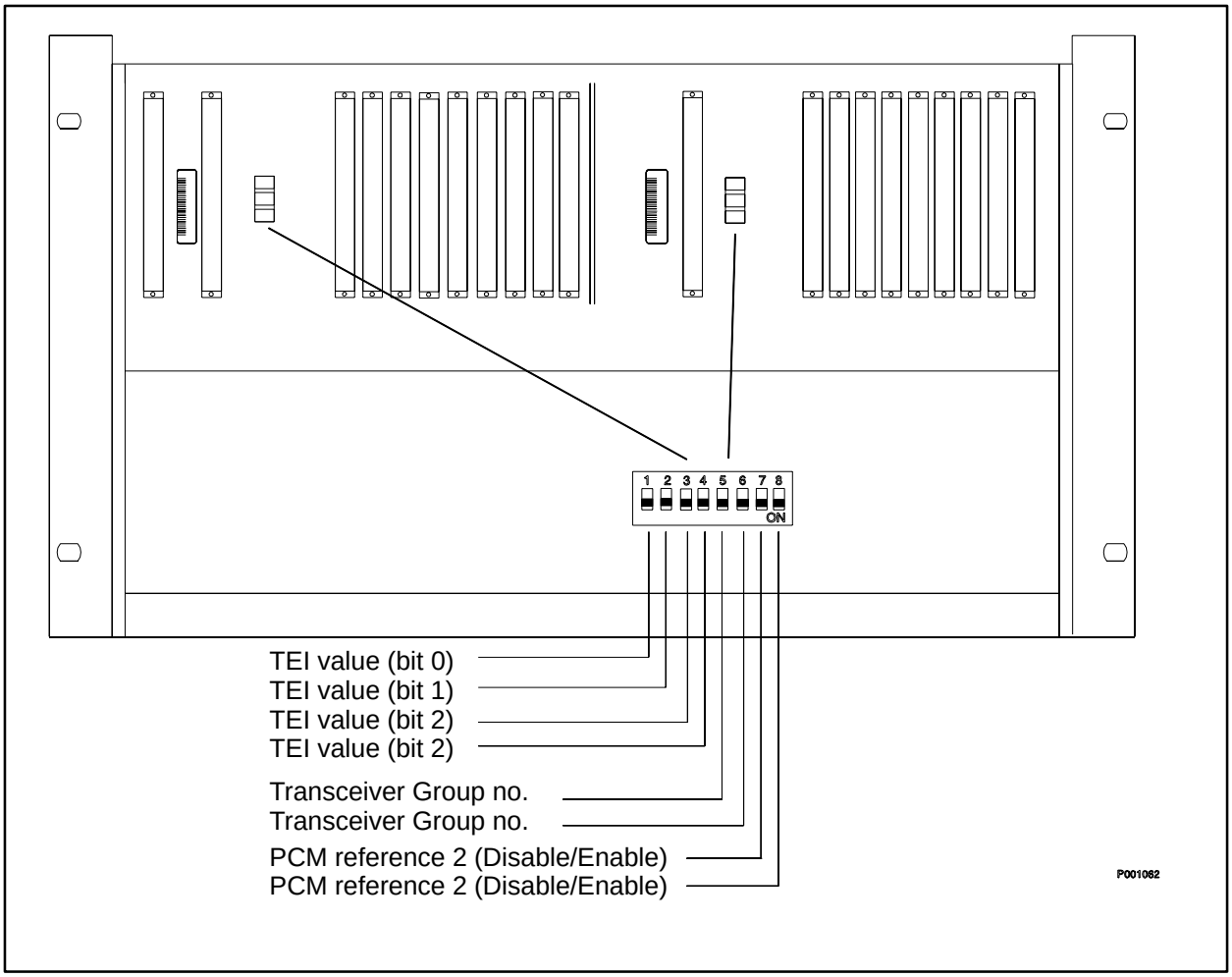


*Figure 19 DIP switch location and configuration on TRXD backplane.*

### 1.14.1 Strapping TEI value

The Base Station Controler (BSC) uses Terminal Endpoint Identifier (TEI) values to establish and maintain connections with the TRXCs in the Base Station.

The TEI value to be strapped into the back plane shall correspond to the TEI value set by command `RXREI` in the data transcript for each TRXC.

To maintain a uniform strapping of the TEI value within each Transceiver Group (TG), switch number 1-4 shall be set according to figure 20, figure 21, figure 22, figure 23 .

### 1.14.2 Strapping the Transceiver Group (TG) number

The Transceiver Group number points out a specific TG, which is defined as the set of equipment associated with radio transmission on one common transmitter antenna. When this function is not used, set switches 5 and 6 according to figure 20.

### 1.14.3 Strapping the PCM reference

An 8 kHz signal from an incoming 2 Mbit/s PCM system is used as a long term reference for the Timing Module (TM) in each TG.

To maintain a uniform strapping of the PCM reference within each TG, switch number 7 and 8 shall be set according to figure 20 and figure 21.

## 1.15 Normal Strapping of the TRXD Magazine

### 1.15.1 Master Cabinet

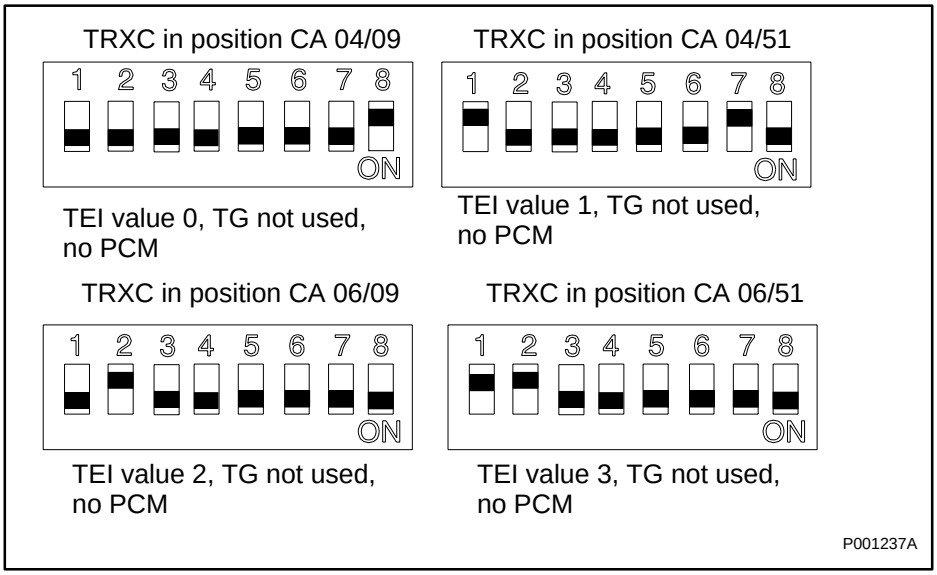


*Figure 20 Strapping the TRXD magazine, master cabinet*

### 1.15.2 Extension Cabinet 1

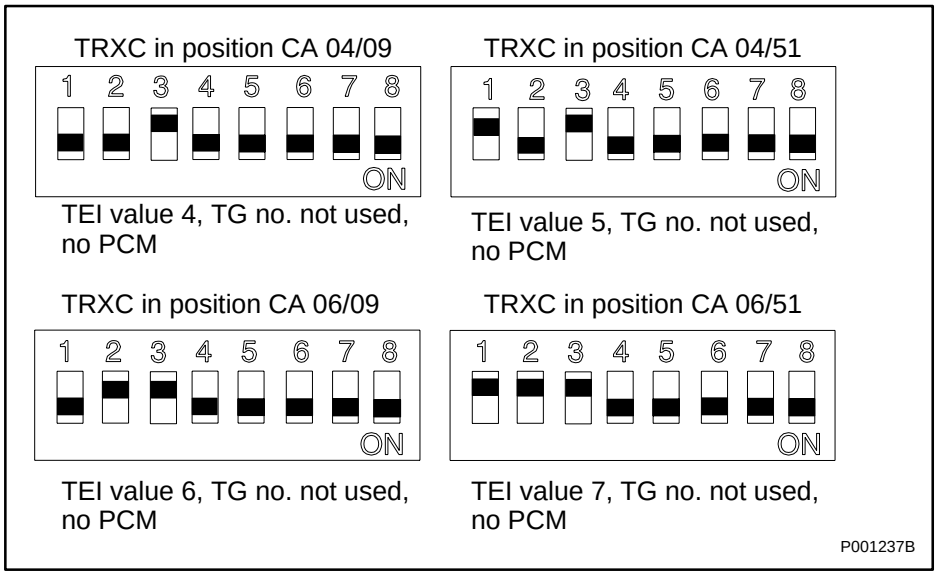


*Figure 21 Strapping the TRXD magazine, extension cabinet 1.*

### 1.15.3 Extension Cabinet 2

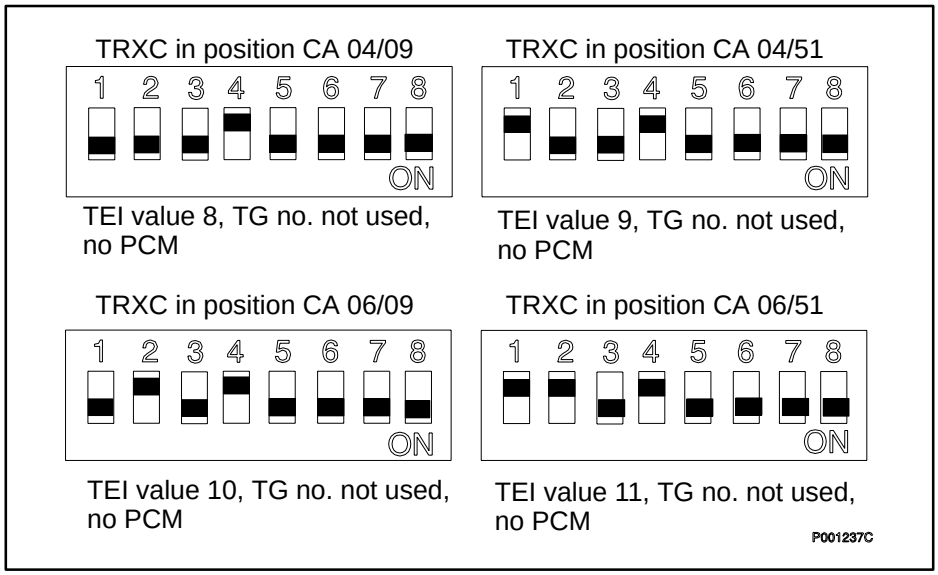


*Figure 22 Strapping the TRXD magazine, extension cabinet 2.*

### 1.15.4 Extension Cabinet 3

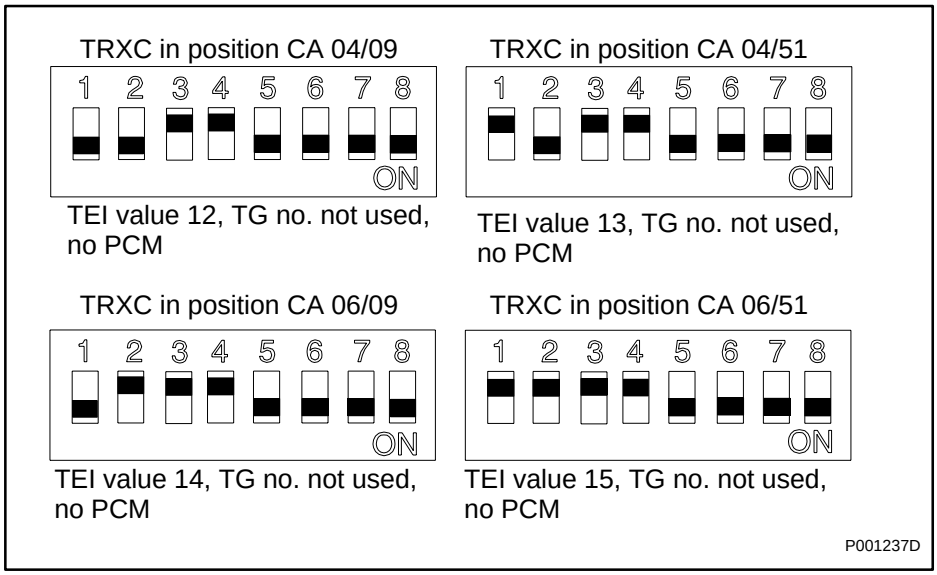


*Figure 23 Strapping the TRXD magazine, extension cabinet 3.*

## 1.16 Strapping the RTX, KRB 111 01/02

The RTX (Radio Transmitter) is made up of a number of circuit boards mounted in a common chassis. Strapping is done on the chassis front and on the Transmitter Control Unit (TXCU) board ROA 119 3193/1.

### 1.16.1 Strapping on chassis front

When using filter combiners there has to be a connection between connectors Power Reflected (PR) and the Transmitter Test Point (TXTP) on the RTX chassis front.

Use cable RPM 513 424/1 for the connection.

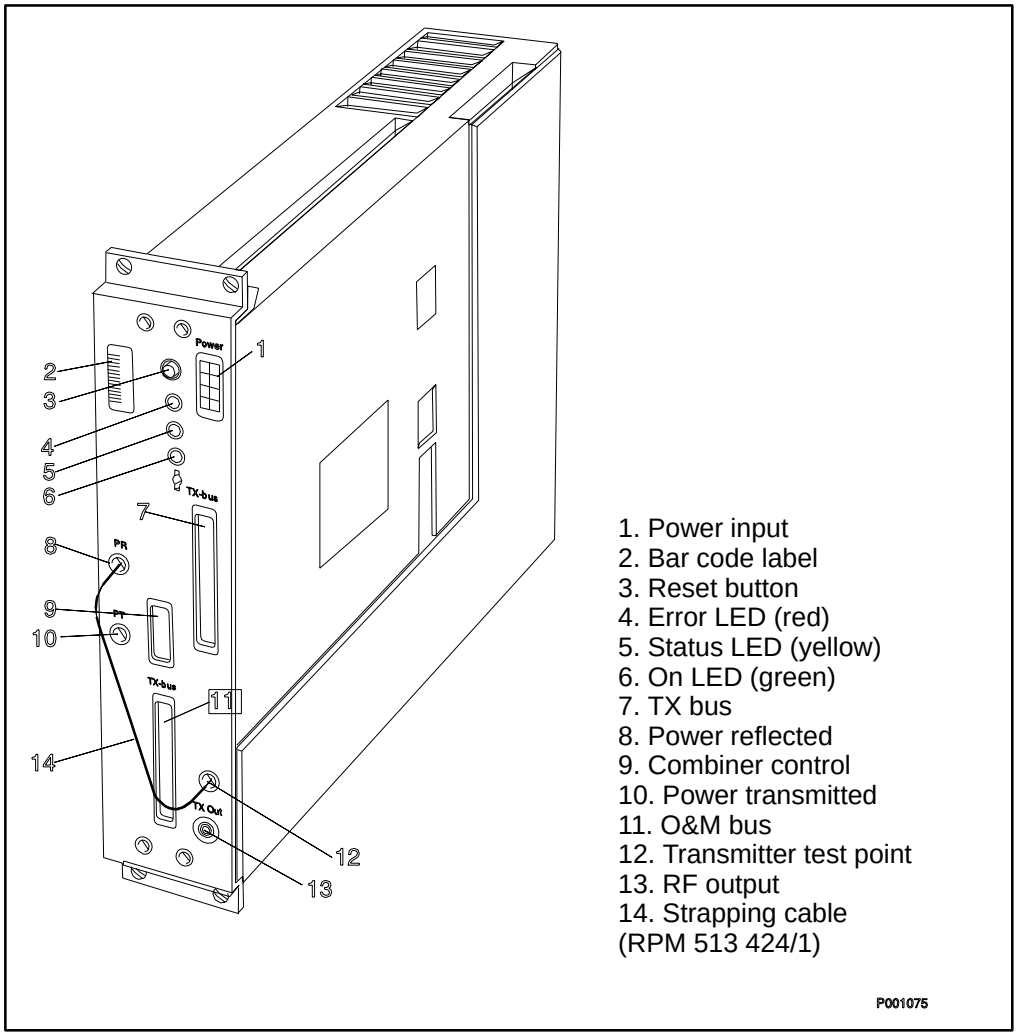


*Figure 24 Strapping the RTX*

**Note** If hybrid combiners are used, do not make this connection.

## 1.17 Strapping the TXCU, ROA 119 3193/1

Each RTX has a hard-wired address that defines the Managed Object Address (MOA) on the Operation & Maintenance (O&M) bus.The MOA value is set by means of an 8-position DIP switch located as shown in figure 25.

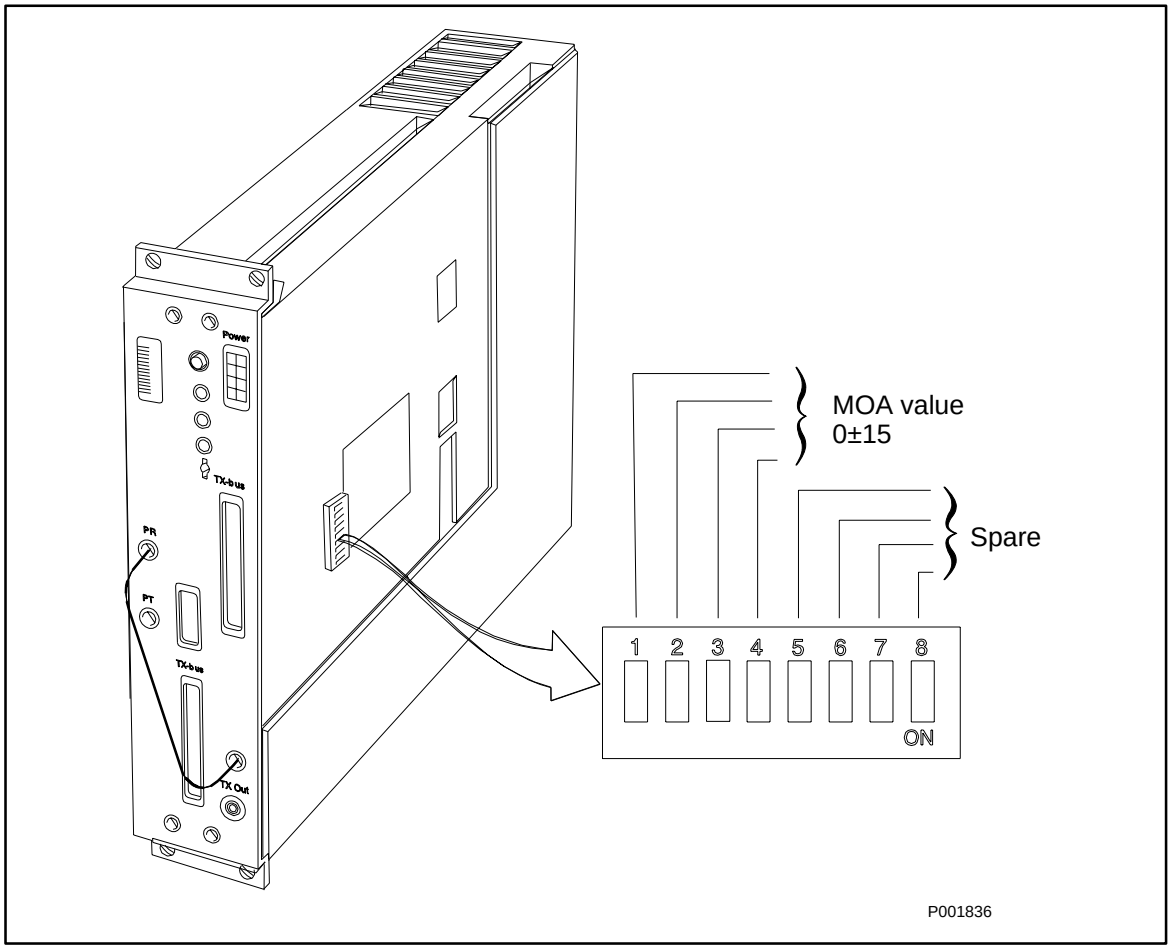


*Figure 25 DIP-switch, TXCU-board*

When frequency hopping is not used, there is a one-to-one correspondence between TRXC and RTX. To reflect this relation the MOA value of the RTXs within each transceiver group shall be set according to figure 26 and figure 27.

### 1.17.1 Master Cabinet

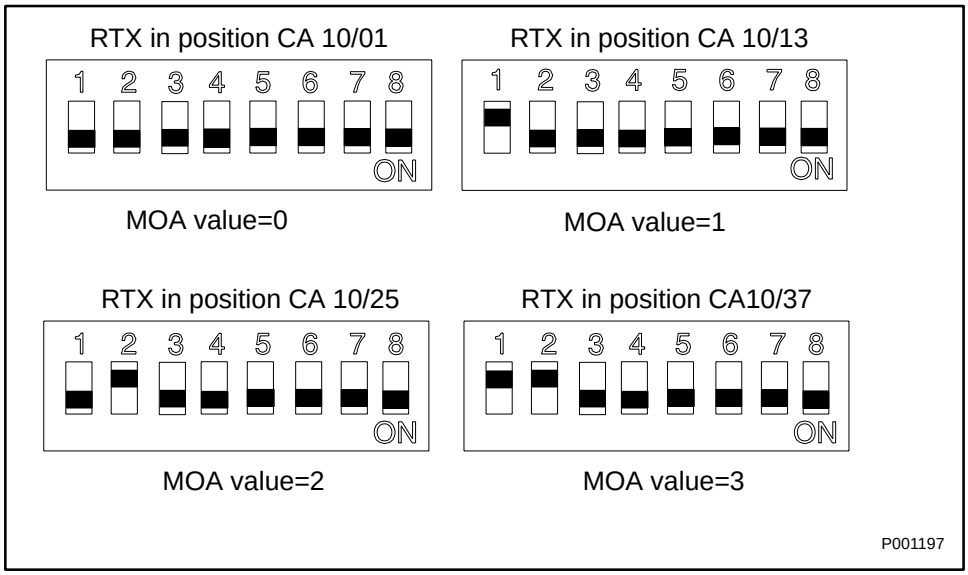


*Figure 26 TXCU strapping, master cabinet.*

### 1.17.2 Extension Cabinet 1

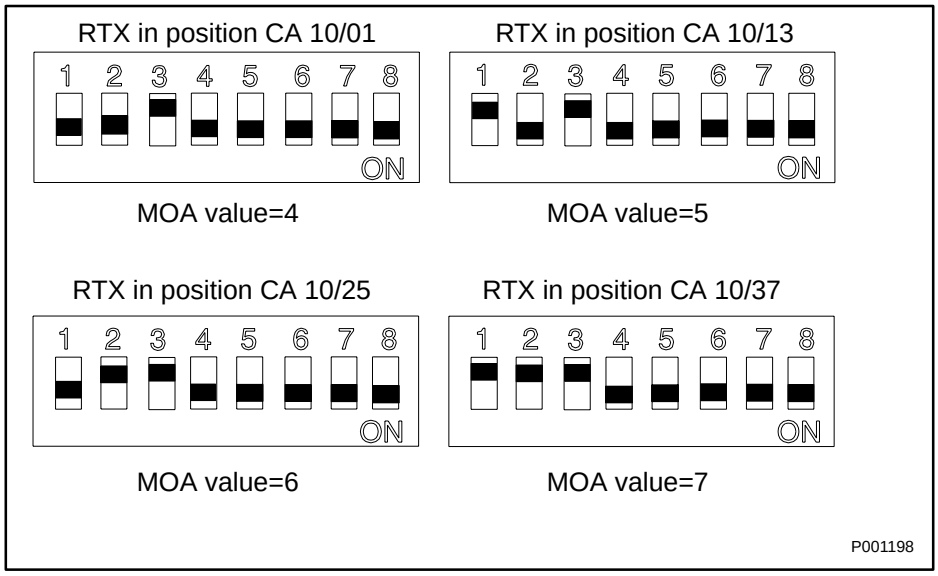


*Figure 27 TXCU strapping, extension cabinet 1.*

### 1.17.3 Extension Cabinet 2

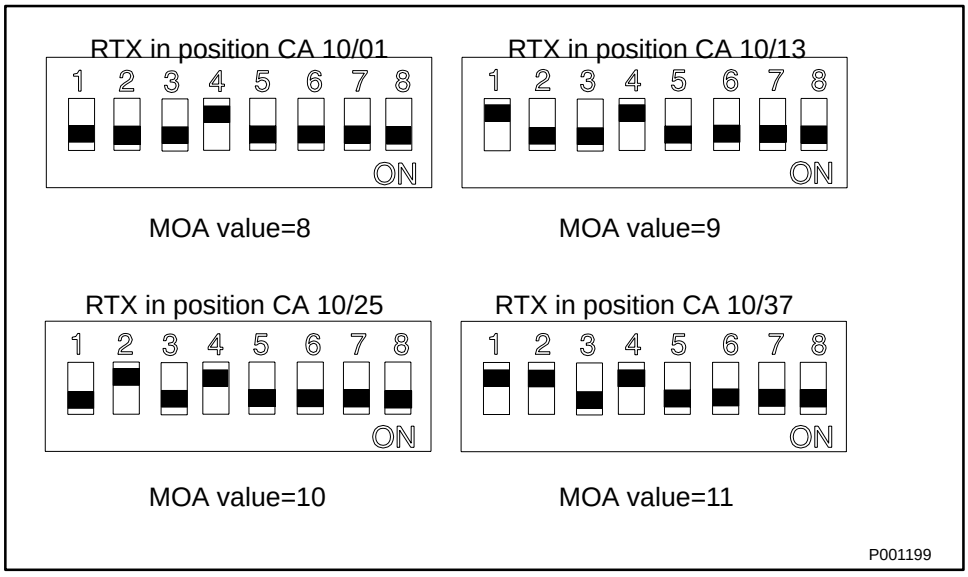


*Figure 28 TXCU strapping, extension cabinet 2.*

### 1.17.4 Extension Cabinet 3

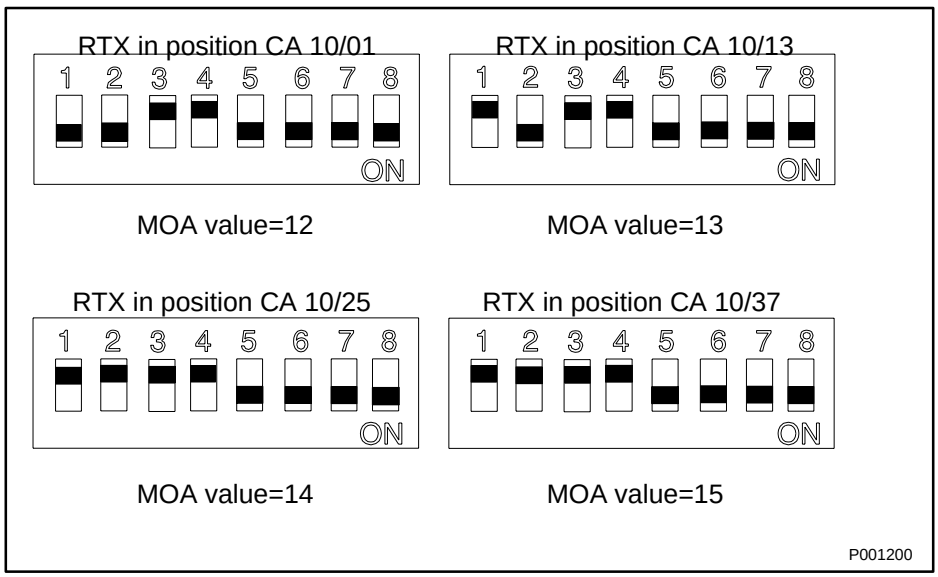


*Figure 29 TXCU strapping, extension cabinet 3.*

## 1.18 Strapping of ACU, KRC 131 42/01

The ACU is configured with one 8-position DIP switch (S4) and one U-link strap (S8). Their positions on the Alarm Collection Control Unit (ACCU) board are shown in figure 30.

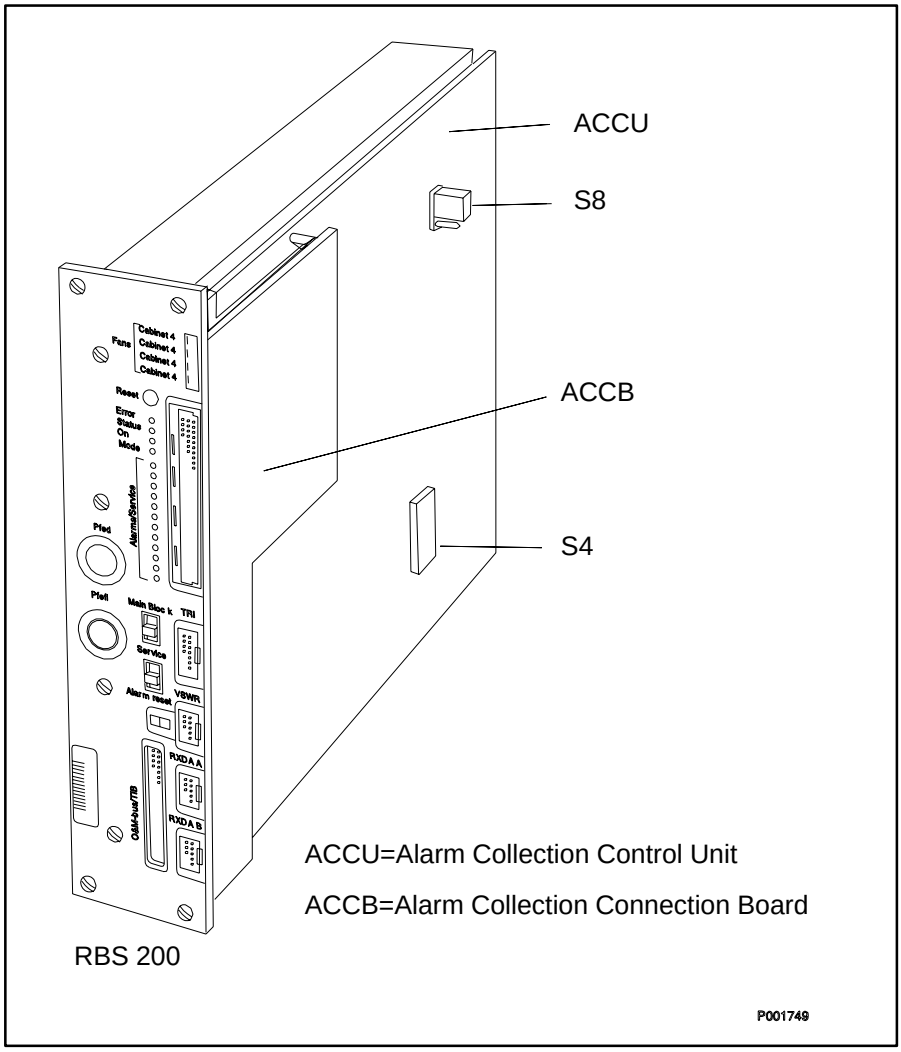


*Figure 30 Switch and U-link locations on the ACU.*

### 1.18.1 DIP switch S4

The Voltage Standing Wave Ratio (VSWR) alarm threshold, type of control mode, VSWR alarm output polarity and number of fan cassettes to be supervised is strapped with this DIP switch. The configuration of the switch is shown in figure 31.

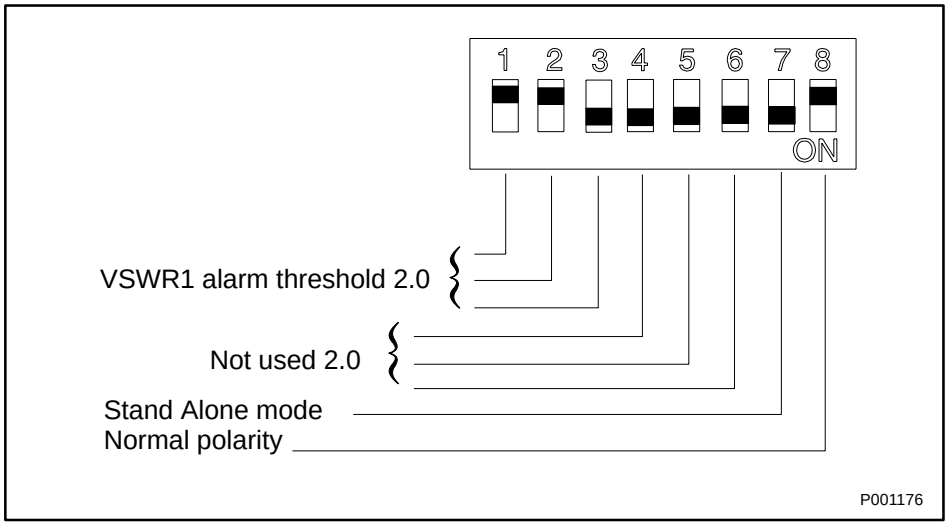


*Figure 31 DIP switch S4 configuration on ACU.*

### 1.18.2 Strapping of VSWR Alarm Threshold

There are eight different VSWR alarm threshold values to select between. These values are obtained by pushing switches number 1 - 3 on DIP switch S4 to the positions shown in figure 32.

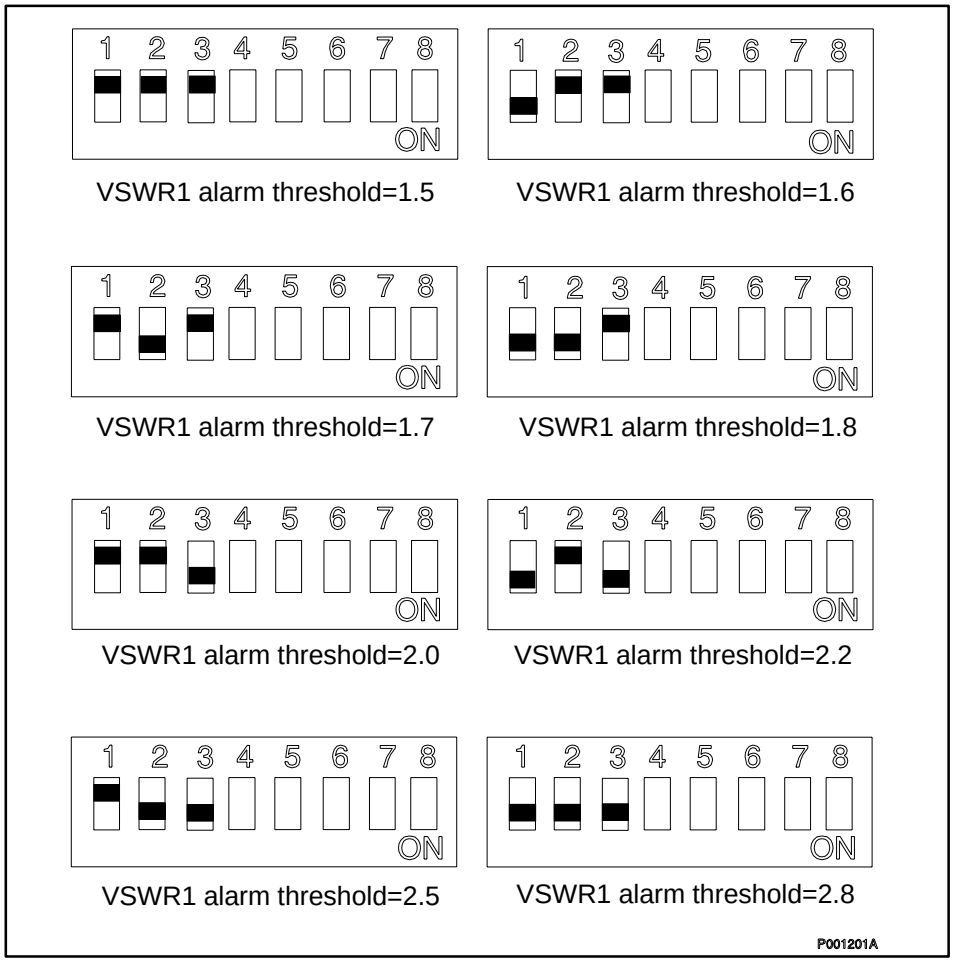


*Figure 32 Strapping the VSWR alarm threshold.*

### 1.18.3 Strapping the Control Mode

Two different control modes, Stand Alone or Slave, are available. Select between them by setting switch number 7 on DIP switch S4 to ON or OFF position (see figure 33).

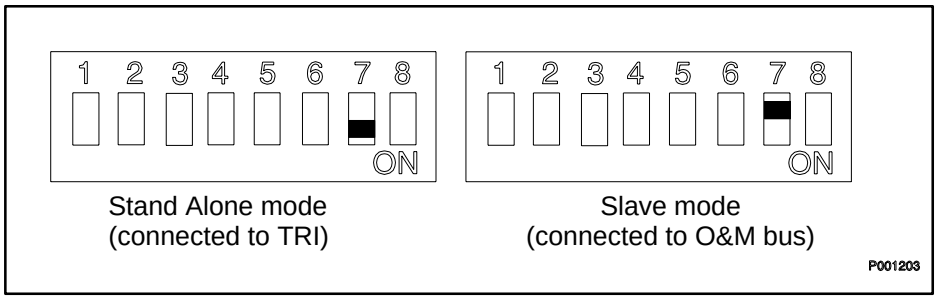


*Figure 33 Strapping the control mode.*

### 1.18.4 Strapping VSWR Alarm Output Polarity

Normal or reverse polarity can be used. Select according to figure 34.

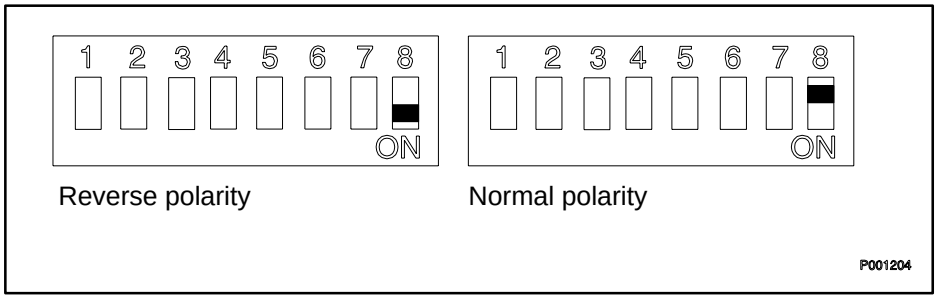


*Figure 34 Strapping the VSWR alarm output polarity.*

### 1.18.5 U-link S8

The number of fan cassettes to be supervised can be selected with U-link S8. It is possible to select supervision of three or four fan cassettes. Configuration and strapping alternatives are shown in figure 35. The recommended setting of U-link strap is for supervision of four fan cassettes.

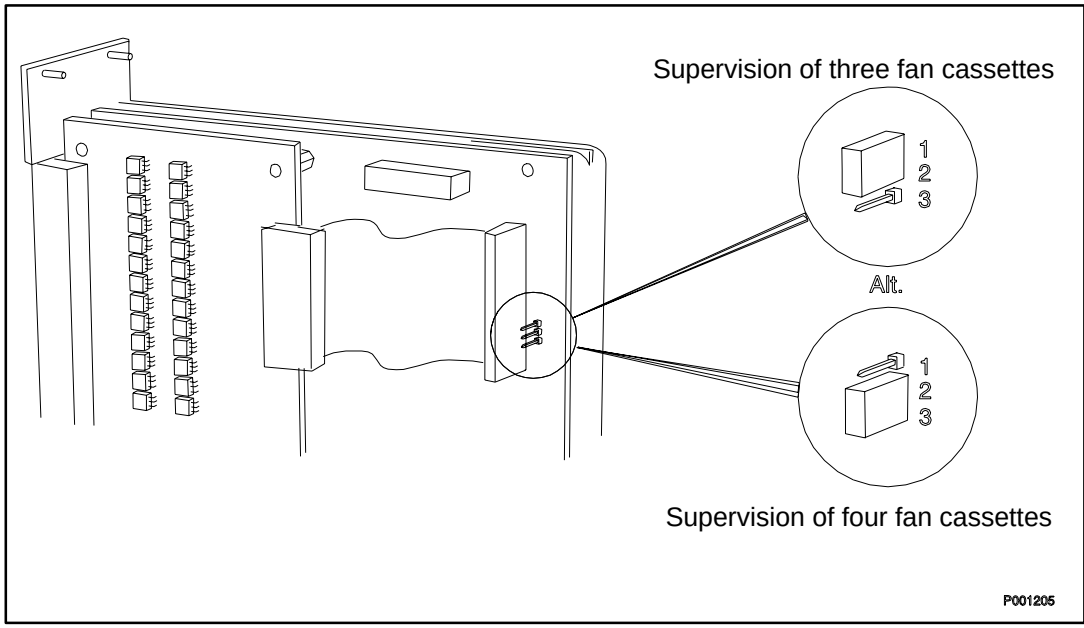


*Figure 35 Configuration and strapping alternatives for U-link S8.*

| Uppgjord — *Prepared* | | Datum — *Date* | Rev | Dokumentnr — *Document no* |
|---|---|---|---|---|
| SG/ERA/LZ/LI ERASNOW | | 1998-02-10 | A | 8/1531-COH 109 2015/11 Uen |
| Godkänd — *Approved* | Kontr — *Checked* | | | Tillhör/referens — *File/reference* |
| ERA/LZ/TGC (ERABVN) | | | | |

# RBS 200-TRXT Installation

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# 1 General information

The transceiver Tester, TRXT, is an optional piece of equipment that can be installed in 900 MHz systems, including those already in operation.

The purpose of the TRXT functionality is to enhance information about transmitting and receiving quality, including TX output signal level, RX sensitivity and coder/decoder functions.

## 1.1 Uplink

With the TRXT in transmitting mode the RBS receiver is checked for signal strength and quality.

## 1.2 Downlink

In this case the TRXT measures and reports received signal strength and quality back to the RBS.

# 2 Installation of TRXT

## 2.1 General

The TRXT consists of two units, the master unit (TRXTM) and the adapter unit (TRXTA). For installation of new units a mounting kit is required.

## 2.2 Material

*Table 1 Material included in ZTY 203 421*

| Pos | Qtr | Product number | Designation |
|---|---|---|---|
| 1 | 1 | NTM 201 875/n | Set of materials |
| 3 | 1 | KRC 131 45/nn | Control Unit / TRXT A |
| 4 | 1 | KRC 131 46/nn | Control Unit / TRXT M |

*Table 2 Material in mounting kit NTM 201 875/n*

| Pos | Qtr | Product number | Designation |
|---|---|---|---|
| 1 | 1 | NGH 257 01/100 | Fuse |
| 2 | 1 | SVH 281 60/1 | Label |
| 3 | 1 | SXA 120 1827/1 | Dummy front |
| 4 | 2 | 80/SBA 331 030/1006 | Screw |
| 5 | 6 | SEV 403 02 | Card slide |
| 6 | 1 | Depends on variant | Coaxial cable |
| 7 | 1 | RPM 513 351/1 | Power cable |
| 8 | 2 | RPM 513 370/4 | Coaxial cable |
| 9 | 2 | ZRB 101 0107/001 | Matched termination |

## 2.3 Installation Instructions

**CAUTION**

⚠

Short circuit can cause injury or damage. Although battery voltage may be low, the released power can be extremely high.

1. For protective reasons, pull out power cable number 22 in the IDM at the top of the cabinet. This stops the fan under the TRX magazine. If an ACU is mounted, a fan alarm is sent to the BSC.

2. Remove dummy fronts on shelf number 10 where the TRXT units will be fitted, position 49A and B (see figure 1). Ensure that the fan under the slot is not running before starting to install the TRXT.

3. Fit board guides into holes in positions 51 and 59 in the upper slot, and in position 59 in the lower slot. The track shall be to the left (see figure 1).

4. Fit the TRXTM (upper slot) and TRXTA (lower slot) carefully into place. Ensure that the board is fitted into both upper and lower board slide tracks before pushing the board into the magazine, otherwise there is a risk of

short-circuiting the RTX PF unit . Mount Dummy front (SXA 120 1827/1) on the left side of the TRXT units.

Follow the cabling diagram enclosed in this instruction (see figure 2).

5. Move cable from shelf 12 to shelf 10 connector 23*Pr to 51B*Pr.

6. Move cable from shelf 12 to shelf 10 connector 23*Pf to 51B*Pf.

7. Move cable from shelf 12 to shelf 10 connector 23*RXDA—A to 51B*RXDA-A.

8. Move cable from shelf 12 to shelf 10 connector 23*RXDA—B to 51B*RXDA-B.

9. Alt. 1. With ACU unit; connect coaxial cable (RPM 513 370/4) between TM/PSU and TRXTA: from shelf 12 23*Pfwd to shelf 10 51B* ACU Pf and from shelf 12 23*Prtn to shelf 10 51B* ACU Pr.

10. Alt. 2. Without ACU unit; mount matched termination (ZRB 101 0107/001) on TRXTA outputs ACU Pf and ACU Pr.

11. Mount new fuse (NGH 257 01/100) and label (SVH 281 60/1) on fuse holder number J24.

12. Mount power cable (RPM 513 351/1) between power outlet J24 to TRXTM Power in.

13. Reconnect all other cables that were disconnected for safety reasons.

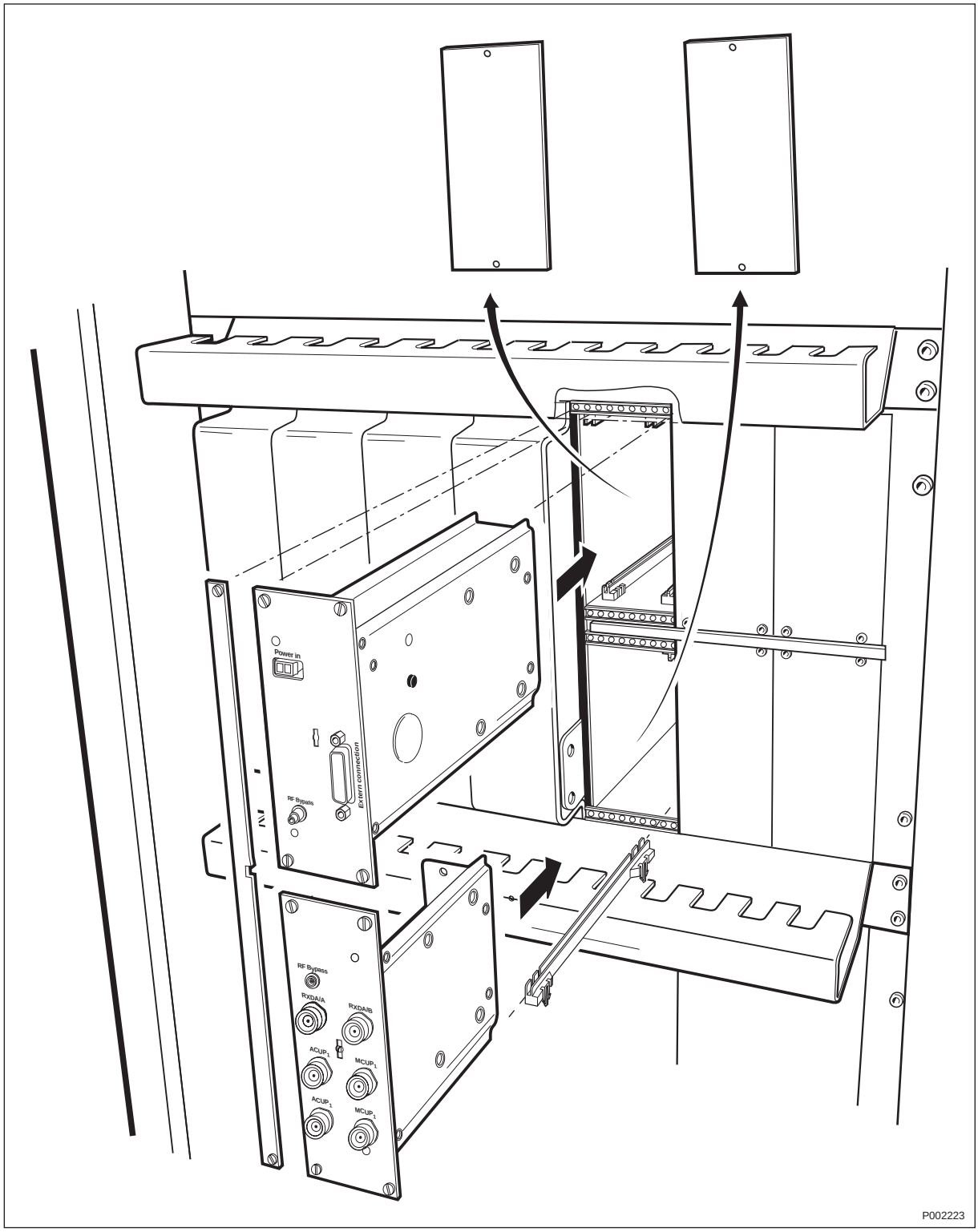


*Figure 1 Mounting of units*

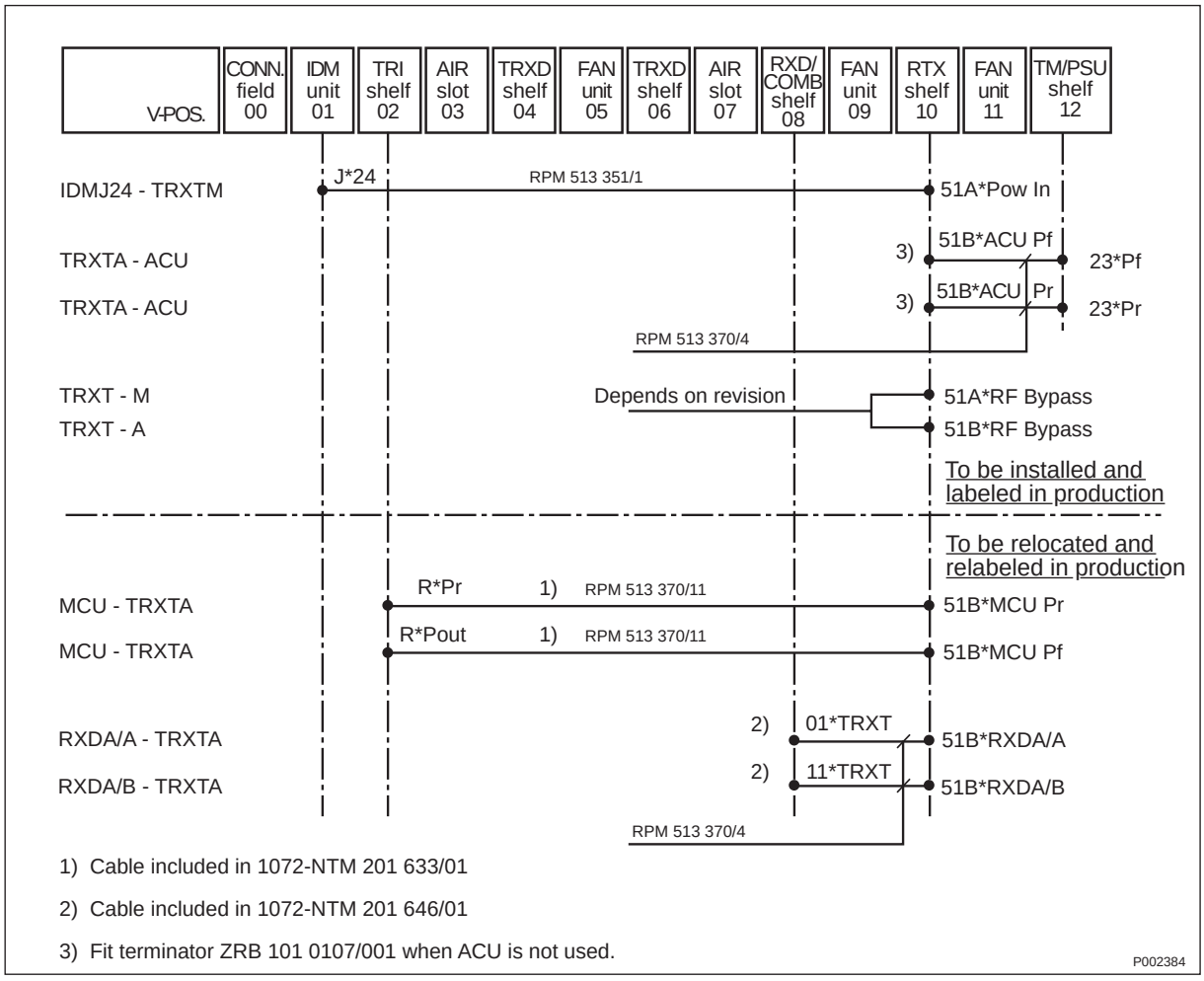


*Figure 2 Cable connection diagram*

# RBS 200 Installation Instructions


## Abstract

Up-grade to replace Filter Combiner with Hybrid Combiner and MCU-TXBP panel replacement.


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# 1 INTRODUCTION

The purpose of this document is to describe the reconfiguration of an RBS 200 to accommodate both Synthesiser and baseband frequency hopping. This will improve the quality of service to the end user.

Synthesiser frequency hopping requires that Hybrid Combiners replace the Filter Combiners already fitted. This modification is intended to be completed on site with the minimum of downtime.

The up-grade may be completed with access only to the front of the RBS 200 cabinet assembly. It entails the replacement of the Filter/ Combiner magazine and the cabinet MCU-TXBP assembly. The replacement magazine will have a different Combiner system.

The test procedures required after completion of this up-grade are all contained in the existing RBS 200 "***Commissioning Manual***" (module H section 11).

## 1.1 Applicable Cabinets

This up-grade is applicable to RBS 200 cabinets powered from 230V, -48V and +24V necessitating the following part number changes:

*Table 1*

| Cabinet Option | Existing Part number | New Part number |
|---|---|---|
| 230 Volt Power | BDE 201 162/01 | BDE 201 162/112 |
| -48 Volt Power | BDE 201 162/04 | BDE 201 162/118 |
| +24 Volt Power | BDE 201 162/02 | BDE 201 162/106 |

## 1.2 Personnel

This modification should normally be carried out by usual RBS 200 service personnel. It is assumed that the supervisors and installation staff possess a sound knowledge of, and are familiar with the following:

- RBS 200 Installation and Maintenance procedures.
- Mechanical, Electrical and Radio Techniques.
- The English language.

Installers are directed to section 2 of this document headed ***SAFETY*** which should be read by all personnel prior to commencement of work.

Replaceable units fitted to magazines are particularly sensitive to static discharges and should be treated with care by installation staff.

Use of the anti-static wrist strap is recommended. Refer to sub-section 2.2 of this document headed ***EQUIPMENT SAFETY***.

# 2 SAFETY

Installers and service personnel must always be aware of safety when working on any equipment.

## 2.1 Personal Safety

**WARNING**

Be sure power is NOT connected to the units during assembly work as any contact with electricity may be fatal. Do not be misled by the term "LOW VOLTAGE" as potentials as low as 50V DC (35V AC) can be fatal.

To avoid injuries, always observe all safety precautions when working with any potentially hazardous equipment and in hazardous locations.

Observe any additional local site regulations regarding the use of safety clothing and equipment.

## 2.2 Equipment Safety

When handling RUs always use the anti-static wrist strap **LYB 250 01/14** to avoid damaging sensitive electronic components by electrostatic discharge (ESD).

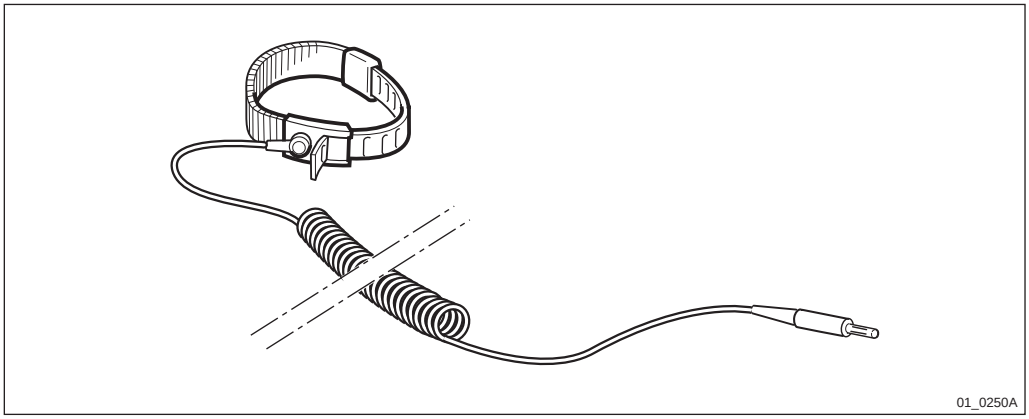


*Figure 1 Anti-static wrist strap LYB 250 01/14*

# 3 REFERENCE INFORMATION

Magazine locations within the cabinet, removal of Replaceable Units (RUs) and taking the cabinet out of service (**Halting** the cell) prior to work are all detailed in this section of this instruction.

## 3.1 RBS 200 Magazine Locations

The figure 2 shows the cabinet mounted magazine locations and the numbering system used within the cabinet. Labels should be fitted to the right hand side of the cabinet interior bearing these numbers beside the magazine. All references to magazine locations in this document will be as shown.

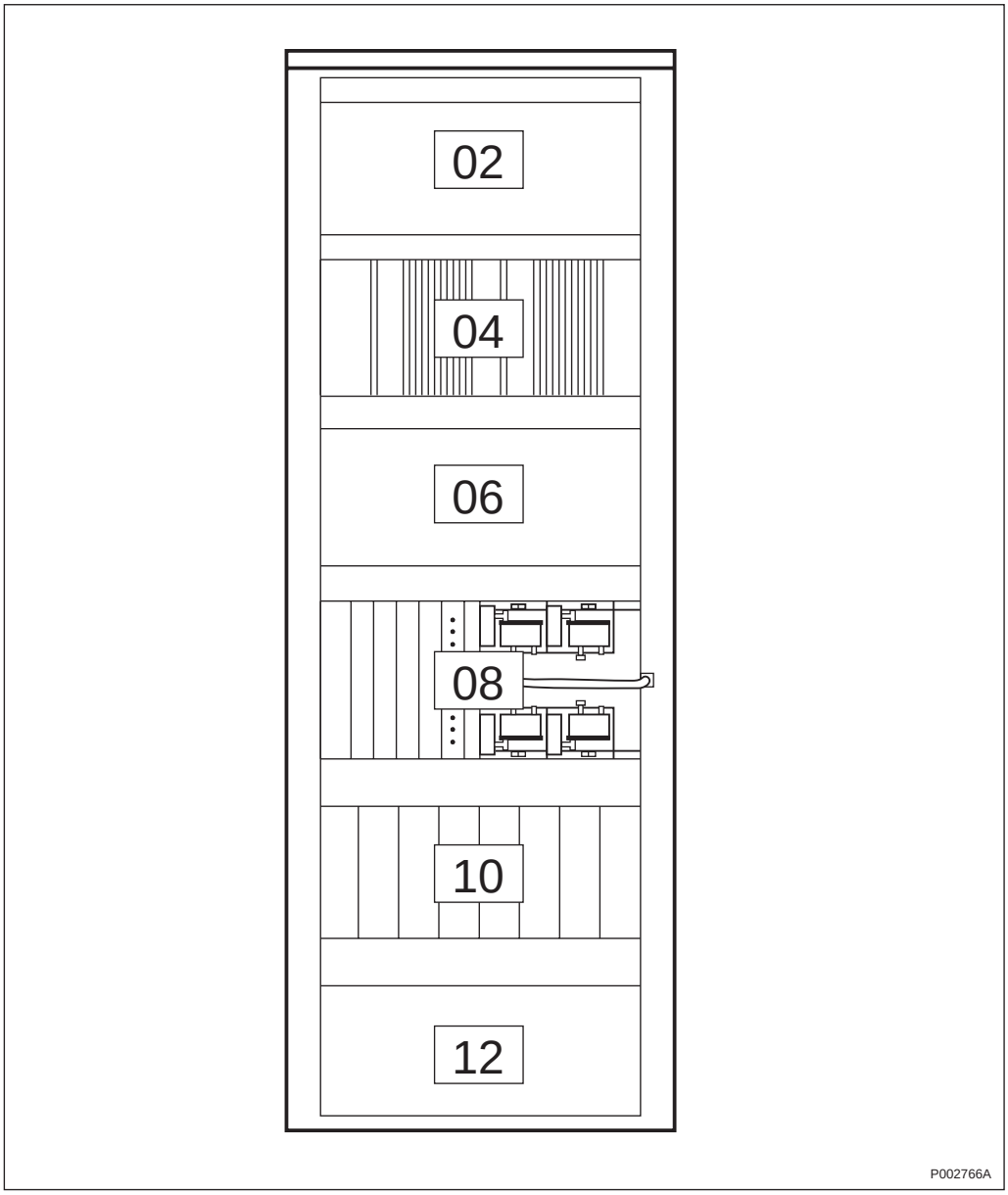


*Figure 2 RBS 200 magazine locations*

## 3.2 Unit Removal

During the up-grade, RUs may have to be removed from a magazine if the cabinet is situated in an awkward location, or if the magazine is too heavy to be manipulated.

To withdraw an RU, observe the correct procedure of the two types of RU that are fitted to the RBS 200 magazines:

### 3.2.1 Units Fitted With A Key Slot

Remove the retaining screws then insert the supplied removal key into the keyhole situated on the front of the unit. Rotate the key by 90° and carefully draw the unit forward.

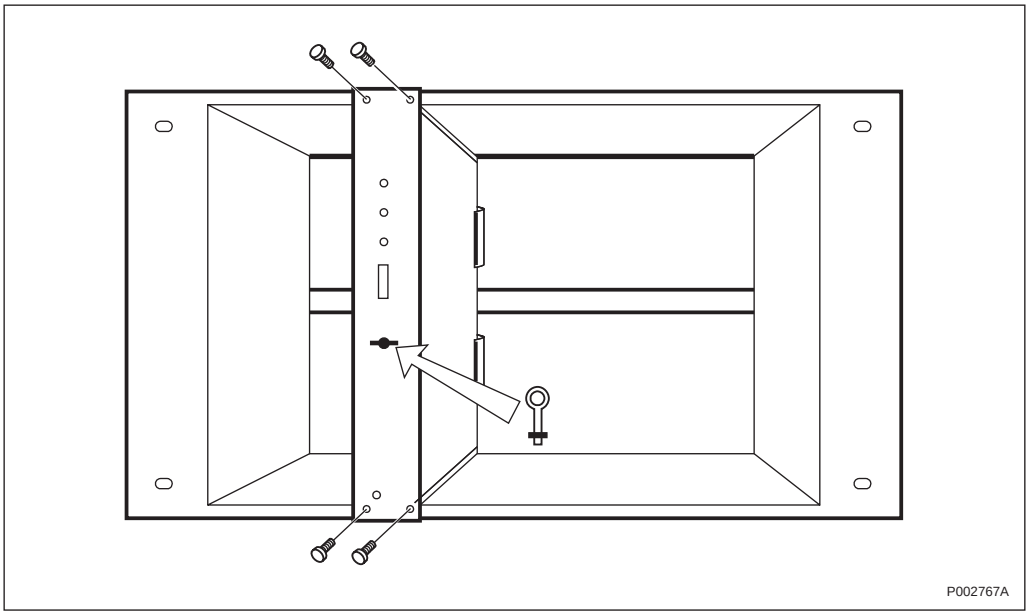


*Figure 3 How to insert and withdraw the RUs*

### 3.2.2 Units Without A Key Slot

The removal key is not required for these units. After removing the retaining screws, remove the RU by gripping the edges of the unit and gently pulling the unit straight forward.

## 3.3 Taking the Cabinet Out of Service

The RBS must be released from traffic before any installation work may be attempted otherwise users may abruptly loose service.

To release the RBS from traffic the installation staff may:

1. Request the BSC Exchange to **HALT** the cell.

   or

2. Use a PC computer and service software "FIOL" to **HALT** the cell via the BSC.

It is assumed that installation personnel are also the RBS maintenance personnel who should be familiar with these techniques.

Work may only proceed after one of the above steps have been completed.

# 4 PREPARATION

For ease of access the work area should be well planned and free of any unnecessary obstacles. Remove redundant tools, equipment, attachments and other non-essential items before proceeding with the up-grade work.

## 4.1 Tools

The following tools are recommended for assembly and maintenance work on the RBS 200 series of equipment:

- Tool Case, **LTT 601 045/1**.
- Wrist strap (Anti-static), **LYB 250 01/14**.

## 4.2 Materials

The following installation kits are available for this up-grade and should be selected dependant upon the quantity of TRXs used in the existing system.

- Four TRX units - use kit NTM 201 288/1 comprising:

*Table 2*

| **NTM 201 288/1 MODIFICATION KIT** | | | |
|---|---|---|---|
| Item | Part Number | Description | Qty |
| 1 | SXK 107 2730/1 | Label Strip | 1 |
| 2 | 1/BFL 119 72/2 | Magazine | 1 |
| 3 | KRF 201 01/02 | Combiner | 2 |
| | or | | |
| | KRF 201 01/03 | Combiner | 1 |
| 4 | KRF 201 089/1 | Mounting Plate | 1 |
| 5 | RPM 513 368/2 | Cable | 2 |
| 6 | RPM 513 368/6 | Cable | 2 |

- Two TRX units - use kit NTM 201 288/2 comprising:

*Table 3*

| **NTM 201 288/2 MODIFICATION KIT** | | | |
|---|---|---|---|
| Item | Part Number | Description | Qty |
| 1 | SXK 107 2730/1 | Label Strip | 1 |

| | | | |
|---|---|---|---|
| 2 | 1/BFL 119 72/2 | Magazine | 1 |
| 3 | KRF 201 01/02 | Combiner | 1 |
| 4 | KRF 201 089/1 | Mounting Plate | 1 |
| 5 | RPM 513 368/2 | Cable | 1 |
| 6 | RPM 513 368/6 | Cable | 1 |

## 4.3 Preliminary Requirements

Installers should verify that the following items are available before attempting to perform the up-grade:

- All necessary installation tools and materials.
- A new "***Data Transcript***" must be available for use.
- RBS 200 "***Commissioning Manual***" (module H).
- Permission to **HALT** the cell from the BSC during the work.

## 4.4 Assembly Order

The following checklist, table 4, is a guide to the routines to follow prior to assembly of the RBS 200 cabinet.

*Table 4*

| STEP | ACTION |
|---|---|
| 1 | Take the cabinet out of service. |
| 2 | Remove DC power. |
| 3 | Replace the MCU-TXBP panel. |
| 4 | Replace the Combiner Filter magazine. |
| 5 | Restore DC power. |
| 6 | Test the RBS functions satisfactorily. |
| 7 | Restore the RBS back into service. |
| 8 | Document all changes and test results. |

Steps **2** and **5** will be achieved by removal and replacement of the cables connecting the front of the units within the magazines. Do not remove the power to the whole cabinet.

# 5 REPLACING THE MCU-TXBP

After the cell has been halted and the units have been blocked, the existing MCU-TXBP assembly situated in the cabinet must first be replaced with the new unit provided. This is situated in the right hand side panel of the cabinet assembly between the magazines numbers ***04*** + ***06*** and the right hand cabinet side panel.

## 5.1 Cable Removal

1. Carefully disconnect the coaxial cables associated with magazines ***02*** and ***04***, ensuring that each cable is correctly labelled as per the RBS 200 manual documentation.

2. Should any cable appear to be unidentified, add a label bearing the unit and connector position numbers:

   <magazine> / <position> <connector>

   eg: " ***08/61 TX1*** " is connected to the connector marked ***TX1*** which is situated on the unit in the location ***61*** within magazine ***08***.

## 5.2 Magazine Removal

1. Unscrew the four supporting screws situated to the left and right of each magazine and gently slide the unit out of the cabinet. There are no connectors or cables at the rear of these magazines requiring attention prior to withdrawal.

2. The Cable- and Fan-Trays between magazines **04** and **06** must also be removed after disconnecting the power to the trays.

3. Remove the connector or fuse labelled **23** on the Internal Distribution module (IDM). The IDM is the uppermost unit within the cabinet.

## 5.3 MCU-TXBP Exchange

Exchange the MCU-TXBP with the new replacement assembly.

1. Remove the five RF connectors and the MCU-TXBP mounting plate. The MCU-TXBP mounting plate is fitted to the cabinet by means of four screws.

2. Fit the new MCU-TXBP in the same cabinet position using the original four screws.

3. Reconnect the RF coaxial cables to the new MCU-TXBP connectors having same physical locations as the old MCU-TXBP.

*Table 5*

| CABLE | Old MCU-TXBP Label | New MCU-TXBP Label |
|---|---|---|
| 1 (B) | PRTT -40 | P RTN -40 |
| 2 (A) | P OUT -40 | P OUT A -40 |
| 3 (C) | P OUT -40 | P OUT B -40 |
| 4 (D) | COUPLER OUT | MEAS. COUPLER OUT |
| 5 (E) | Unidentified (Lowest socket) | Unidentified (Lowest socket) |

This may be better explained with reference to figure 4 showing connector equivalence between the two MCU-TXBP units. The cable identification letters in table 5 **(within brackets)** correspond to the terminations shown in figure 4.

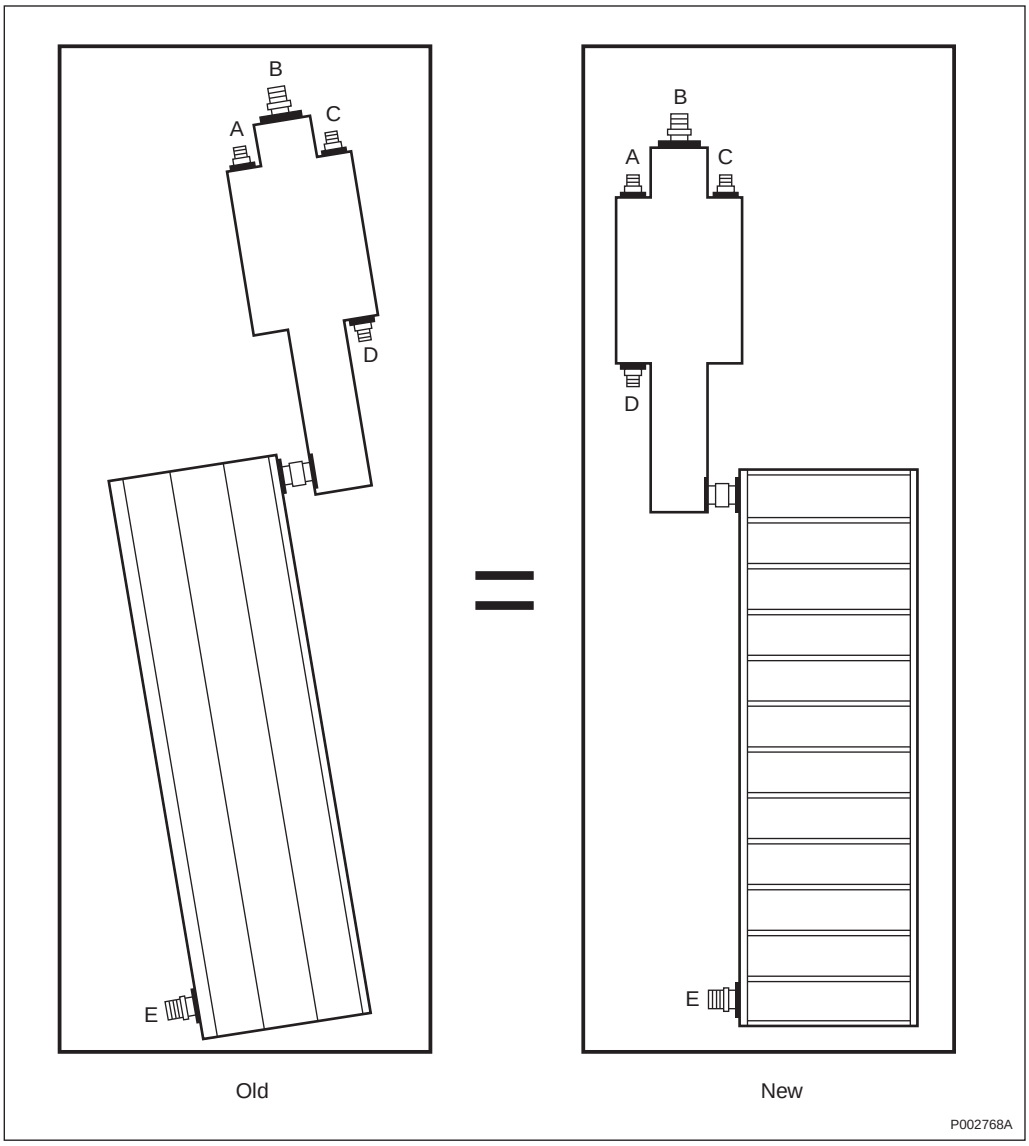


*Figure 4*

## 5.4 Magazine Replacement

1. After the MCU-TXBP has been exchanged, the Cable-trays and Fan-trays may be replaced and fuse **23** re-fitted.

2. Restore magazines ***04*** and ***06*** back into their original positions in the RBS 200 cabinet taking care not to trap or damage any cables between the cabinet and the magazine chassis. The replacement order is the reverse of the removal order detailed in section 5.2.

3. Reconnect cables and connectors that were removed from the units.

4. Check that all cables, connectors and retaining screws have been restored to their original condition.

## 5.5 MCU-TXBP Precautions

The MCU-TXBP replacement requires access to parts of the cabinet not normally accessible to service personnel. Installation personnel should therefore be aware of the possibility of bodily contact with sharp metalic corners, especially if the cabinet is installed in an awkward or inconvenient location.

Exercise care not to accidentally drop loose hardware such as screws down the side of the cabinet. Retrieval may prove difficult and the hardware may become lodged inside the PSUs situated at the bottom of the cabinet. A magnetised screwdriver may be of some assistance for the ferrous screws.

The MCU-TXBP assembly is a passive device an therefore is not sensitive to static charges. No special anti-static handling techniques are required for the above replacement procedure.

# 6 REPLACING THE FILTER COMBINER MAGAZINE

Locate magazine number ***06*** in the RBS 200 cabinet.

The Filter/Combiner magazine shall now be replaced with the new unit supplied for the up-grade. The RUs (other than the Filter/Combiners) in the old magazine shall be removed and installed in the new magazine.

## 6.1 Cable Removal

1. Carefully disconnect the coaxial cables ensuring that each cable is correctly labelled as per the RBS 200 manual documentation. Should any cable appear to be lacking an identity label then add a suitable label bearing the unit and connector position numbers:

   <magazine> / <position> <connector>

   eg: " ***08/61 TX1*** " is connected to the connector marked ***TX1*** which is situated on the unit in the location ***61*** within magazine ***08***.

2. Be especially careful removing the antenna coaxial cable connector as the cable used may be damaged if bent too sharply. The connector may be more easily loosened by applying firm anticlockwise pressure to the screw ferrule while gently moving the cable up and down ***by only two or three millimetres***.

## 6.2 Magazine Removal

There are no connectors or cables at the rear of the magazine requiring attention prior to withdrawal.

The magazines are quite heavy so it may be worthwhile removing the RUs if the cabinet is installed in an inconvenient or awkward location.

1. Remove the RUs.

2. Unscrew the four supporting screws situated to the left and right of the magazine and gently slide the complete magazine out of the rack.

## 6.3 Magazine Installation

1. Insert the new magazine into the cabinet and secure it in position within the cabinet using the four original screws.

2. Insert the RUs removed from the old magazine, taking care to ensure they are inserted and positioned correctly.

## 6.4 Cable Installation

1. Reconnect the coaxial cables to the same connectors from which they were originally removed.

2. All cables should have been identified and labelled to assist the re-installation before the modification commenced.

3. The four cables listed in table 4 and table 5 under **MATERIALS** should be installed between magazine **08** and magazine **10** as per table 6:

*Table 6*

| **NTM 201 288/1 MODIFICATION KIT** | | | |
|---|---|---|---|
| ITEM | PART NUMBER | FROM | TO |
| 7 | RPM 513 386/6 | HCOMB 1 | RTX 1 |
| 7 | RPM 513 386/6 | HCOMB 1 | RTX 2 |
| 6 | RPM 513 368/2 | HCOMB 2 | RTX 3 |
| 6 | RPM 513 368/2 | HCOMB 2 | RTX 4 |

| **NTM 201 288/2 MODIFICATION KIT** | | | |
|---|---|---|---|
| ITEM | PART NUMBER | FROM | TO |
| 5 | RPM 513 386/2 | HCOMB | RTX 1 |
| 6 | RPM 513 386/6 | HCOMB | RTX 2 |

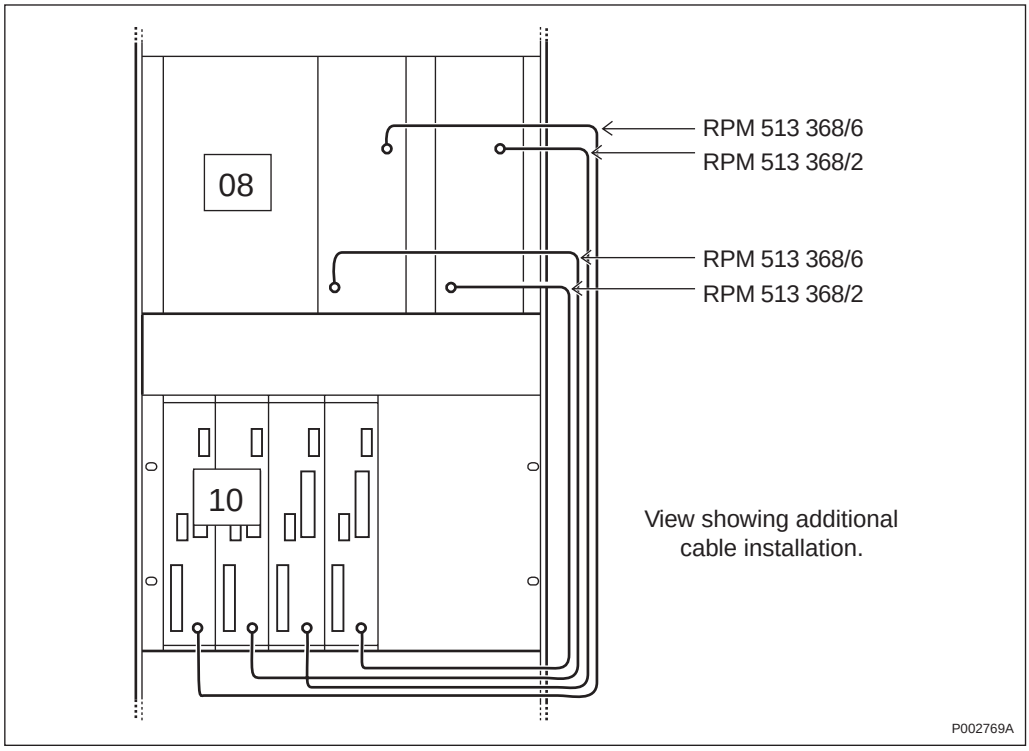


*Figure 5*

**Note**

- There should be one cable remaining without termination, this cable should be labelled "**MCU-TXD**" part number **RPM 513 370/9.** This cable should be neatly coiled and concealed under the cable tray Label Strip.
- One short cable on each RTX unit connecting **PR** and **TXTP** together must also be removed. This cable is not required with the new configuration.

## 6.5 Mechanical

1. Replace the Filter Combiner magazines Label Strip with the new item supplied.
2. Check that the cabinet assembly is now completed and that all screws units and connectors have been replaced.

# 7 COMMISSIONING

Ensure that the cabinet is powered-up and that the cell operating parameters from the BSC have been updated. Refer to the RBS "***Commissioning Manual***" module ***H*** section 11 for the correct test procedure.

## 7.1 Test Results

1. Complete the cabinet assembly test results and check that all assembly steps have been correctly completed.

2. Update all "***Site Specific***" records or other relevant documentation peculiar to the site location. Radio sites often have a local site attendance and/or work record book which may also require an entry.

ERICSSON

*CAPTION LIST*

| Document No. | |
|---|---|
| 4/001 53-LZN 302 006 | |
| Date | Rev |
| 99-09-20 | B |

# Power Supply Installation and Commissioning

RBS 200
Installation Manual


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| 99-09-20 | B |

# Power Supply 230V AC

RBS 200
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# Power Supply 230V AC, General

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# 1 Introduction

**DANGER**

High voltage (more than 200V) is used in the operation of this equipment. Direct contact with mains power can be fatal, and indirect contact via damp items may also be fatal.

**Note** *The AC installation must be carried out by an authorised electrician.*

**Note** *Verify that the external AC mains supply is switched OFF before connecting the AC mains cable.*

Power supply system BZZ 207 01 (figure 1), is designed to power RBS (Radio Base Station) cabinets in a GSM (Global System Mobile) system. The internal supply voltage in the RBS cabinet is +24V DC.

The main components of the system are single phase rectifiers (1200W) connected in parallel on the secondary side, for redundancy, Internal Distribution Module(s) (IDM), Power Control Unit (PCU), Battery and Interconnection Module (BIM) and battery(ies).

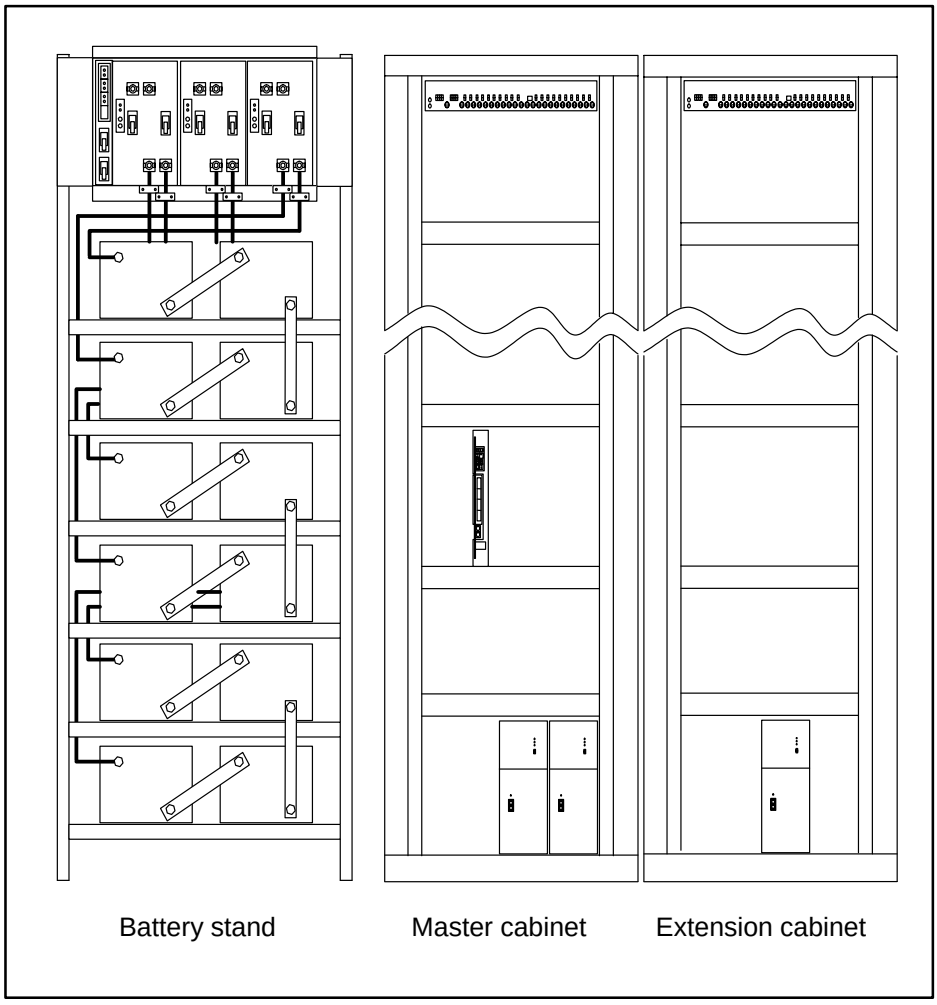


*Figure 1 Example of system BZZ 207 01*

# 2 Function

During normal operation, the system maintains a constant DC voltage across the batteries and the telecommunication equipment. In case of mains or rectifier failure, the telecommunication equipment will be powered from the batteries.

The RBS is supplied "high ohmically" with +24V DC through an Internal Distribution Model (IDM). The power cable from the distribution unit to the different consumers is high ohmic. Refer to section 3.4.

## 2.1 Supervision and control

The Power Control Unit of the system (PCU) supervises the operational state of the system and communicates with the superior communication unit in the RBS cabinet, the Transmission Radio Interface (TRI). To avoid interference, the PCU has an optic signal interface to rectifiers and batteries and interconnection modules. The interfaces are connected in series in a loop.

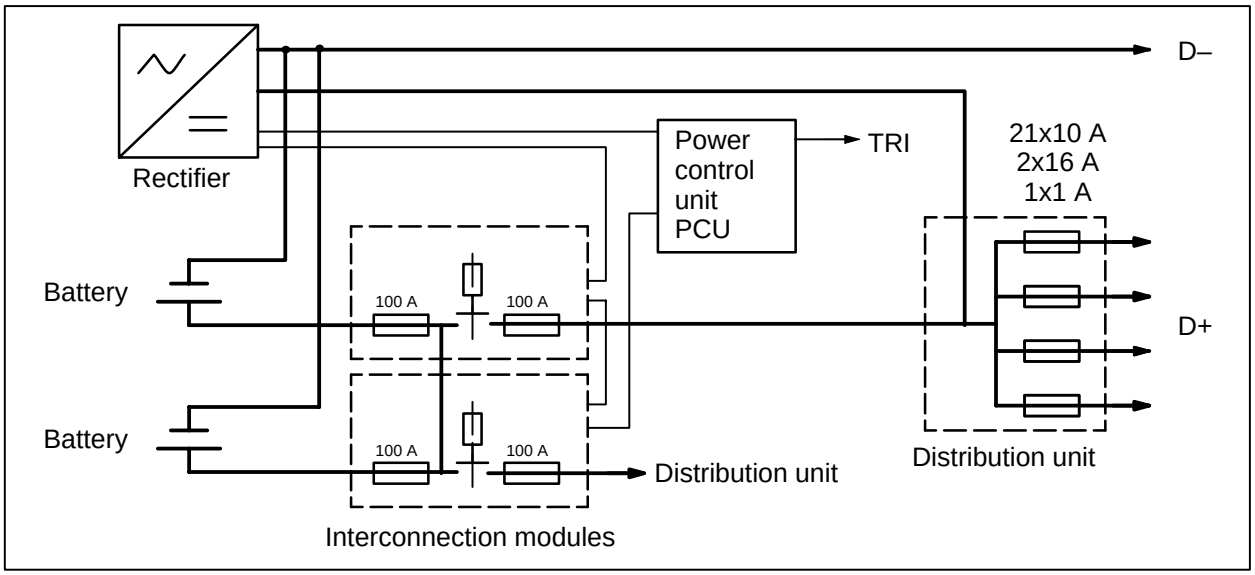


*Figure 2 Circuit diagram of power supply system BZZ 207 01*

The control unit supervises and controls the units as follows:

### 2.1.1 To TRI from PCU

- Refer to paragraph Alarm categories in section 4.0.3.

### 2.1.2 From PCU to rectifier

- Setting of desired value of output voltage, to be stored in the rectifier.
- Load sharing.

- Regulation of system voltage.

### 2.1.3 To PCU from rectifier

- Output voltage.
- Output current.
- Temperature.
- Alarm:
  - Rectifier failure (also fuse failure).
  - overvoltage (detected in the PCU by measurement of voltage and output).
  - Mains failure.
  - Power limitation.

### 2.1.4 From PCU to interconnection module

- Contactor releases.
- Contactor operation.

### 2.1.5 To PCU from interconnection module

- Contactor released.
- Battery circuit breaker tripped.
- Stand circuit-breaker tripped.

The control unit has two, factory preset undervoltage monitors.

Undervoltage monitor 1:

Gives A1 alarm at +22V DC.

Undervoltage monitor 2:

Gives "undervoltage alarm" at +20.0V DC, and the battery contactor releases to avoid discharging the battery too much, (refer to BIM module, section 3.2 for more information).

When a rectifier is defective, the system voltage can exceed +30V DC. The faulty rectifier will be blocked through the control unit, after which the rectifier in question makes one attempt at restart. If the overvoltage remains, the PCU shuts down the rectifier and alarm A2 be initiated.

# 3 Included units

The positions of the different units in the cabinets are shown in Wiring diagram 1/1073-BZZ 207 01 Ux.

## 3.1 Rectifier BML 435 002/-

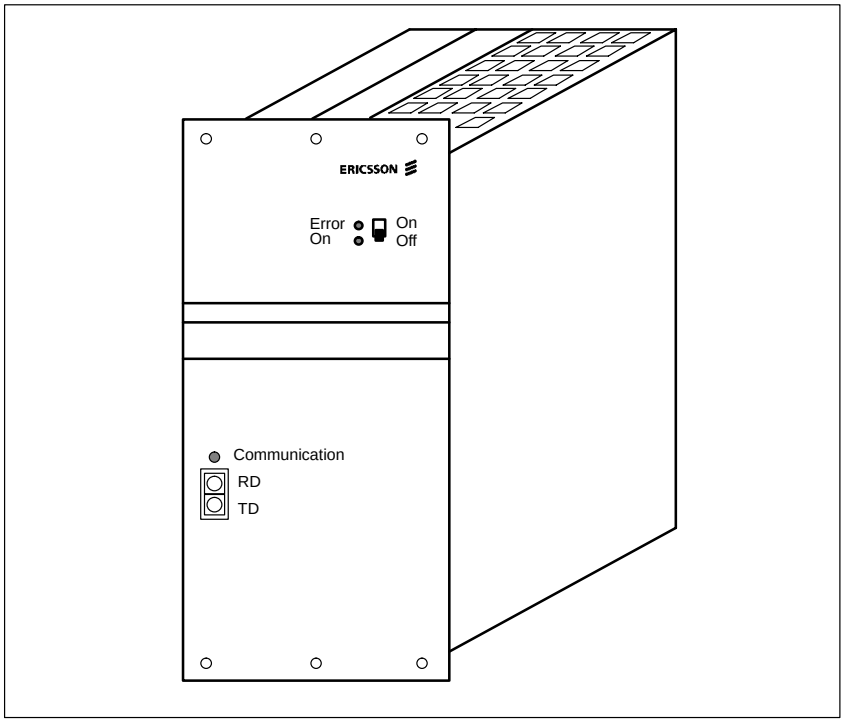


*Figure 3 1200 W rectifier BML 435 002/-*

Rectifier BML 435 002/- is used to power the RBS-cabinet.This high frequency 1200 W rectifier, converts incoming 230V AC mains voltage, to controlled +24V DC.

## 3.2 Battery and Interconnection Module BMG 701 013/-

**CAUTION**

⚠

Read Safety instructions regarding handling of batteries.

The Battery and Interconnection Module, BIM, is designed to protect the battery connection and the interconnection of various cabinets in the system via fuses.

The unit comprises one 100 A battery circuit breaker, one 100 A cabinet circuit breaker, and a contactor for load cut-out in case of undervoltage alarm, to avoid discharging the battery too much.

A maximum of 3 BIM modules and one distribution unit, EFU, (refer to section 3.4) can be fitted into one magazine, interconnected through bars at the rear edge of the magazine.

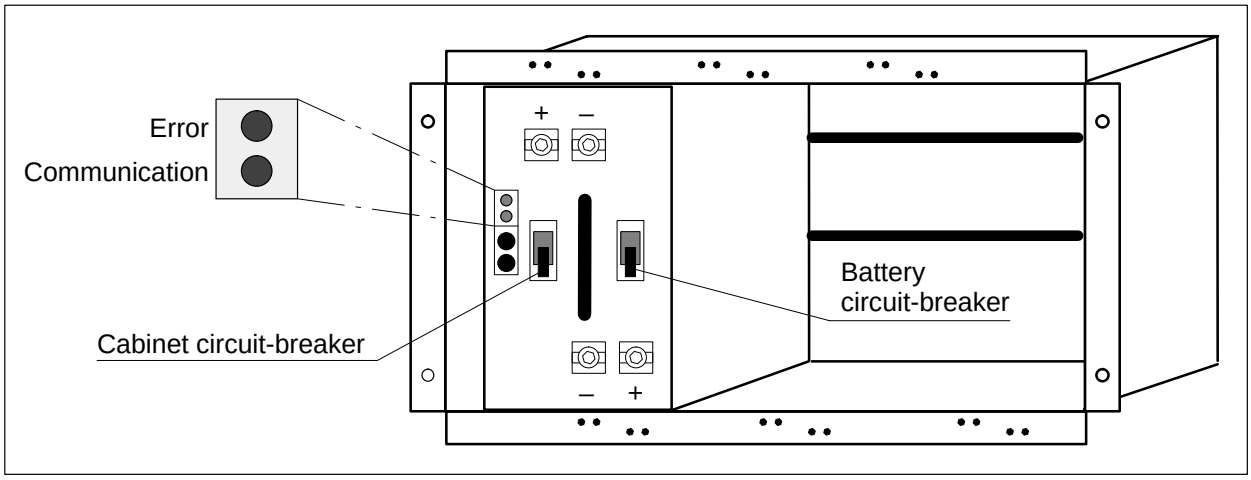


*Figure 4 Battery and Interconnection Module BMG 701 013/-*

There is also a local computer to supervise the module, control the contactor and communicate with the control unit, (the PCU).

In case of undervoltage (+20V DC) the load is cut out to avoid over-discharge. If the control unit fails, the contactors release automatically when the system voltage has been less than +20V DC for about 15 seconds.

When the mains returns after a mains failure, all rectifiers start. The output voltage is set to +24V DC, after which the battery contactors

operate, reconnecting the batteries.When the contactors are connected, voltage rises to normal system voltage, +27V DC.

If the control unit fails, the batteries are automatically reconnected when the system voltage exceeds +25.5 V DC after approx. 15 seconds.

The battery and cabinet circuit breakers initiate alarm *only* when tripped, not in position "OFF".

### 3.3 alt. Battery and Interconnection Module BIM, BMG 701 014/-

**CAUTION**

⚠

Read Safety instructions regarding handling of batteries.

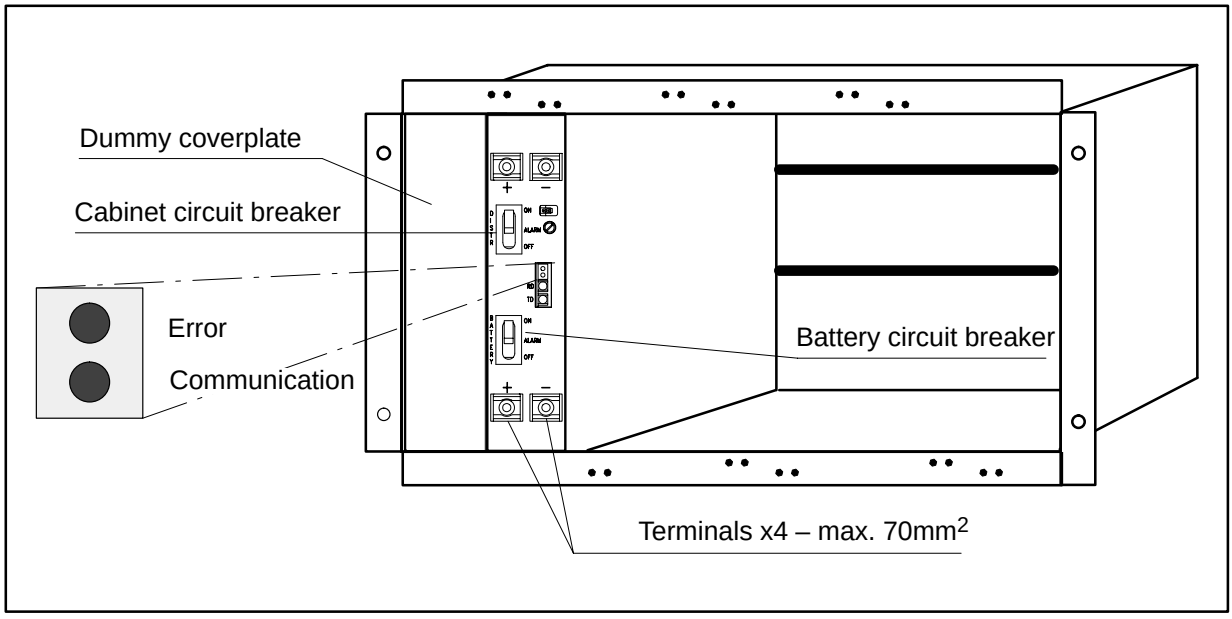


*Figure 5 Battery and Interconnection Module BMG 701 014/-*

The alt. Battery and Interconnection Module (BIM), BMG 701 014/- is equivalent to the BMG 701 013/-.

Technical specifications are equivalent to BMG 701 013/-.

**Note** *Cables to the terminals on the front panel can be max. 70 mm$^2$.*

### 3.4 Internal Distribution Module BMG 663 002/-

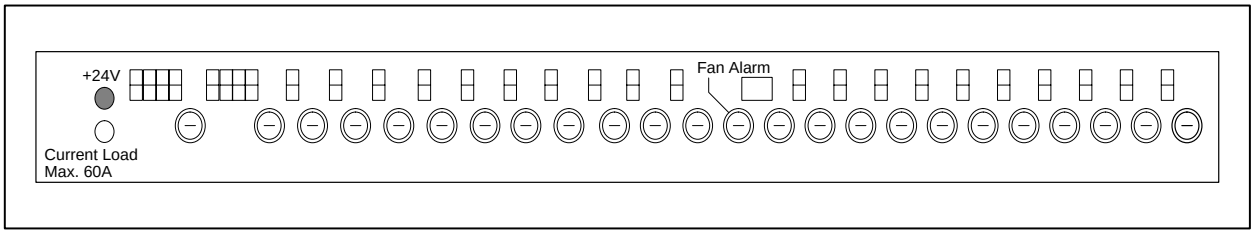


*Figure 6 Internal Distribution Module BMG 663 002/-*

The distribution unit comprises 21x10A, 2x16A and 1x1A glass-tube fuses and capacitors to filter the +24V DC voltage. The unit also comprises a control board for supervision of cooling fans and an RC-filter for the incoming 230V AC supply.

To make the system "high ohmic", the distribution cables have a standard length of 3 m and a standard area of 0.80 $mm^2$.

In this way, the internal impedance of the cable is about 6 times higher than the internal impedance of the power supply. As a result, if a short circuit appears in a distribution point, the voltage of the common feeding point will not fall below the allowed value of power to the equipment.

### 3.5 External Fuse Unit ROA 117 510/-

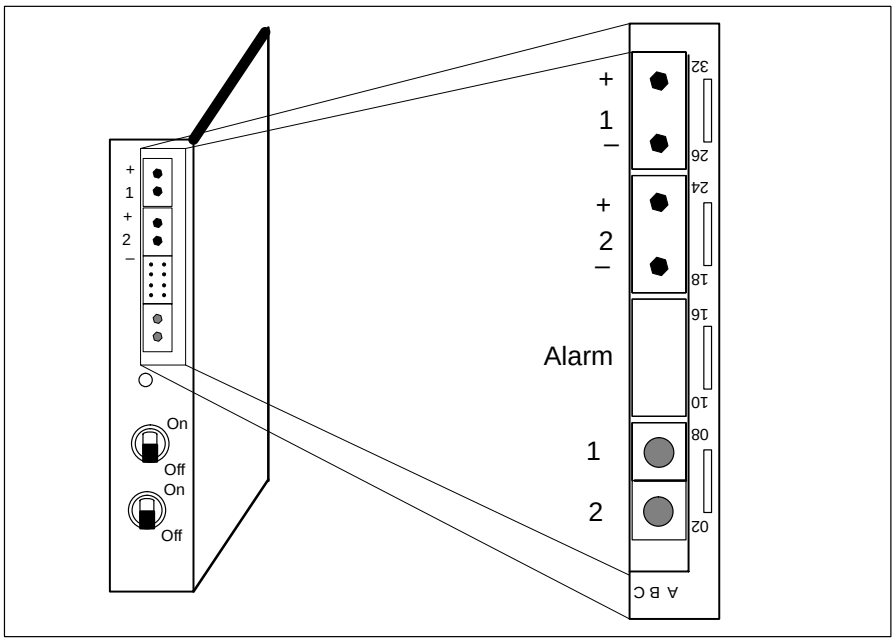


*Figure 7 External Fuse Unit ROA 117 510/-*

External Fuse Unit, EFU, ROA 117 510 contains 2 x 10 A circuit breakers for high ohmic power to external units, for instance DC/DC

converters. The outlets will be disconnected if the voltage drops to +19.6V, ±0.2V DC to avoid discharging the batteries too much, and are connected again when the system voltage has risen to +24.2V DC.

The LED shines when the circuit breakers are in position "On".

The circuit breakers initiate alarm in position "OFF", refer to Circuit diagram 1911-BZZ 207 01 Ux, page 2 in Appendices in this section.

## 3.6 External Fuse Unit ROA 117 560/-

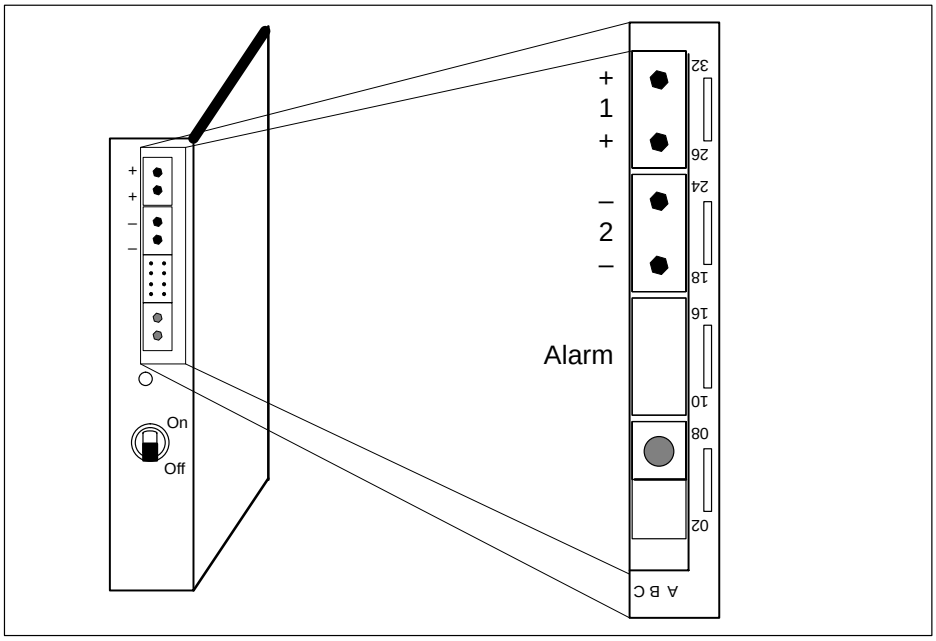


*Figure 8 External Fuse Unit ROA 117 560/-*

External Fuse Unit, EFU, ROA 117 560 contains 1 x 50 A circuit breaker for high ohmic power to external units, for instance DC/DC converters. The outlets will be disconnected if the voltage drops to +19.6V, ±0.2V DC to avoid discharging the batteries too much, and are connected again when the system voltage has risen to +24.2V DC.

The LED shines when the circuit breaker is in position "On".

The circuit breakers initiate alarm in position "Off", refer to Circuit diagram 1911-BZZ 207 01 Ux, page 2 in Appendices in this section.

## 3.7 DC/DC converter BMR 974 101/-

The DC/DC converter is used to convert +24V DC to -48V DC or-60 V DC. Place the unit on a wall near the other equipment and pull a power cable to it from the EFU, ROA 117 510.

The converter comes in a number of different versions, depending on the input and output voltage, and on the desired output power.

Each DC/DC board, ROA 137 0628/- has an output power of approximately 36 W.

Max. four DC/DC boards can be connected to one box, a total of 144 W.

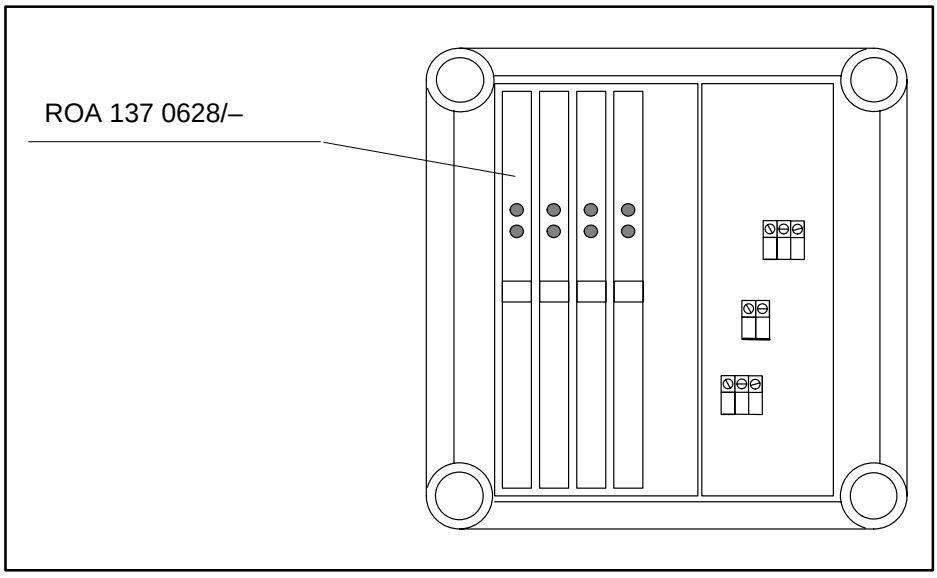


*Figure 9 DC/DC-converter BMR 974 101/-*

## 3.8 Power Control Unit ROA 119 807

The Power Control Unit (PCU), the controlling and supervising unit of the power supply system, is the interface between power units and the communication unit, theTRI, in the RBS cabinet.

A display on the front of the control unit shows the system voltage and total current used by the rectifiers in the system.

Voltage, current or the desired system voltage may be selected for display via toggle switches. The desired voltage value is the voltage level that the rectifiers set themselves at.

The desired voltage value can be set at 23.0 - 28.5V DC.

The alarm assembling unit of the control unit has five potential free output relays with change-over function for outgoing alarms to the Transmission Radio Interface (TRI).

All contact pins (3 pcs) of the relay outputs are connected to the pin contact unit on the front of the board. Outgoing alarms are A1, A2, O1, mains failure and undervoltage alarms. Outgoing alarms shall be

connected according to paragraph Handling and operation in sub-section 4.0.3.

The alarm condition is indicated by three LEDs: a green (On) which indicates that the control unit working normally, a yellow (Stat) which indicates observation alarm and a red (Err) which indicates an error condition.

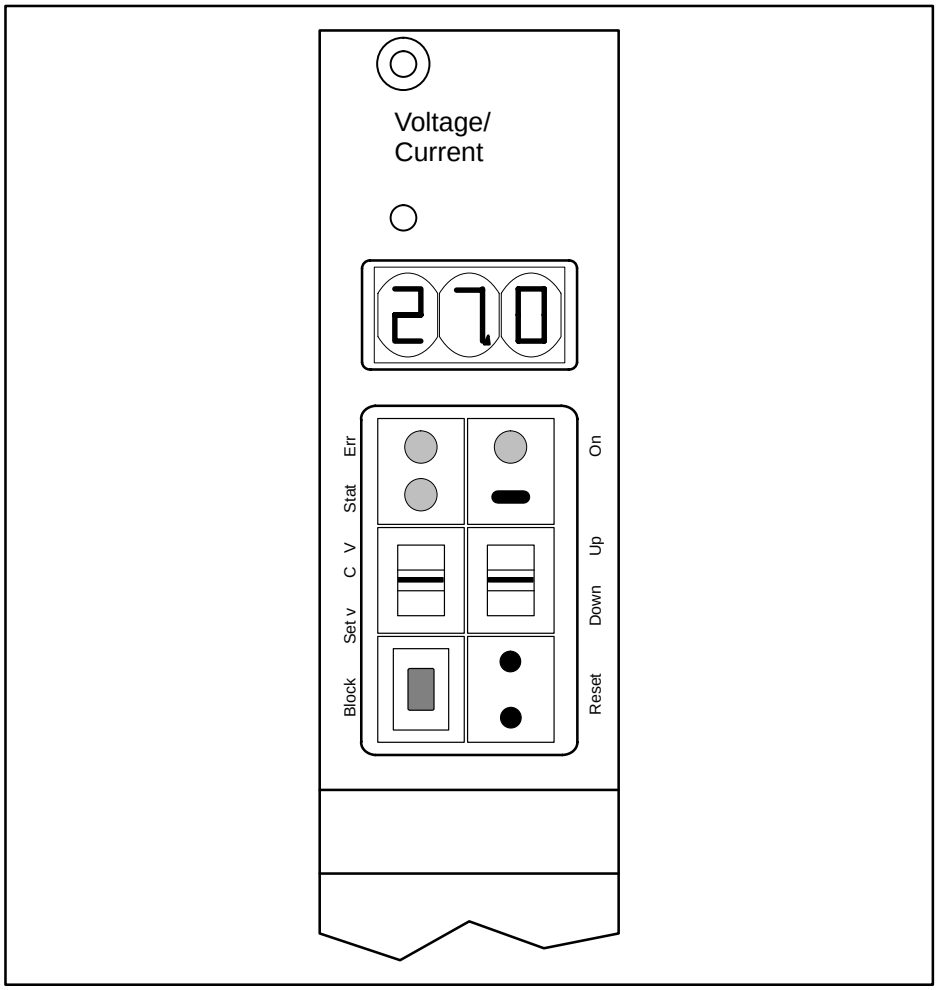


*Figure 10 Power Control Unit ROA 119 807*

# 4 Handling of Power Control Unit ROA 807

The left-hand toggle switch is used to select what will be shown on the display. With the toggle switch in the upper position (V) the system voltage is shown, in mid-position (C), the total current consumption of the system is shown, and in its bottom position (Set V) the desired voltage value of the system is shown. This preset voltage level is then stored in the respective rectifiers.

Set desired voltage by means of the right-hand toggle switch. If the toggle switch is brought Up, the voltage increases in steps of 0.1V, and if the toggle switch is brought Down, the voltage decreases by the same value. Refer to figure 11.

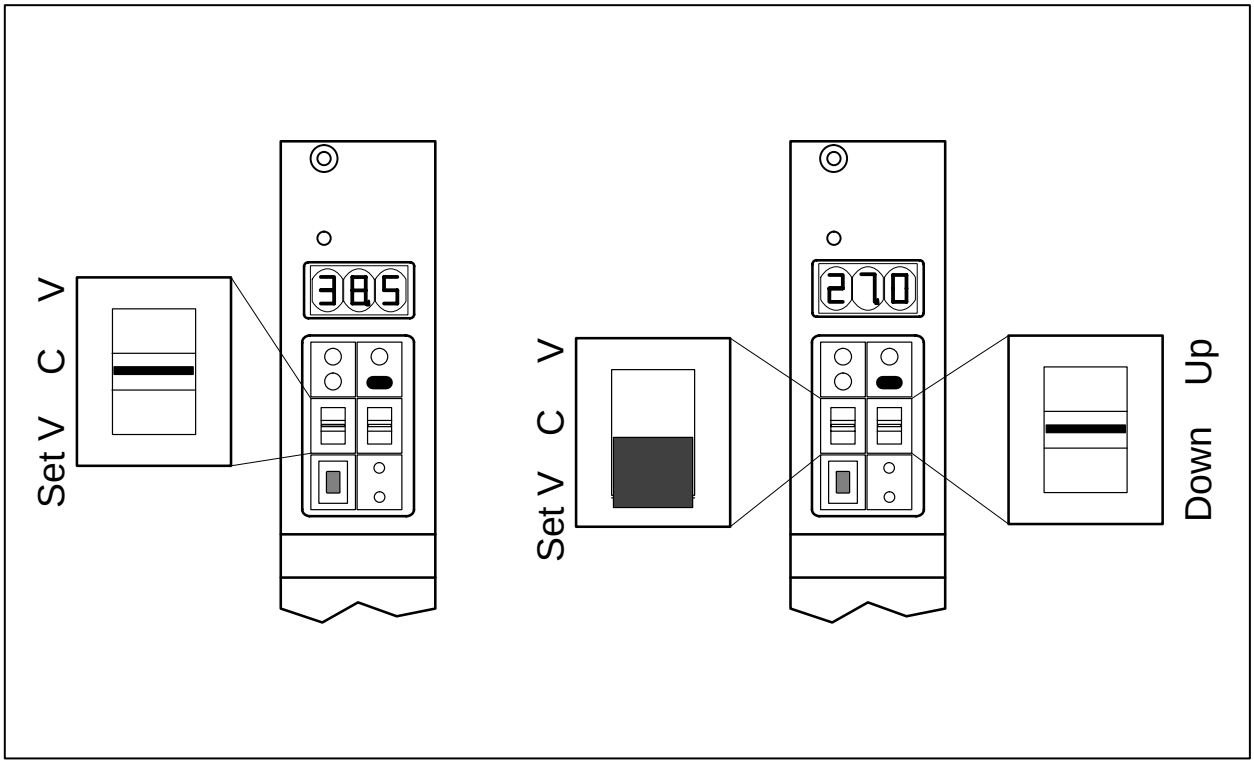


*Figure 11 Voltage/Current display and setting*

When servicing the power supply system, outgoing alarms from the control unit to the Transmission Radio Interface (TRI) can be disabled by pressing key Block. Refer to figure 12.

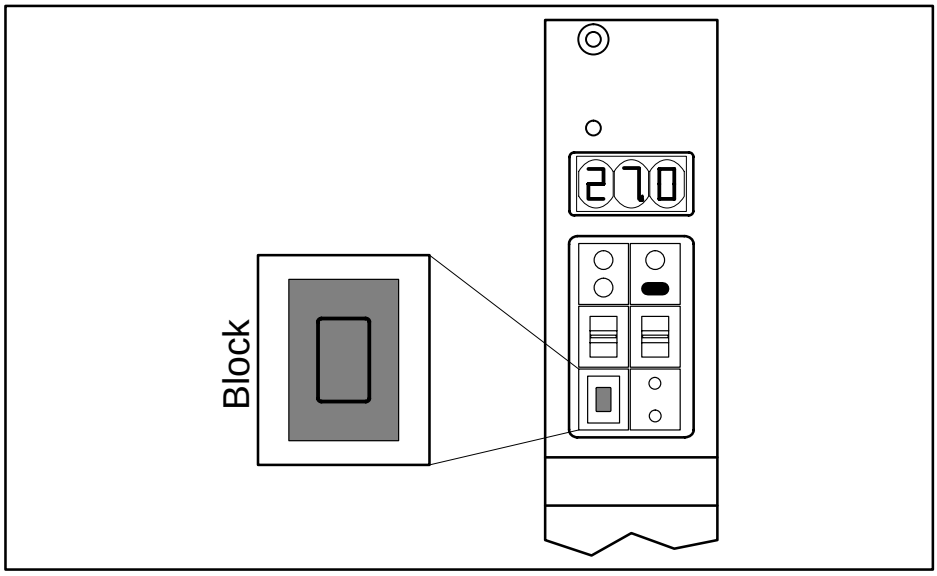


*Figure 12 Blocking outgoing alarms*

After installation or after a break in the communication loop, the control unit may "lock up". This is remedied by short circuiting the Reset output, after which the control unit restarts. Refer to figure 13.

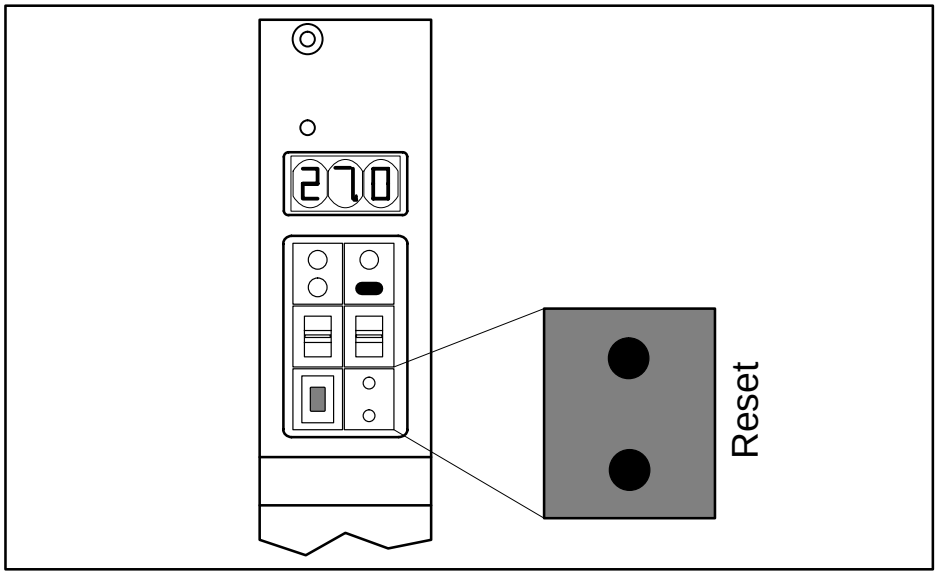


*Figure 13 Restarting control unit with Reset*

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| Godkänd — *Approved* | Kontr — *Checked* | | | Tillhör/referens — *File/reference* |
| ERA/LZ/TGC (ERABVN) | | | | |

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# 1 Power Supply Installation and Commissioning

## 1.1 Power Supply 230V AC, General

Appendices section has been removed from the manual as follows:

### 1.1.1 Wiring Diagram 1/1073-BZZ 207 01 Ux

This document is not written in SGML format and is therefore not included in this manual. The document must be ordered separately from GASK2. Internet users can print out the documents from Intranet.

### 1.1.2 Wiring Diagram 2/1073-BZZ 207 01 Ux

This document is not written in SGML format and is therefore not included in this manual. The document must be ordered separately from GASK2. Internet users can print out the documents from Intranet.

### 1.1.3 Circuit Diagram 1911-BZZ 207 01 Ux

This document is not written in SGML format and is therefore not included in this manual. The document must be ordered separately from GASK2. Internet users can print out the documents from Intranet.

| Uppgjord — *Prepared* | Faktaansvarig — *Subject responsible* | Nr — *No.* | | |
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| Dokansv/Godk — *Doc respons/Approved* | Kontr — *Checked* | Datum — *Date* | Rev | File |
| ERA/LZ/TGC (ERABVN) | | 1998-02-10 | A | |

# Power Supply 230V AC, Installation

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# 1 Installation

**DANGER**

High voltage (more than 200V) is used in the operation of this equipment. Direct contact with mains power can be fatal, and indirect contact via damp items may also be fatal.

**Note** The AC installation must be carried out by an authorised electrician.

**Note** Verify that the external AC mains supply is switched OFF before connecting the AC mains cable.

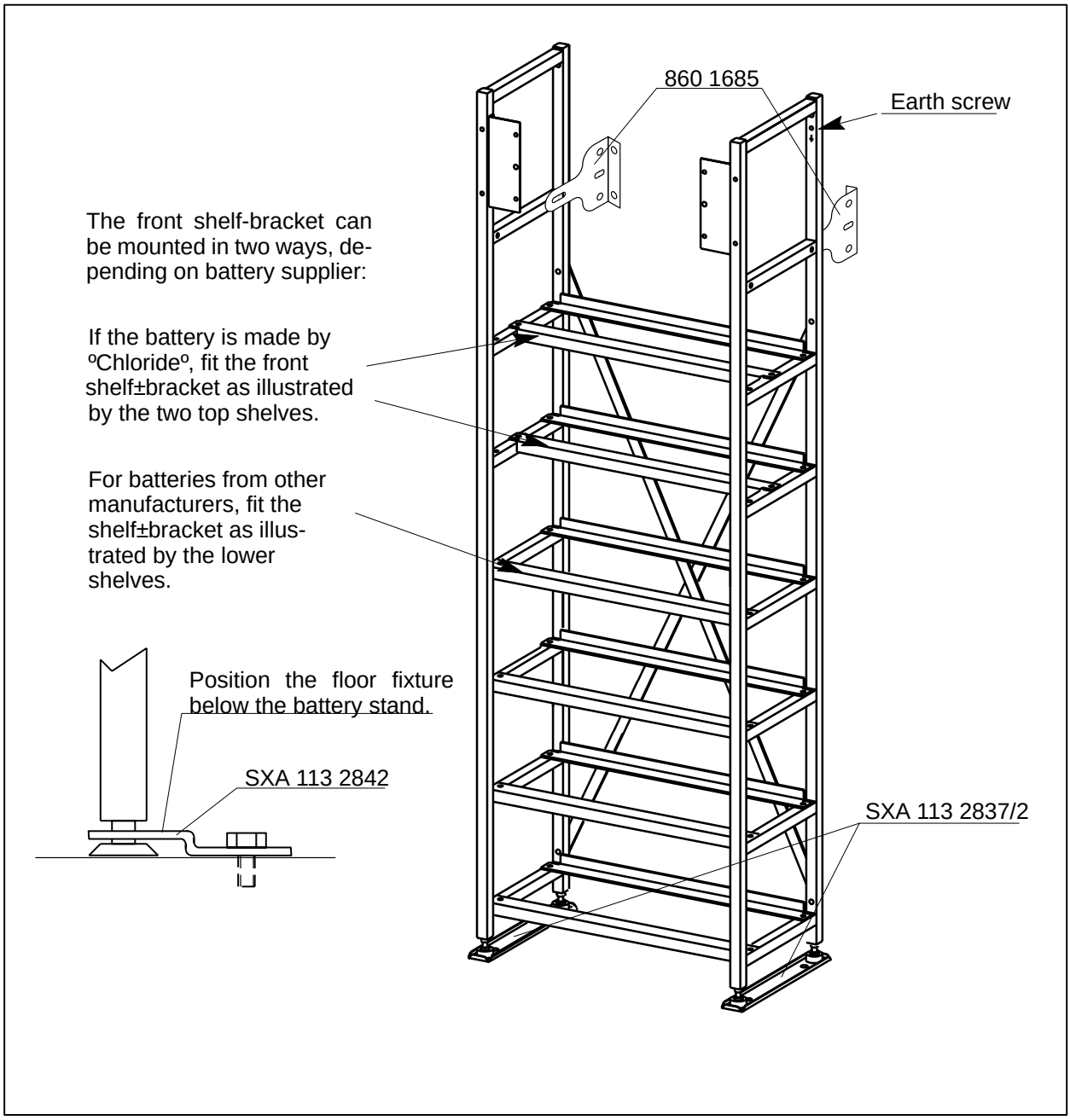


*Figure 1 Battery stand*

**WARNING**

When drilling, the drill may come into contact with live wires. It is prohibited to drill holes in the Base Station

The RBS cabinet is delivered with distribution unit and all internal wiring installed. Incoming mains supply is connected in the Internal Distribution Module, IDM, BMG 663 002/-.

The cables are connected to pin connector units, depending on which rectifier position is to be connected. Refer to Wiring diagram 1/ 1073-BZZ 207 01, page 1 (18), found in section 4.0.0 - Appendices.

Recommended mains cable: min 3x2,5 $mm^2$/rectifier.Recommended circuit breaker: 16 A/rectifier.

## 1.1 Fitting battery stands

1. Assemble the battery stand according to the instructions of the supplier taking into account what make of battery is to be used. See figure 1.

**CAUTION**

Read Safety instructions regarding handling of batteries..

**Note** Always use insulated protective gloves, such as the LYB 1032, when drilling in walls, ceilings, or other objects where live wires might be hidden.

2. Fix the battery stand to the wall and/or floor with angle brackets.

3. Use SXA 113 2842 to hold down to the floor.

4. Use 860 1685 to fix to the wall . Refer to figure 1.

**Note** Support relief bars SXA 113 2837/2, packed with the stand, shall be placed under the feet of the battery stand. Refer to figure 1.

5. Connect the earth wire (min 35mm$^2$) from the earth assembly point to the earth screw, on top right-hand side of the battery stand, refer to figure 1.

6. Make the connection with a cable lug.

   Refer also to Wiring drawing 1/1073-BZZ 207 01, found in section 4.0.0 - Appendices.

7. Mount the interconnection module magazine (BFL 107 101/-, refer to figure 1) at the top of the battery stand.

8. Push the interconnection modules into position and attach them with screws.

9. Place and connect batteries according to Wiring drawing 1/1073-BZZ 207 01, page 1 or 2, (depending on battery type).

10. Torque according to manufacturers specifications.

    The connecting cables for the battery (TRE 211 041) are supplied with the Battery and Interconnection Module BMG 701 013/-.

11. Post the Maintenance instructions from the battery manufacturer near the battery stand, where they are clearly visible.

12. Connect the Battery and Interconnection Module to the Internal Distribution Module and the signalling loop according to 1/1073-BZZ 207 01.

**Note** The bending radius of the optical cable (RPM 982 01/-) must not be less than 35 mm. The maximum length must not exceed 30 m.

13. Secure all cables that come in and go out from the interconnection module using cable clamp SXA 113 2760 which is attached with screws 03/SBA 131 050/0450 to the shelf frame. Refer to figure 2 below.

    Clamp and screws come with the interconnection module.

14. Fit the four protective caps on all outlets of the interconnection module.

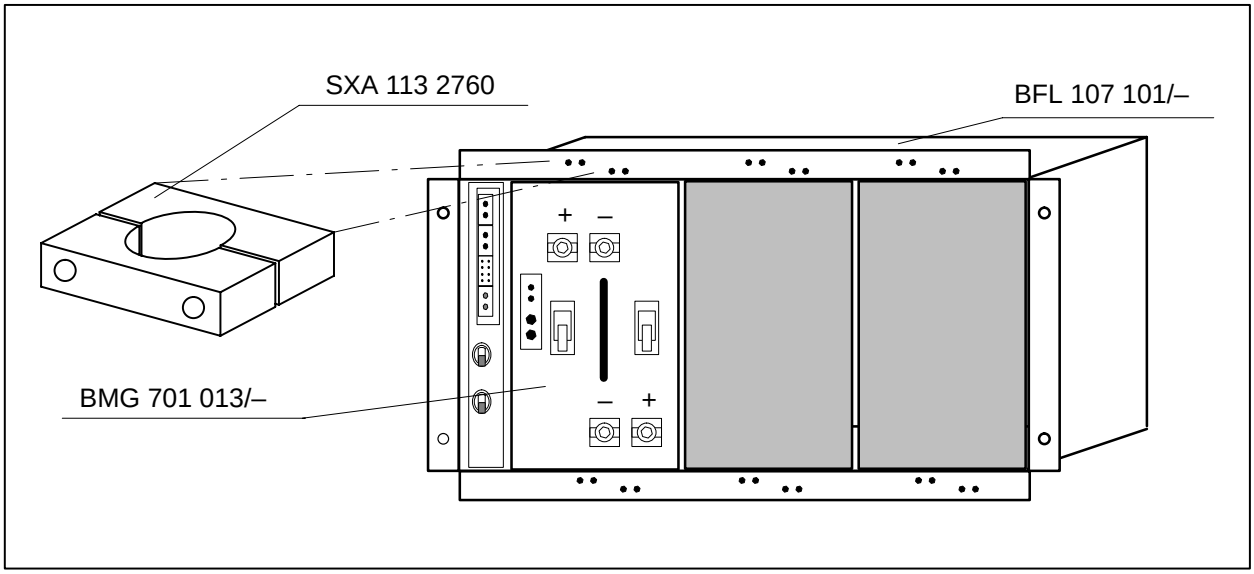


*Figure 2*

15. Fix the protective cover, which covers the whole front of the magazine. It is included in set of parts BMY 201 069/— or BMY 105 050.

## 1.2 Fitting DC/DC converters

**1** Position the unit on the wall, at a suitable height near the other equipment.

**2** Drill four, 10 mm diameter holes in a square pattern, with 255 mm between the centres of the holes. Refer to 151 88-BMR 974 101 Ux.

Screw SBH 111 465/03 with plug NSV 984 05 come with the unit.

**3** Connect the supply and signalling cables according to 1/1073-BZZ 207 01 Ux.

**4** Select alarm category (release or operation) on the terminal block.

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| Dokansv/Godk — *Doc respons/Approved* | Kontr — *Checked* | Datum — *Date* | Rev | File |
| ERA/LZ/TGC (ERABVN) | | 1998-02-02 | A | |

# Power Supply 230V AC, Battery Stand

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**3 Battery stand installation 4**

**4 Connection of batteries and cell block voltage regulators 5**

4.1 Internal cabling 5

4.2 External cabling 5

# 1 Battery stand

There are three versions available, see table 1:

*Table 1*

| | Version | Width | Depth | Between shelves | |
|---|---|---|---|---|---|
| 1 | BKY 261 003 | 350 mm | 375 mm | 150 mm | Fig. 1 |
| 2 | BKY 261 004/650 | 650 mm | 375 mm | 250 mm | Fig. 2 |
| 3 | BKY 261 004/950 | 950 mm | 375 mm | 250 mm | Fig. 2 |

The battery stand is delivered unassembled and consists of the following parts:

- Two frames with mounting supports for the batteries and the Battery Interconnection Module, BIM
- Four adjustable feet
- Two tie bars for stabilizing the battery stand
- 12 runners for installation of batteries.

## 2 Battery back-up

*Table 2*

| Item | Product no. | Description | Omni site, 1 cabinet | Sector site, 3 cabinets | Sector site, 6 cabinets |
|---|---|---|---|---|---|
| 1 | 29 Ah back-up: | | | | |
| 1.1 | BKY 261 003 | Battery stand | 1 | 1 | 2 |
| 1.2 | 12/BKC 861 0029/ 05 | Battery 24V DC | 1 | 3 | 6 |
| 2 | 134 Ah back-up: | | | | |
| 2.1 | BKY 261 004/650 | Battery stand | 1 | 1 | 2 |
| 2.2 | 12/BKC 861 0134/ 05 | Battery 24V DC | 1 | 3 | 6 |
| 3 | 187 Ah back-up: | | | | |
| 3.1 | BKY 261 004/950 | Battery stand | 1 | 1 | 2 |
| 3.2 | 12/BKC 861 0187/ 05 | Battery 24V DC | 1 | 3 | 6 |

# 3 Battery stand installation

For installation of BIM and batteries, see section 4.0.1.

# 4 Connection of batteries and cell block voltage regulators

- 29 Ah back-up, see figure 3.
- 134 Ah back-up, 6.75V/cell block, see figure 3.
- 187 Ah back-up, 4.5V/ cell block, see figure 4.

## 4.1 Internal cabling

For cabling between BIM and batteries, see sub-section 4.0.0.

## 4.2 External cabling

See section 3.3.

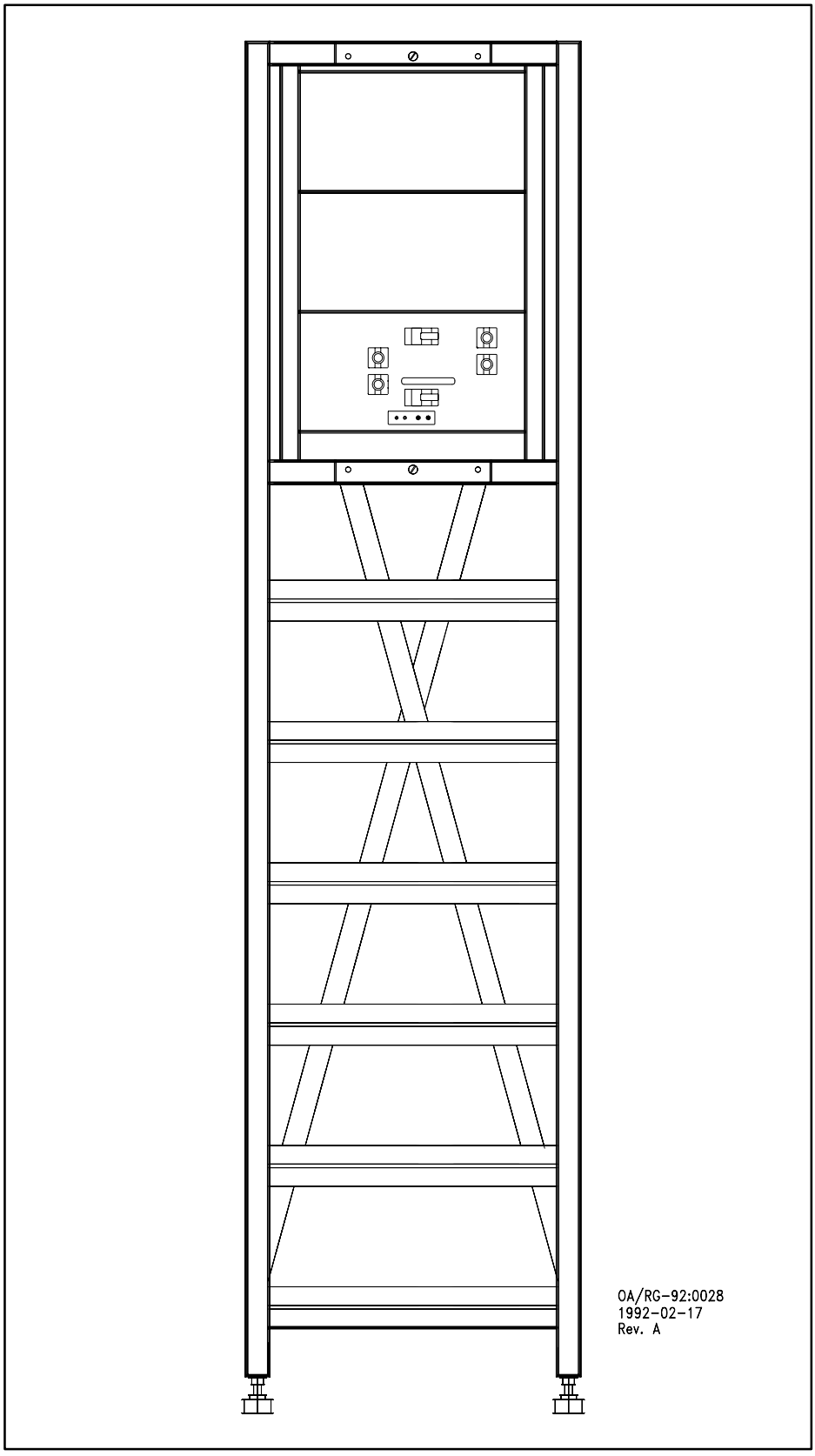


*Figure 1 Battery back up stand 3 x 29 Ah, including BIM*

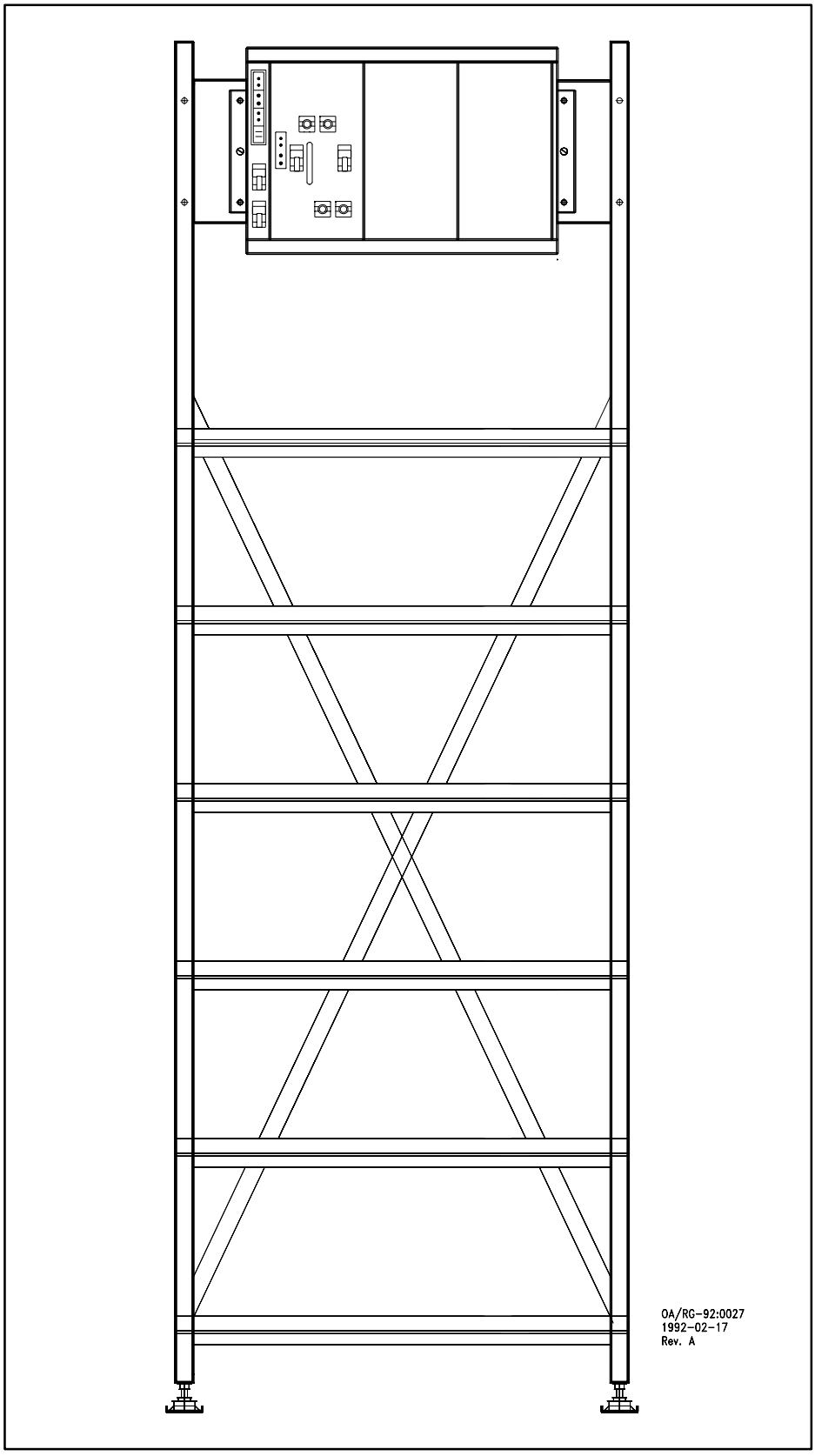


*Figure 2 Battery Back-up Stand BKY 261 002/650 3 x 134 Ah or BKY 261 002/950 3 x 187 Ah, including BIM*

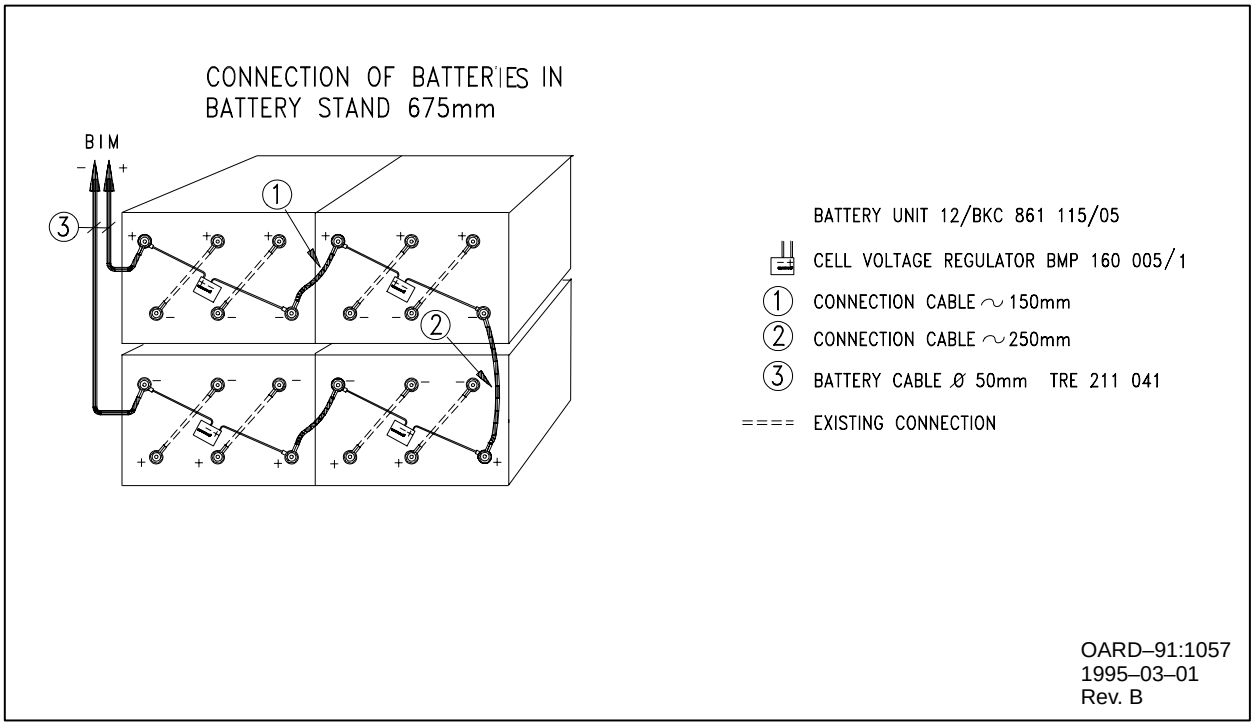


*Figure 3 134 Ah Battery Back-up: Connection of Batteries and 6.75V/cell Block Voltage Regulators*

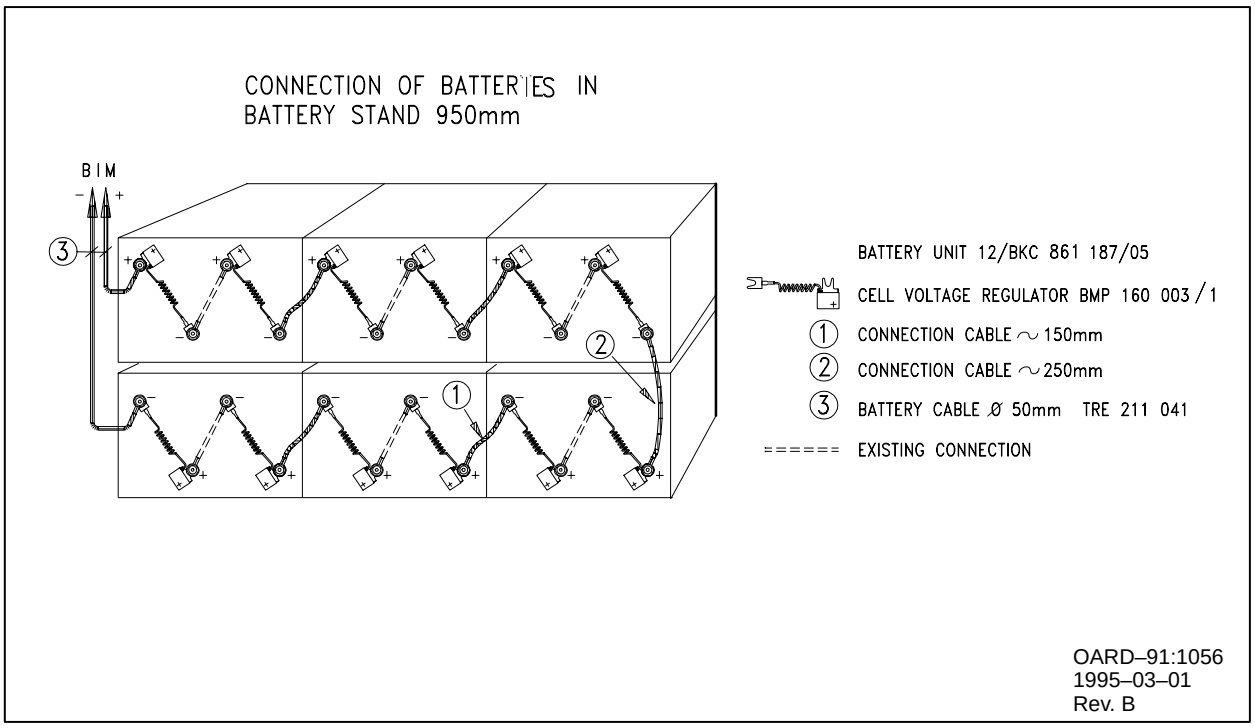


*Figure 4 187 Ah Battery Back-up: Connection of Batteries and 4.5V/cell Block Voltage Regulators*

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# Power Supply 230V AC, Commissioning

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# 1 Test

## 1.1 Test Equipment

A voltmeter class 0.5 with measuring ranges 250V AC, 100 mV and 30V DC.

## 1.2 Preparations

**DANGER**

High voltage (more than 200V) is used in the operation of this equipment. Direct contact with mains power can be fatal, and indirect contact via damp items may also be fatal.

**CAUTION**

Read Safety instructions regarding handling of batteries.

1. Make a visual inspection of the power plant together with the person responsible for the installation of the power equipment.

2. Make sure, that the plant is in accordance with the valid plant documents, and that the mechanical parts are correctly fitted.

3. Make sure, that the signalling loop is correctly connected. Refer to Wiring diagram 1/1073-BZZ 207 01 Ux, page 2 in Appendices in section 4.0.0.

4. Make sure that the AC connection is made according to local regulations and that the correct mains voltage is connected to the rectifiers.

5. Make sure that the batteries are installed according to suppliers instructions.

6. Check that the correct number of cells are installed.

7. Check that cells are properly positioned, and that inter-cell connectors conform to Wiring diagram 1/1073-BZZ 207 01 Ux, page 1 or 2 in the Appendices of section 4.0.0, and that they are tightened according to the instructions of the battery supplier.

8. Check that cell voltage equalizers, if any, are correctly connected across the cells.

## 1.3 Testing units

1. Test the power system in the order indicated below.

2. Read through all of the test instructions before starting.

Testing of units applies only when the power plant is first installed.

### 1.3.1 Preparations

1. Read through all paragraphs in sections 1.3 and 1.4, and check where all the buttons and other items mentioned are located. Refer to Included units and Handling of Power control unit ROA 119 807 in section 4.0.0.

2. Remove any personal effects that could cause a short circuit, such as rings, watches, etc.

3. Make sure that toggle switches on the rectifiers are in the "OFF" position.

4. Make sure that battery and cabinet circuit breakers of all interconnection modules are in the "OFF" position. See Figure 4 in section 4.0.0.

5. Remove all distribution fuses in use, except the supply to the PCU and cabinet fan(s).

6. Check with an ohmmeter that no short circuit exists between the positive and negative bars of the system.

7. Connect the AC supply to the cabinet(s).

**1.3.1.1**

*Table 1*

| Action | Result |
|---|---|
| Start all rectifiers by setting the toggle switches to the "On" position. | LEDs "On" and "Communication" light up on the rectifiers.The PCU display shows 24V ±0.5V. After about 5 sec., a green LED "ON" and a red LED "Err" ligths up, and an A2 alarm is initiated from the PCU. |

**1.3.1.2**

*Table 2*

| Action | Result |
|---|---|
| Switch on all cabinet and battery circuit-breakers by setting them to position "ON", refer to Figure 4, section 4.0.0 | The load contactors are energised, green LED "Communication" on the the interconnection modules light up. The red LED "Err" goes out and the A2 alarm on the PCU ceases. The system voltage increases to the set desired value ±0.5V. |

### 1.3.2 Voltage level

1. Set the toggle switch on the PCU to position "Set V", and make sure that desired value is set at 27.0V. If another output voltage is desired, change the value according to Handling of Power Control Unit ROA 119 807, section 4.0.0.

   This procedure is necessary only once, but if the whole system is disconnected, and desired value is set at something other than the pre-programmed 27.0V, the desired value must be reset according to Power Supply 230V AC, General section, Handling of Power Control Unit ROA 119 807.

   Recommended voltage levels are shown in apply to valve regulated batteries (VR). The battery voltage stated in the table is applicable for 12 cells and an ambient temperature < 25°C.

2. Adjust voltage level according to recommendation 2, if cell voltage equalizers/block voltage equalizers BMP 160 are used.

Other levels may apply depending on suppliers specifications.

*Table 3 Battery voltage levels*

| **Operational mode at T<25°C** | | **Battery voltage (V)** | **V/cell** | **V/block** |
|---|---|---|---|---|
| Floating charge: | | | | |
| 2 V cells | 1) Without cell voltage equalizers. | 27.25V | 2.27 | |
| d:o | 2) With cell voltage equalizers. | 27.0V | 2.25 | |
| 6V block | 1) Without cell voltage equalizers. | 27.25V | | 6.81 |
| d:o | 2) With cell voltage equalizers. | 27.0V | | 6.75 |

**1.3.2.1**

*Table 4*

| **Action** | **Result** |
|---|---|
| Switch off mains supply to one rectifier by removing the mains fuse. | Red LED "Err" lights on the PCU, A2 alarm is initiated. Green LED "On" for the rectifier in question starts flashing. |
| Reset the mains supply. | A2 alarm ceases. |

- **Repeat paragraph** 1.3.2.1 **for all rectifiers.**

**1.3.2.2**

*Table 5*

| **Action** | **Result** |
|---|---|
| Make sure that all rectifiers are in "ON" position . Disconnect mains supply to all rectifiers by taking out all mains fuses. | The yellow LED "Stat" lights on the PCU, mains failure alarm is initiated. The green LED "On" of each rectifier starts flashing. |
| *Note: Applies only if the plant contains batteries.* | |
| Connect the mains supply to the rectifiers | All alarms cease. |

**1.3.2.3**

*Table 6*

| **Action** | **Result** |
|---|---|
| Make a break in the communication loop by removing the cable from one unit. | After about 10 sec. the red LED "Err" on the PCU lights. A2 alarm is initiated. |
| Reset | A2 alarm is cancelled. |

**1.3.2.4**

*Table 7*

| Action | Result |
|---|---|
| Press the key blocking the outgoing alarm. See Figure 11 in sub-section 4.0.0. | The yellow LED "Stat" on the PCU lights. O1 alarm is initiated. |
| Reset | O1 alarm is cancelled. |

## 1.4 Reset

1. Set all battery circuit breakers in the "OFF" position and disconnect the mains supply to all rectifiers.

   The plant is switched off.

2. Replace the removed distribution fuses.

3. Connect the mains supply to the rectifiers.

4. Make sure that all rectifiers are in the "On" position.

   Set all battery circuit-breakers to the "On" position at this time.

5. Make sure that all cabinet and battery circuit breakers are in the "On" position.

   The plant is now operational, and all alarms shall be reset.

## 1.5 Performance test

Make a performance test in the following cases:

- as a final or acceptance test of a new plant.
- as a final or acceptance test when the plant has been extended.
- as a scheduled (annual) functional test.

### 1.5.1 Prior Conditions

The plant manager shall have been informed that tests will be made and that alarms will be sent to the central alarm unit.

The plant batteries shall be connected and all rectifiers in operation.

**1.5.1.1**

*Table 8*

| Action | Result |
|---|---|
| Read the system voltage on the PCU display. If it must be changed, refer to para. 1.3.2 | The value shall correspond to the float charging level of the battery in question. |

**1.5.1.2**

*Table 9*

| Action | Result |
|---|---|
| Make a break in the communication loop by removing the cable from one unit. | After about 10 secs, the red LED Err" on the PCU lights, A2 alarm is initiated. |
| Reset | The A2 alarm is cancelled. |

**1.5.1.5; The following paragraphs** 1.5.1.3 **and** 1.5.1.4 **shall be performed only if the system contains batteries.**

**1.5.1.3**

*Table 10*

| Action | Result |
|---|---|
| Disconnect incoming mains to one rectifier by removing the mains fuse. Reset the mains supply. | Red LED "Err" lights up on the PCU, and alarm A2 is initiated. Green LED "On" of the rectifier in question starts flashing. |
| Repeat this procedure with all rectifiers. | Alarm A2 is cancelled. |

**1.5.1.4**

*Table 11*

| Action | Result |
|---|---|
| Make sure, all rectifiers are set to "ON". Disconnect incoming mains of all the rectifiers by removing all mains fuses. | Yellow LED "Stat" on the PCU lights up, mains failure alarm is initiated. Green LEDs "On" start flashing on all rectifiers. |
| Connect mains supply to the rectifiers. | All alarms cease. |

**1.5.1.5**

*Table 12*

| Action | Result |
|---|---|
| Press the button for disabling of outgoing alarm, refer to Figure 10 in section 4.0.0.. | Yellow LED "Stat" lights up on the PCU, and alarm O1 is initiated. |
| Reset. | The O1 alarm is cancelled. |

### 1.5.2 Checking cell voltages

1. Measure the cell voltage/block voltage across each battery cell/battery block.
2. Leave a new battery with normal operating voltage for a minimum of 7 days, if it does not comply with the voltage values stated below.
3. Repeat check.
4. Check the capacity of the battery in a capacity test, if the battery still does not comply with the voltage values specified below.

#### 1.5.2.1 Valve regulated 4V block

The voltage of a fully charged 4V block, without a cell voltage equalizer of the type BMP 160, must not deviate more than 0.10V from the mean block voltage.

The voltage of a fully charged 4V block, with a cell voltage equalizer of the type BMP 160, must not deviate more than 0.02V from the mean block voltage.

#### 1.5.2.2 Valve regulated 6V block

The voltage of a fully charged 6V block without a block voltage equalizer of the type BMP 160 must not deviate more than 0.15V from the mean block value.

The voltage of a fully charged 6V block with a block voltage equalizer of the type BMP 160 must not deviate more than 0.06V from the mean block voltage.

### 1.5.3 Final Steps

1. Disconnect any test equipment that has been connected to the system during the testing and make sure that instruments that do not belong to the equipment have been removed.
2. Make sure that the outgoing alarms are connected.
3. Make sure that all battery and cabinet circuit breakers are set to "ON".
4. Restore the equipment to its original condition.
5. Make sure, that all corrective actions are recorded in the log book, with information about time and name of the person who carried them out.
6. If a fault remains in the equipment, personnel that have been specially trained on the power supply equipment shall be summoned.

7. If a unit is to be sent to a repair centre for repair, Failure report LZT 109 278 shall be filled in and sent with the unit.

# 2 Handling and operation

## 2.1 Alarm categories

Outgoing alarms from the PCU are made via 5 relays with categories according to the list below. Refer also to figure 1. PCU and TRI communicate through connecting cable TSR 901 0197/1700. Refer to Wiring diagram 1/1073-BZZ 207 01.

| | |
|---|---|
| **A1** (de-energises on alarm) | Requires immediate action. |
| **A2** (energises on alarm) | Corrective actions during normal working-hours. |
| **O1** (energises on alarm) | Observation alarm for indication of a temporary state. |
| **Mains failure** (de-energises on alarm) | Mains failure |
| **Undervoltage** (de-energises on alarm) | The system voltage is below the limit of undervoltage monitor 2. |

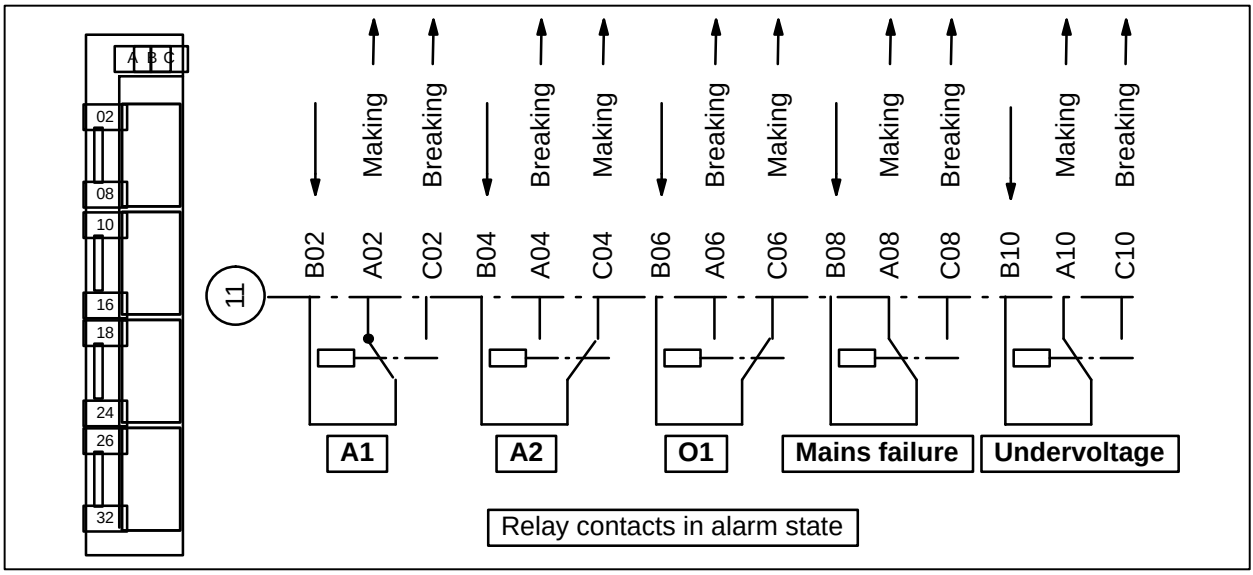


*Figure 1 Outgoing alarm terminal block*

ERICSSON

*CAPTION LIST*

| Document No. | |
|---|---|
| 41/001 53-LZN 302 006 | |
| Date | Rev |
| 99-09-20 | B |

# Power Supply -48V DC

RBS 200
Installation Manual


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# Power Supply -48V DC, General

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# 1 Introduction

Power supply system BZZ 207 10, see figure 1, is designed to power RBS (Radio Base Station) cabinets in a GSM (Global System Mobile) system. The internal supply voltage in the RBS cabinet is +24V DC.

The main components of the system are DC/DC converters (1300W), connected in parallel on the secondary side in order to achieve redundancy, a Capacitor Unit and Distribution Unit(s).

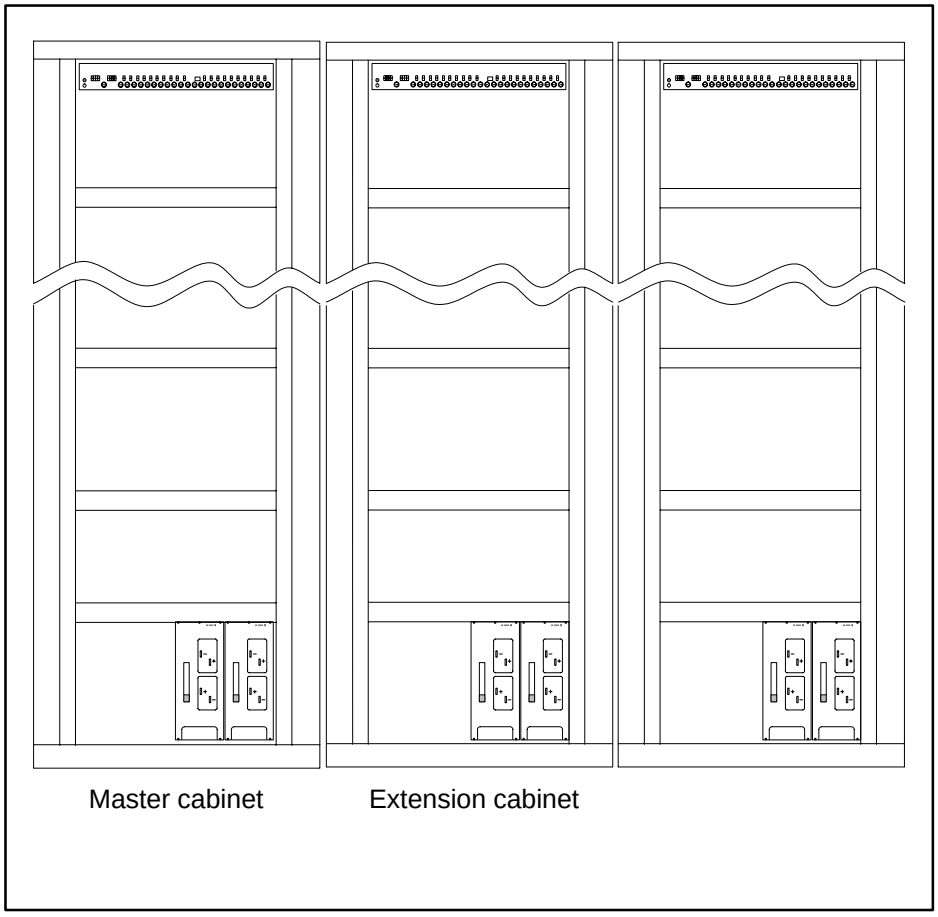


*Figure 1 Example of system BZZ 207 10*

# 2 Function

The system converts incoming -48/-60V DC to +24V DC and maintains a constant DC voltage across the telecommunication equipment. An 0.6 F capacitor on the secondary side protects against transients.

The RBS is supplied high-ohmically with +24V DC through an Internal Distribution Model (IDM). The high resistance is achieved by the feeder cable from the distribution unit to the different consumers.

## 2.1 Supervision

In the event of an alarm, the DC/DC converter of the system sends a signal to the main communication unit in the RBS cabinet, the Transmission Radio Interface (TRI).

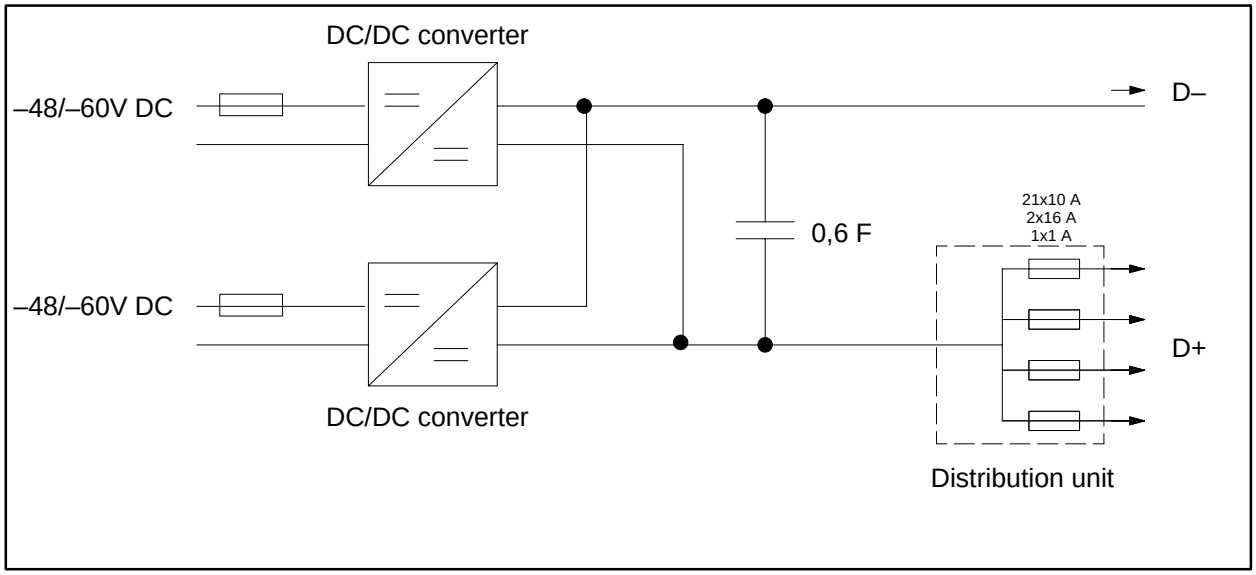


*Figure 2 Circuit diagram of power supply system BZZ 207 10*

# 3 Included units

## 3.1 DC/DC converter BMR 960 009/1

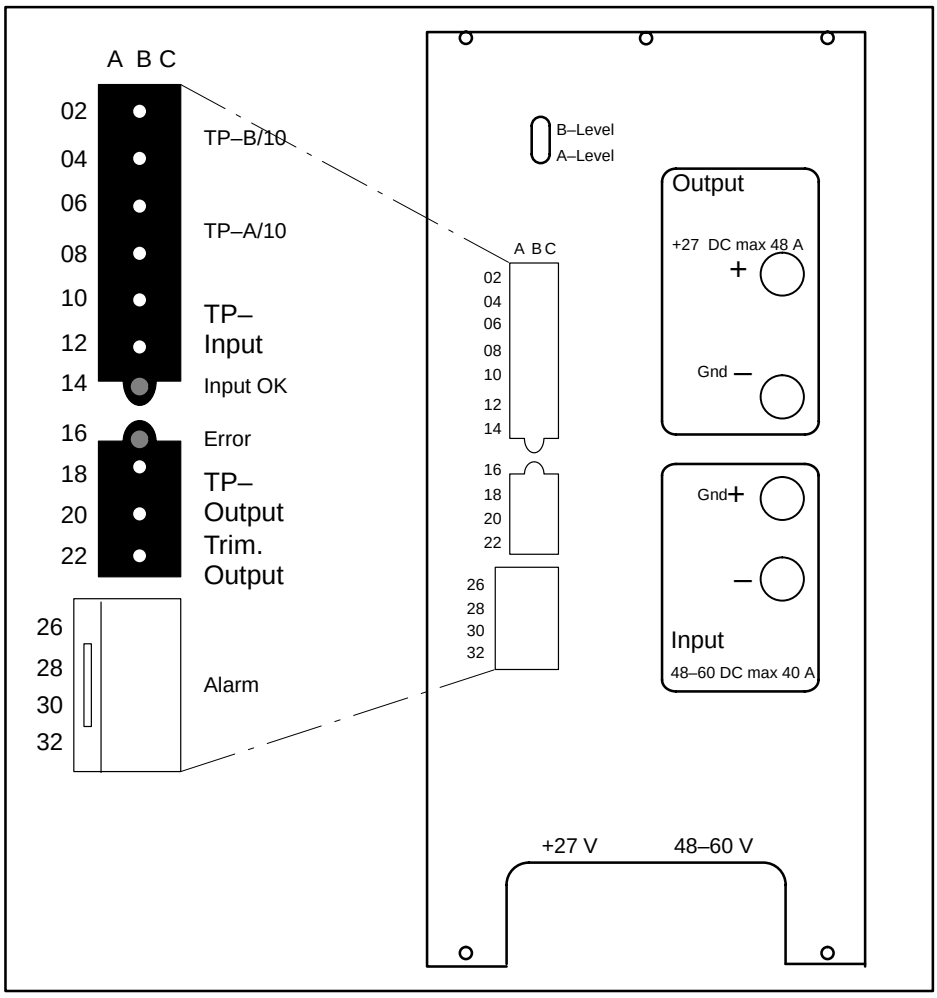


*Figure 3 1300 W DC/DC converter BMR 960 009/1*

The converter has an input voltage operating range of -38 to -72V DC, for power to the RBS cabinet. It is a high-frequency 1300W DC/DC converter, that converts the nominal -48 to -60V DC to regulated +27V DC. A protective circuit shuts down the DC/DC converter if the input voltage drops below 40V (A-level). The converter restarts automatically when the input voltage exceeds 45V again (B-level).

Alarm is initiated when the input voltage is too low. This is indicated by the LED Input OK, which goes off.

Alarm is also initiated when the output voltage deviates more than ±10 % from the set value. This is indicated by the lighted LED Error. See figure 4.

Alarms from the converter are sent over relay contacts as shown in figure 4. Relays are normally energised and de-energised in event of an alarm.

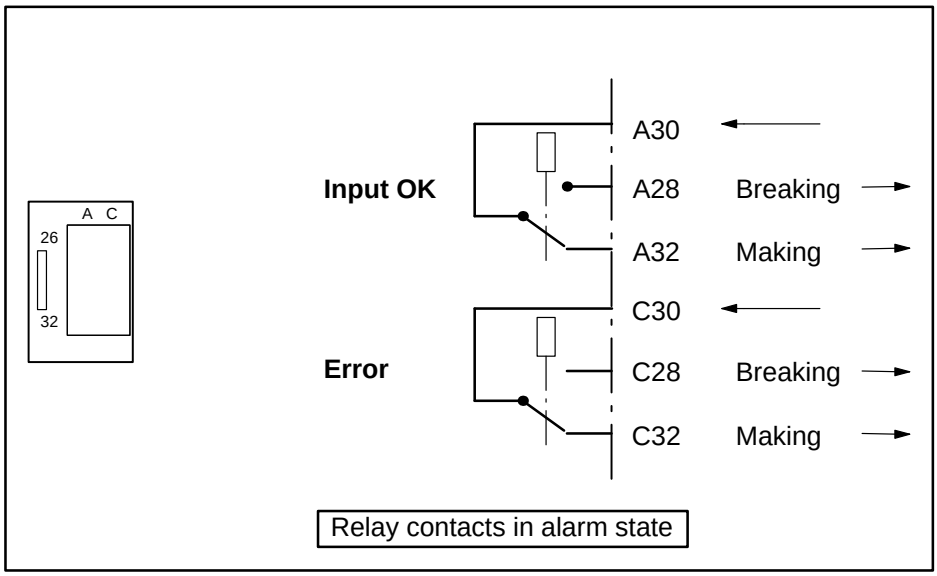


*Figure 4 Outgoing alarm terminal block on the DC-DC converter*

Older version BMR 960 008/1 exists. It is identical except the output power is 1100 Watts.

## 3.2 Capacitor unit

This unit is used to store energy on the 24V side when the RBS cabinet is powered via DC/DC converters.

The stored energy is used to:

- give sufficient current to blow a fuse in the IDM when a load is short-circuited.
- hold the system voltage within specified tolerances during the blow time for the fuse.

The Capacitor unit is positioned on the left side of the cabinet, as seen from the front, according to figure 5.

It can be reached from the inside of the cabinet when the magazine and fan units have been removed.

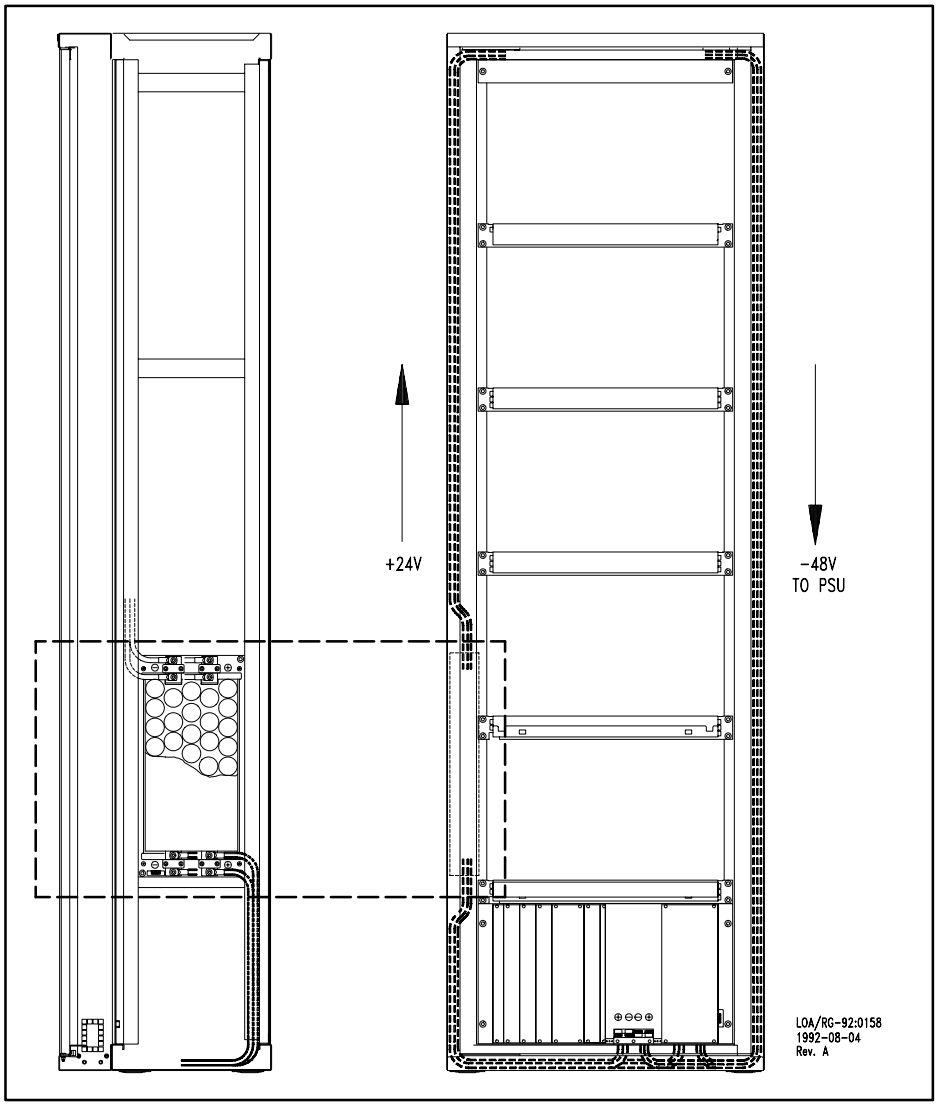


*Figure 5 Dashed line shows position of capacitor unit*

### 3.3 Distribution unit BMG 663 002/-

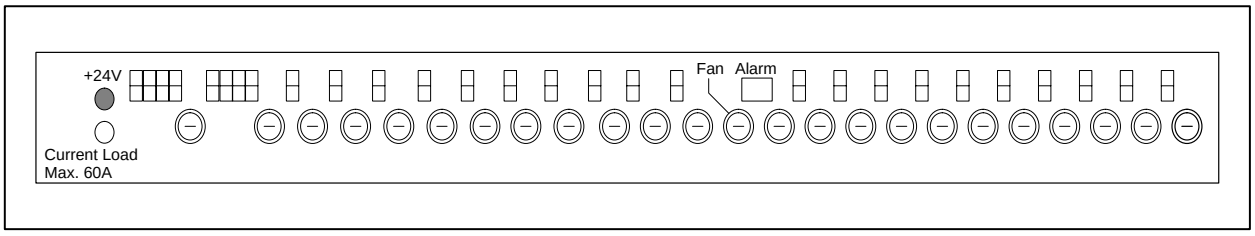


*Figure 6 Internal Distribution Module BMG 663 002/-*

The distribution unit comprises 21x10A, 2x16A and 1x1A glass-tube fuses and capacitors to filter the +24V DC voltage. The unit also comprises a control board for supervision of the cooling fans.

To make the system "high-ohmic", the distribution cables have a standard length of 3 m and a standard area of 0.80 $mm^2$.

In this way, the internal impedance of the cable becomes about six times higher than the internal impedance of the power supply plant. Accordingly, in the event of a short circuit at a distribution point, the voltage of the common feeding point will not fall below the permissible value of the powered equipment.

| Uppgjord — *Prepared* | | Datum — *Date* | Rev | Dokumentnr — *Document no* |
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| SG/ERA/LZ/LI ERASNOW 72709 | | 1998-02-02 | A | 3/001 59-LZN 302 006 Uen |
| Godkänd — *Approved* | Kontr — *Checked* | | | Tillhör/referens — *File/reference* |
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# 1 Power Supply Installation and Commissioning

## 1.1 Power Supply -48V DC, General

The Appendix has been removed from the manual as follows:

### 1.1.1 Wiring Diagram 1073-BZZ 207 10 Ux

This document is not written in SGML format and is therefore not included in this manual. The document must be ordered separately from GASK2. Internet users can print out the document from Intranet.

| Uppgjord — *Prepared* | Faktaansvarig — *Subject responsible* | Nr — *No.* | | |
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# Power supply -48V DC

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| 1.2 | Wiring | 2 |

# 1 Installation

The RBS cabinet is delivered completely equipped with capacitor and distribution unit and all internal wiring.

## 1.1 Fitting DC/DC converters

1. Push the DC/DC converters, which are delivered separately, into their positions in the bottom right-hand part of the cabinet.

2. Fix the converters with five screws at the front.

## 1.2 Wiring

**CAUTION**

Read Safety instructions regarding handling of batteries.

**CAUTION**

Verify that the cable marking is correct before connecting the cables.

1. Wire the input, output and alarm cables according to Wiring drawings in section 3.5, Radio Cabinets, External cabling.

2. Connect cable RPM 513 620/1 between the DC/DC converters and TRI.

3. Do the wiring between the DC/DC converters with the cables RPM 513 451/1 (use coaxial cable) and RPM 513 451/2.

4. Connect incoming feeder cable in the Distribution Unit BMG 663 002/-.

Recommended connecting cable: min. 2x10 $mm^2$; two per DC/DC converter.

Recommended fuse: 40A per DC/DC converter.

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# Commissioning

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# 1 Test

## 1.1 Test Equipment

- Voltmeter class 0.5 with measuring ranges 100 mV and 100V DC.
- Clip-on ammeter with measuring range 50A DC.

## 1.2 Preparations

1. Make a visual inspection of the power plant together with the person responsible for the installation of the power equipment.
2. Make sure, that the plant is in accordance with the valid plant documents, and that the mechanical parts are correctly fitted.
3. Make sure, that the alarm cables are correctly connected. Refer to Wiring diagrams in Radio Cabinet, section 3.3, External cabling.
4. Make sure, that the incoming feeder cables are correctly connected in the distribution unit and that the feeder voltage stays within the permissible range.

## 1.3 Testing units

1. Test the power system in the order indicated below.
2. Read through entire instructions for use before starting the tests.

*The test of units applies only when the plant is first installed.*

### 1.3.1 Preparations

1. Read through all paragraphs in section 4.1.0, and check out where all buttons and other things mentioned are located.
2. Remove any personal effects that could cause a short circuit, such as rings, watches and similar objects.
3. Make sure, that the feed to the DC/DC converters is switched OFF (feeder fuses disconnected).
4. Remove all distribution fuses in use, except those feeding the fans of the cabinet.
5. Check with an ohmmeter that no short circuit exists between the positive and negative bars of the system.

**1.3.1.1**

*Table 1*

| Action | Result |
|---|---|
| Start both converters of a cabinet by connecting the feeder fuses. | LEDs Input OK and Output OK on the DC/DC converters, light up. |
| Check the levels of the protective circuit by connecting a voltmeter to test point TP-A/10 and TP-B/10. (Applies to both DC/DC converters). | The voltmeter shall show 4.00 V for TP-A/10 and 4.50V for TP-B/10. Any adjustment shall be made with potentiometer A-level and B-level respectively. |

**1.3.1.2**

*Table 2*

| Action | Result |
|---|---|
| Switch off the feeder voltage to one DC/DC converter only, by disconnecting the feeder fuse. | The green LED Input OK of the DC/DC converter in question extinguishes. |
| Measure the voltage at the output of the DC/DC converter in operation (the voltmeter can be connected to test point TP-Output). | The voltage shall be +27.9±0.1 V. Any adjustment shall be made with potentiometer Trim.Output. |
| Restore feed to the shutdown DC/DC converter. | The green LED Input OK lights. |
| Switch off the feeder voltage of the other DC/DC converter, disconnecting the feeder fuse. | The green LED Input OK of the DC/DC converter in question extinguishes. |
| Measure the voltage at the output of the DC/DC converter in operation. | The voltage shall be +27.9±0.1 V. Any adjustment shall be made with potentiometer Trim.Output. |
| Restore feed to the shutdown DC/DC converter. | The green LED Input OK lights up. |

**1.3.1.3**

*Table 3*

| Action | Result |
|---|---|
| Check with the clip-on ammeter that the load is shared between the two DC/DC converters of a cabinet. | The max. permissible difference is 20 %. Any adjustment can be made with potentiometer Trim.Output. |
| Measure the current in the positive conductor of the output. | An increase in voltage gives an increase in current. |

- Repeat para. 1.3.1.1. - para. 1.3.1.3 for all cabinets.

## 2 Pinout for test and alarm connectors

| | | |
|---|---|---|
| Voltage level B/10 test out | | B02 - B04 |
| Voltage level A/10 test out | | B06 - B08 |
| Input voltage level test out | | B10 - B12 |
| Input voltage level LED | | B14 |
| Alarm LED | | B16 |
| Output voltage level test out | | B18 - B20 |
| Output voltage adjustment | | B23 |
| Input voltage alarm | closed contact = no alarm | A28 - A30 |
| | open contact = no alarm | A32 - A30 |
| Output voltage alarm | closed contact = no alarm | C28 - C30 |
| | open contact = no alarm | C32 - C30 |

| Uppgjord — *Prepared* | Faktaansvarig — *Subject responsible* | Nr — *No.* | | |
|---|---|---|---|---|
| ERA/LZ/LI SNOW | | 4/1531-COH 109 2015/1 Uen | | |
| Dokansv/Godk — *Doc respons/Approved* | Kontr — *Checked* | Datum — *Date* | Rev | File |
| ERA/LZ/TGC (ERABVN) | | 1998-01-30 | B | |

# Power Supply +24V DC, Installation

**Contents** **Page**

**1 Installation 2**
1.1 Wiring 2

# 1 Installation

**CAUTION**

Read Safety instructions regarding handling of batteries.

**CAUTION**

Verify that the cable marking is correct before connecting the cables.

**Note** The AC installation must be carried out by an authorised electrician. Verify that external AC mains supply is switched OFF before connecting the AC mains cable.

**Note** Verify also that the internal DC battery supply is disconnected before starting any work.

## 1.1 Wiring

- Terminate cables from the power source to the connection points in the middle of the IDM unit on top of the cabinet, as indicated in figure 1.

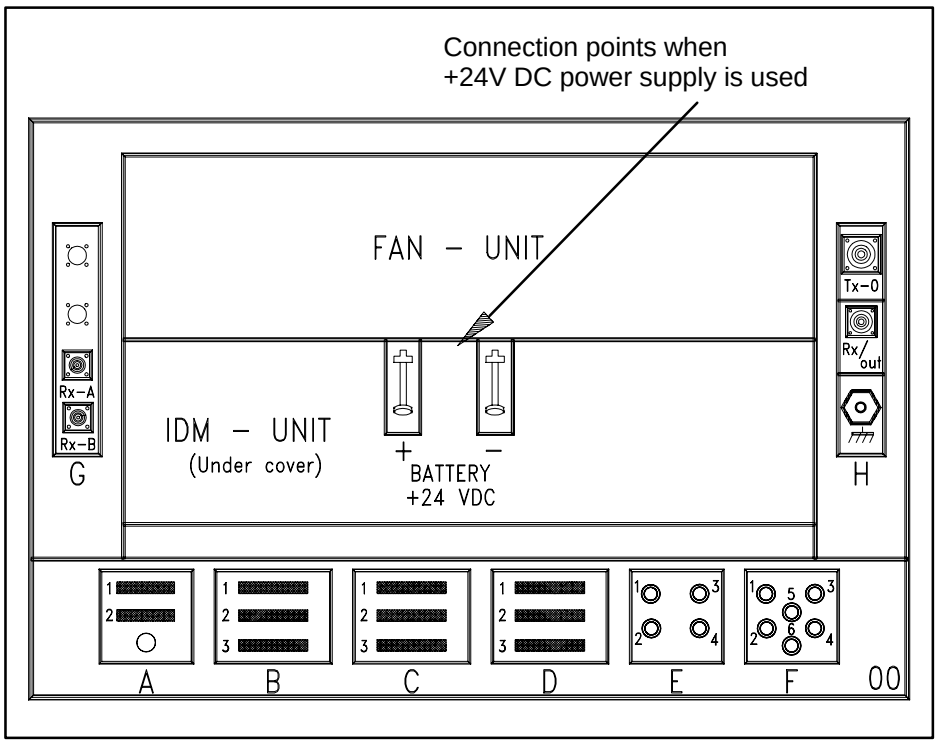


*Figure 1 Connection points for +24V DC on top of cabinet*

ERICSSON

*CAPTION LIST*

| Document No. | |
|---|---|
| 5/001 53-LZN 302 006 | |
| Date | Rev |
| 99-09-20 | B |

**Supplementary Information**

RBS 200
Installation Manual


| | |
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| Lifting of Cabinet | 1 |
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| | 9 |

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|---|---|---|---|
| ERA/LRN/ZG ERAWAIN | | 105 49-COH 109 2015/11 Uen | |
| Dokansv/Godk — *Doc respons/Approved* | Kontr — *Checked* | Datum — *Date* | Rev | File |
| ERA/LRN/ZGC (Leif-Olof Fager) | | 1999-10-06 | B | |

# Material Specification

**Contents** **Page**


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| **1** | **Material Specification** | **2** |
| 1.1 | Battery Back-Up | 2 |
| 1.2 | Supplementary Equipment | 4 |
| 1.3 | Mechanical Parts for Indoor Installation | 6 |

# 1 Material Specification

## 1.1 Battery Back-Up

### 1.1.1 Battery Back-Up - 29 Ah

*Table 1 Battery back-up - 29 Ah*

| Item | Product No. | Description | Omni site | Sector site | |
|---|---|---|---|---|---|
| | | | **1 cabinet** | **3 cab.** | **6 cab.** |
| 1.1 | BKY 261 003 | Battery stand 3 x 29 Ah | 1 | 1 | 2 |
| 1.2 | 12/BKC 861 0029/05 | Battery 24 V DC | 1 | 3 | 6 |
| 1.3 | BKY 261 020/120 | Connector | 1 | 3 | 6 |
| 1.4 | TFK 100 510/08 | Battery Cable | 30 m | 90 m | 180 m |
| 1.5 | BMY 105 058/1- | SET OF PARTS | /11 | /13 | |
| 1.5.1 | BFL 107 101/4 | BIM magazine | 1 | 1 | 2 |
| 1.5.2 | BMG 701 013/2 | BIM | 1 | 3 | 6 |
| 1.5.3 | BMY 105 054/2 | Cables BIM-battery | 1 | 3 | 6 |
| 1.5.4 | BMY 201 069/490 | Cover for BIM, EFU | 1 | 1 | 2 |
| 1.5.5 | BMY 105 045/1 | Set of Parts | 1 | 1 | 1 |
| 1.5.6 | RPM 982 01/500 | Opto cable 0.5 m | 0 | 2 | 5 |
| 1.5.7 | RPM 982 01/10000 | Opto cable 10 m | 0 | 2 | 5 |
| 1.6 | BMY 105 051 | Set of Spare Parts | - | - | 1 |

### 1.1.2 Battery Back-Up - 134 Ah

*Table 2 Battery back-up - 134 Ah*

| Item | Product No. | Description | Omni site | Sector site | |
|---|---|---|---|---|---|
| | | | **1 cabinet** | **3 cab.** | **6 cab.** |
| 2.1 | BKY 261 004/650 | Battery stand | 1 | 1 | 2 |
| 2.2 | 12/BKC 861 0134/05 | Battery 24 V DC | 1 | 3 | 6 |
| 2.2.1 | BKY 261 020 122 | Connector | 2 | 6 | 12 |
| 2.2.2 | BKY 261 020/123 | Connector | 1 | 3 | 6 |
| 2.3 | TFK 100 510/08 | Battery cable | 30 m | 90 m | 180 m |
| 2.4 | BMY 058/1- | SET OF SPARTS | /21 | /23 | |
| 2.4.1 | BMP 160 005/1 | Cell regulator | 4 | 12 | 24 |
| 2.4.2 | BFL 107 101/4 | BIM magazine | 1 | 1 | 2 |
| 2.4.3 | BMG 701 013/2 | BIM | 1 | 3 | 6 |
| 2.4.4 | BMY 105 054/2 | Cables BIM-battery | 1 | 3 | 6 |
| 2.4.5 | BMY 201 069/650 | Cover for BIM, EFU | 1 | 1 | 2 |
| 2.4.6 | BMY 105 045/1 | Set of Parts | 1 | 1 | 1 |
| 2.4.7 | RPM 982 01/500 | Opto cable 0.5m | 0 | 2 | 5 |
| 2.4.8 | RPM 982 01/10000 | Opto cable 10m | 0 | 2 | 5 |
| 2.5 | BMY 105 051 | Set of Spare Parts | - | - | 1 |

### 1.1.3 Battery Back-Up - 187 Ah

*Table 3 Battery back-up - 187 Ah*

| Item | Product No. | Description | Omni site | Sector site | |
|---|---|---|---|---|---|
| | | | 1 cabinet | 3 cab. | 6 cab. |
| 3.1 | BKY 261 004/950 | Battery stand | 1 | 1 | 2 |
| 3.2 | 12/BKC 861 0187/05 | Battery 24 V DC | 1 | 3 | 6 |
| 3.3 | BKY 261 020/125 | Connector | 2 | 6 | 12 |
| 3.4 | BKY 261 020/134 | Connector | 1 | 3 | 6 |
| 3.5 | TFK 100 510/08 | Battery cable | 30 m | 90 m | 180 m |
| 3.6 | BMY 058/1- | SET OF PARTS | /41 | /43 | |
| 3.6.1 | BMP 160 003/1 | Cell regulator | 12 | 36 | 72 |
| 3.6.2 | BFL 107 101/4 | BIM magazine | 1 | 1 | 2 |
| 3.6.3 | BMG 701 013/1 | Battery fuse-BIM | 1 | 3 | 6 |
| 3.6.4 | BMY 105 054/2 | Cables BIM-battery | 1 | 3 | 6 |
| 3.6.5 | BMY 201 069/650 | Cover for BIM, EFU | 1 | 1 | 2 |
| 3.6.6 | BMY 105 045/1 | Set of parts | 1 | 1 | 1 |
| 3.6.7 | RPM 982 01/500 | Opto cable, 0.5 m | 0 | 2 | 5 |
| 3.6.8 | RPM 982 01/10000 | Opto cable, 10 m | 0 | 2 | 5 |
| 3.7 | BMY 105 051 | Set of Spare Parts | - | - | 1 |

### 1.1.4 DC/DC Converter RTP +24/-48 or 60 V (Built-in Redundancy):

*Table 4 DC/DC converter RTP +24/-48 or 60 V*

| Item | Product No. | Description | Omni site, 1 cabinet | Sector site, 3 cabinets |
|---|---|---|---|---|
| 4.1 | ROA 117 510/1 | External Fuse Unit, EFU | 1 | 1 |
| 4.2 | BMY 201 070/1 | Set of parts | 1 | 1 |
| 4.2.1 | TSR 211 0203/15000 | Cable EFU-DC/DC | 2 | 2 |
| 4.2.2 | TSR 202 0111/15000 | Alarm cable | 1 | 1 |
| 4.3 | BMR 974 101/1 | DC/DC, 24/60 V, 36 W | 1 | [1] |
| 4.4 | BMR 974 101/11 | DC/DC, 24/60 V, 108 W | 1 | [1] |
| 4.5 | BMR 974 101/3 | DC/DC, 24/48 V, 36 W | 1 | [1] |
| 4.6 | BMR 974 101/13 | DC/DCX, 24/48 V, 108 W | 1 | [1] |
| 4.7 | TFK 250 41/8 | Cable DC/DC-transm. | 1 | 1 |
| 4.8 | TEL 250 47/8 | Alarm cable | 1 | 1 |

[1] According to power requirements

## 1.2 Supplementary Equipment

### 1.2.1 Basic Equipment (Always to Be Delivered):

*Table 5 Basic equipment*

| | NTM 201 245/3 | Suppl. Equipment, omni site (1 cabinet) | | |
|---|---|---|---|---|
| | NTM 201 245/4 | Suppl. Equipment, sector site (3 cabinets) | | |
| **Item** | **Product No.** | **Description** | **Omni site, 1 cabinet** | **Sector site, 3 cabinets** |
| 5.1 | RPM 513 336/500 | LIB cable | 1 | 1 |
| 5.2 | RPM 513 336/6500 | LIB cable | - | 2 |
| 5.3 | RPM 513 338 | Ext. alarm cable | 2 | 4 |
| 5.4 | 5/NTM 201 201 | Cabinet grounding set | 4 | 6 |
| 5.5 | SVH 287 001/1 | Label set | 1 | 1 |
| 5.6 | LZY 213 184/103 | Label set, TRI cables | 1 | 1 |

### 1.2.2 Optional Equipment

*Table 6 Optional equipment*

| **Item** | **Product No.** | **Description** | **Omni site, 1 cabinet** | **Sector site, 3 cabinets** |
|---|---|---|---|---|
| 6.1 | NTM 201 249/1 | Distribution Field, DF | 1 | 1 |

### 1.2.3 Connection of Feeder Cables to the RBS Cabinet

*Table 7 Connection of feede cables to the RBS cabinet*

| **Item** | **Product No.** | **Description** | **Omni site, 1 cabinet** | **Sector site, 3 cabinets** |
|---|---|---|---|---|
| 7.1 | NTM 201 219/2 | Grounding kit, feeders | 3 | 9 |
| 7.2 | TSR 951 65/1, 2, 3 | Jumper cable, TX 1, 2, 3 m | 1 | 3 |
| 7.3 | TSR 951 66/1, 2, 3 | Jumper cable, RX 1, 2, 3 m | 1 (2)*) | 3 (6)*) |

*) In case of diversity

### 1.2.4 External PCM Cabling in accordance with Local Demands and TRI Configuration

(numbers in brackets (-) indicate max. configuration):

*Table 8 External PCM cabling*

| Item | Product No. | Description | Qty |
|---|---|---|---|
| for 75 ohm coaxial cabling: | | | |
| 8.1 | RPM 513 339 | Coax. cable, 75 ohm for one ETB board | 2 (12) |
| if more than three ETB boards: | | | |
| 8.2 | SXK 107 2435/1 | Connector box BNC | 1 |
| in case of DDF, install the following in the Disbribution Field, DF: | | | |
| 8.3 | SXA 120 165 | Holder for 6 x RNT 403 113 | 1 (2) |
| 8.4 | RNT 403 113 | Connector, female per 1/RPM 513 339 | 2 (12) |
| 8.5 | RPT 158 53 | Connector, male per 1/RPM 513 339 | 2 (12) |
| in case of 120 pair cable: | | | |
| 8.6 | RPM 513 698/15000 | PCM cable. 120 ohm for one ETB board | 2 (8) |
| if more than two ETB boards: | | | |
| 8.7 | SXK 107 2436/1 | Connector box DIN | 1 |
| in case of DDF, install the following in the Distribution Field, DF: | | | |
| 8.8 | SXA 120 164 | Holder for 4 x RNT 40305/03 | 1 (2) |
| 8.9 | RNT 403 05/03 | Connector, female per 1/RPM 513 349 | 2 (8) |
| 8.10 | RPT 403 08/03 | Connector, male per 1/RPM 513 349 | 2 (8) |

## 1.3 Mechanical Parts for Indoor Installation

Recommended for both omni and sector sites:

### 1.3.1 NTM 201 201/4 Indoor Inst. Material

*Table 9 NTM 201 201/4 indoor inst. material*

| Item | Product No. | Description | Qty |
|---|---|---|---|
| 9.1 | NTM 201 275 | Ladder, 0.400 m x 15 m (5 x 3m), grey, wall & ceiling mounted | 1 |
| 9.2 | 4/NTM 201 201/2 | Earthing wire set | 1 |
| 9.3 | 6/NTM 201 201/2 | Cable tray, 12 m (6 x 2 m) | 1 |
| 9.4 | 7/NTM 201 201 | Common inst. material | 1 |
| 9.5 | NTM 201 218/2 | Tube kit, (5 x 3 m) | 1 |

| Uppgjord — *Prepared* | Faktaansvarig — *Subject responsible* | Nr — *No.* | | |
|---|---|---|---|---|
| ERA/LZ/TG PIAH | | 1204-COH 109 2015/1 Uen | | |
| Dokansv/Godk — *Doc respons/Approved* | Kontr — *Checked* | Datum — *Date* | Rev | File |
| ERA/LZ/TGC (ERABVN) | | 1998-02-06 | A | |

# Lifting of Cabinet

**Contents** **Page**

**1 Lifting the RBS Cabinet 2**

**2 Lifting Kit NTM 292 3**
2.1 Mounting 3

# 1 Lifting the RBS Cabinet

**WARNING**

Read Safety chapter regarding handling of heavy goods.

**WARNING**

To prevent injury to personnel and damage to materials when lifting an RBS cabinet, we strongly recommend using Lifting Kit NTM 201 292.

# 2 Lifting Kit NTM 292

*Table 1*

| Item | Product No. | Description | Qty |
|---|---|---|---|
| 1 | SXA 120 183 | Top bar | 2 |
| 2 | SCA 360 04 | Washer | 4 |
| 3 | 03/SBA 166 100/0250 | Screw | 4 |
| 4 | SXA 120 184 | Lifting sling | 2 |

## 2.1 Mounting

1. Mount the top bars with screws and washers as shown in figure 1 and figure 2.

2. Mount the lifting sling as shown in figure 3.

**Note** Unscrew the cabinet feet approximately 2 cm from the bottom so that they will retain the lifting sling safely in place.

**WARNING**

⚠

There is a danger of the assembly toppling over, which could cause injury to personnel or damage to the equipment.

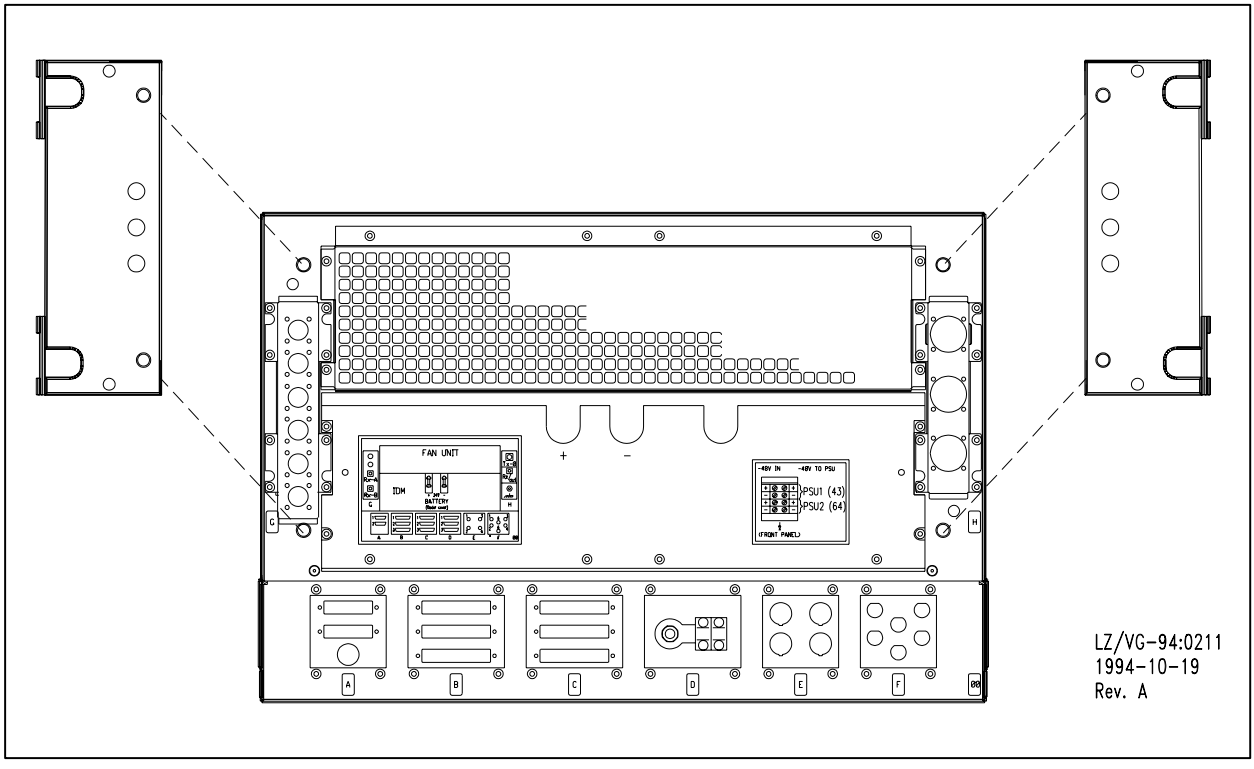


*Figure 1 Mounting of top bars SXA 120 183 on master cabinet*

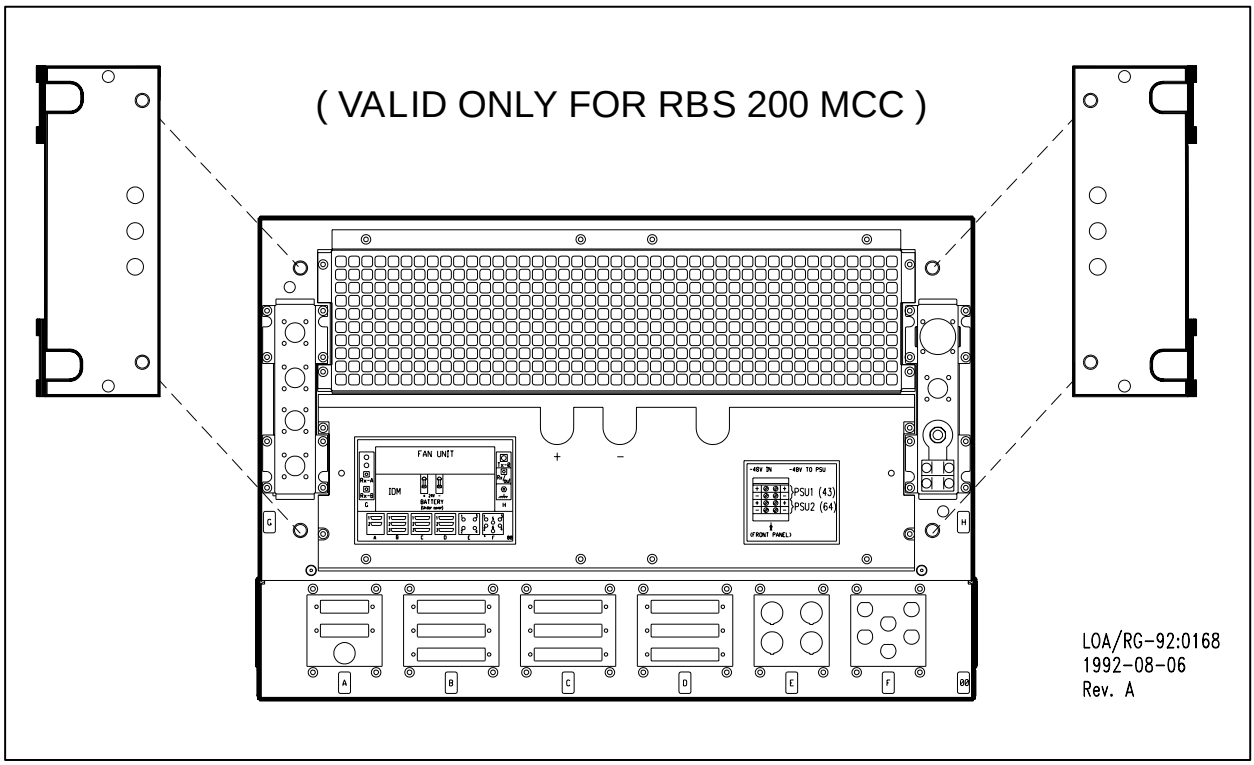


*Figure 2 Mounting of top bars SXA 120 183 on extension cabinet*

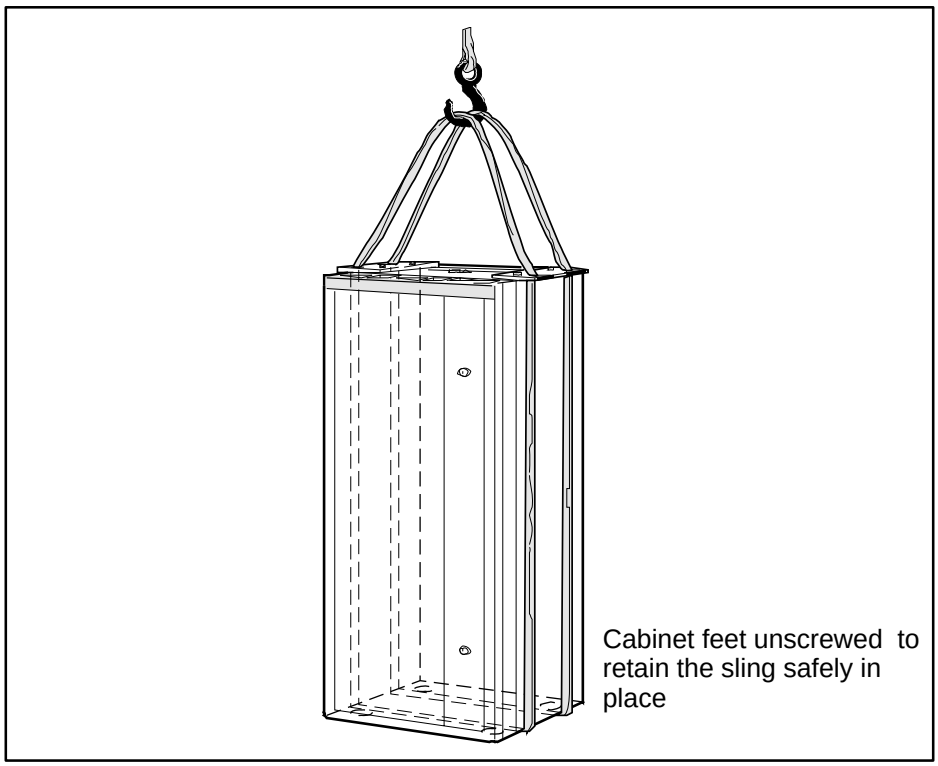


*Figure 3 Lifting sling mounted*

# Glossary - RBS 200 series

**Contents** **Page**


**1 General 2**
1.1 Terms and abbreviations 2

# 1 General

This glossary lists abbreviations and acronyms that occur in the RBS manuals. Some basic terms and acronyms needed for cross-references are also included in the list.

In the RBS manuals, terminology defined by GSM is used together with Ericsson terminology.

GSM definitions are listed in GSM recommendation 01.04. Definitions of general (mobile) communication terminology are given in CCITT Red book, volume X.

## 1.1 Terms and abbreviations

An arrow (→) is used to indicate a reference to another entry in this list. Terminology defined by GSM is marked with an asterisk (*).

## Glossary

**A1** Designation of RBS cabinet

Radio cabinets on a site are designated A1, B1, C1, A2 . . ., according to site configuration.

**Abis*** GSM standard BSC-BTS interface

GSM interface standard defining attributes of the communication between BSC and BTS.

**ACB** Alarm Collection Board

The ACB is used to cross-connect internal and external alarms.

**ACU** Alarm Collection Unit

A unit in the TM/PSU and TM magazines that collects and processes common TG alarm signals.

**ANP** Antenna Near Part

**ARFCN** Absolute Radio Frequency Channel Number

**ARU** Alarm Registration Unit

**B1** Designation of RBS cabinet → A1

**BCCH** Broadcast Control CHannel

**BER** Bit Error Rate

**BFI** Bit Frame Indication

**BIM** Battery Interconnection Module

RBS hardware unit for fused connection of batteries to the system and for fused interconnection of power circuits between cabinets.

**BITE** Built In Test Equipment

**BPC** Basic Physical Channel

Denotes the air interface transport vehicle formed by repetition of one time slot on one or several radio frequency channels.

If frequency hopping is not enabled, only one frequency is used to convey the BPC. → TS, → RFCH

**BS** Base Station

**BSC*** Base Station Controller

GSM network unit for control of one or several BTSs.

**BSS** Base Station Subsystem

**BTB** Bus Terminal Board

The BTB board is used for connecting the internal cabinet bus to units in the cabinet.

**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.

GSM defines four burst types:

- AB Access Burst- FB Frequency correction Burst- NB Normal Burst- SB Synchronization Burst

Another fifth burst is defined that may replace an NB when no information is to be transmitted:

- DB Dummy Burst

**C1** Designation of RBS cabinet → A1

**CE** Conformité Européenne

**Cabinet bus** —

The vertical cabinet bus cabling at the left side of the cabinet distributes the TX and TIB/O&M buses. → TX-bus, → TIB, → O&M-bus

**CBCH** Cell Broadcast CHannel

**CCB** Cable Connection Board

Mounted in the left cable shaft of the cabinet, one at each rack position.

**CCCH** Common Control CHannel

**CMAS** Cellular Maintenance Application System

**CME 20** Ericsson GSM system

Ericsson digital land mobile telecommunication system based on the GSM standards.

**COMB** Combiner → FCOMB, → HCOMB

**DCCH** Dedicated Control CHannel

**DEVCB** DEVice Control Bus

**DEVSB** DEVice Speech Bus

**DF** Distribution Field (cabinet)

**DFA** Distribution Field A in DF

Panel for connection of e.g. external alarms to the TRI.

**DFB** Distribution Field B in DF

Coaxial connection field used for PCM cabling between DF and the ETB board(s) in the TRI magazine.

**DTX** Discontinuous Transmission

**E1-3** Extension cabinet 1-3

**ECU** Environmental Control Unit

**EFU** External Fuse Unit

Distribution unit containing two 10A circuit breakers for powering of external units, for instance DC/DC converters.

**EMPC** Extension Module Regional Processor

A module in the TRI magazine. → EMRP

**EMRP** Extension Module Regional Processor

Processor unit in the BSC.

**EMRPB** Extension Module Regional Processor Bus

**ERP** Effective Radiated Power

**ESB** External Synchronization Bus

**ESD** Electrostatic Discharge

Discharge of static electricity, often in the form of a spark. ESD may damage components such as integrated circuits.

**ETB** Exchange Terminal Board

Interface board in TRI handling communication with the BSC or cascaded RBS sites.

**ETC** Exchange Terminal Circuit

Interface in the BSC between group switch and PCM system.

**EXALI** External Alarm Interface

Board in the TRI magazine.

**FCB** Fan Control Board

**FCCH** Frequency Correction CHannel

**FCOMB** Filter Combiner

RBS hardware unit for connection of several radio transmitters to one common transmitter antenna.

The FCOMB is a narrow-band, motor tuned filter coupler.

**GMSK** Gaussian Minimum Shift Keying

**GSM** Global System for Mobile communications

International standard for a TDMA digital mobile communication system. Originally, GSM was an abbreviation for Groupe Special Mobile, which is a European mobile telecommunication interest group, established 1982.

**HCOMB** Hybrid Combiner

RBS hardware unit for connection of several radio transmitters to one common transmitter antenna.

The HCOMB is a broad-band directive coupler, sometimes named 3-dB Coupler.

**IDM** Internal Distribution Module

RBS hardware unit for internal distribution and fusing of 24V DC in a cabinet.

**IMSI** International Mobile Subscriber Identity

**Int. TX-bus** Internal Transmitter Bus

TG internal bus for interconnection of a TRXC and its subordinated RRX and SPPs.

**L1/L2/L3** Layer 1/Layer 2/Layer 3

**LAPD** Link Access Protocol on D-channel

**LAPDm** Link Access Protocol on Dm-channel

**LIB** Line Bus

RBS internal bus for interconnection of a TRXC to a TRI.

**LMH** Local Maintenance Handler

**LMT** Local Maintenance Terminal

Terminal equipment (PC) that can be connected to a TG for operation and maintenance activities at site.

**LRU** Line Replaceable Unit

**LU** Logical Unit

LU is a class of Managed Objects (MO).

TRS defines four LUs:

- TS Time Slot- RX Receiver- TX Transmitter- TF Timing Function

**M1** Master cabinet 1

**MCC** Multicell Cabinet Configuration

**MCU** Measuring Coupling Unit

**MO** Managed Object

A concept used to denote an object, addressed by means of operation and maintenance procedures on Abis OML, in accordance with the TRS operation and maintenance object model.

Two classes of MOs are defined:

- MO TRXC Managed Object Transceiver Controller- MO LU Managed Object Logical Unit

**MOI** Managed Object Instance

**MS** Mobile Station

**MSC** Mobile Switching Center

**MTBF** Mean Time Between Failure

**MTTR** Mean Time To Repair

**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, etc.

**O&M-bus** Operation and Maintenance bus

TG internal bus for interconnection of all TRXCs, RTXs and a TM.

The O&M-bus is duplicated for redundancy reasons.

**OMC** Operation and Maintenance Center

**OSS** Operation Support System

**PA** Power Amplifier

**PCB** Printed Circuit Board

RBS hardware substrate for multifaceted electron dispersion to predetermined connectorized junctions.

**PCM** Pulse Code Modulation

**PCU** Power Control Unit

RBS hardware unit for control and supervision of the 230V power supply system.

**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.

**PR1** Battery rack designation

Battery racks (PR) at one site are designated PR1, PR2 . . ., according to site configuration. → A1

**PSU** Power Supply Unit

RBS hardware unit for AC/DC conversion, DC/DC conversion and 24V DC supply.

**RCCB** Residual Current Circuit Breaker

**RBS** Radio Base Station

All equipment forming an Ericsson base station. RBS, TRS, → BTS

**RBS 200** Radio Base Station 200

Indoor version of an Ericsson radio base station based on the GSM 900 MHz standard. An RBS 200 comprises both hardware and software.

**RBS 203** Radio Base Station 203

Outdoor version of an Ericsson radio base station for max. 2 TRXs based on the GSM 900 MHz standard. An RBS 203 comprises both hardware and software.

**RBS 204** Radio Base Station 204

Outdoor version of an Ericsson radio base station for max. 6 TRXs based on the GSM 900 MHz standard. An RBS 204 comprises both hardware and software.

**RBS 205** Radio Base Station 205

Indoor version of an Ericsson radio base station based on the DCS 1800 standard. An RBS 205 comprises both hardware and software.

**Receiver Multicoupling System** —

Set of RBS hardware units for filtration, amplification and division of received RF signals from one receiver antenna to several radio receivers.

It comprises an RXBP, an RXDA and RXDs.

**RF** Radio Frequency

**RFCH*** Radio Frequency Channel

A radio frequency carrier with its associated bandwidth.

**RHDEV** Remote Handling Device

**RRX** Radio Receiver

RBS hardware unit for reception and decomposition of received RF signal. → RTX

**RTC** Remote TransCoder

**RTH** Remote Transcoder Handler

**RTP** Redundant Transmission Power

DC/DC converter powered from the External Fuse Unit (EFU).

**RTT** Radio Transceiver Terminal

Interface board in TRI handling communication with TRXs.

**RTX** Radio Transmitter

RBS hardware unit for modulation and RF transmission. → TG, → RRX

**RTXPB** Radio Transmitter Power Booster

Combines the RTXPF function with a constant supply voltage to the RTX. → RTXPF

**RTXPF** Radio Transmitter Power Filter

Filter to avoid interference caused by the RTX power supply ramping voltage.

**RU** Replacement Unit

**RX** Receiver

Logical Unit associated with the RRX. → LU

**RX-A** Receiver antenna A

Antenna jacks Rx-A and Rx-B in the connection field at the top of the cabinet provide for Rx-antennas arranged in a space diversity configuration.

**RX-B** Receiver antenna B RX-A

**RXBP** Receiver Band Pass filter

RBS hardware unit for filtration of received RF signals from a receiver antenna. → Receiver Multicoupling System

**RXD** Receiver Divider

RBS hardware unit for division of received RF signals from an RXDA.→ Receiver Multicoupling System

**RXDA** Receiver Divider Amplifier

RBS hardware unit for amplification and division of received RF signals from an RXBP. → Receiver Multicoupling System

**SACCH** Slow Associated Control CHannel

**SAPI** Service Access Point Identifier

**SCH** Synchronization CHannel

**SDCCH** Stand alone Dedicated Control CHannel

**SID** SIlence Description

**SPE** Signal Processing Extension

Circuit board for piggy-backing onto SPU+ board to allow for half-rate function.

**SPP** Signal Processing Part

RBS hardware unit for digital signal processing on one BPC.

**SPU+** Signal Processing Unit

The same function as for the SPP. One SPU equals 8 SPPs.

**SPU++** Signal Processing Unit

The SPU++ combines the SPU+ and the SPE functions in one unit.

**ST** Supervisor Tester

**STC** Signalling Terminal Central

To extend the BSC control functions to remote locations, a pair of signalling terminals STC/STR is used. They provide the transport mechanism for communication with the remote regional processor (EMPC) in TRI.

**STR** Signalling Terminal Remote →STC

**STRP** Signalling Terminal Remote Processor

**TBA** To Be Announced

**TBC** To Be Confirmed

**TBD** To Be Decided

**TCH** Traffic CHannel

**TDMA** Time Division Multiple Access

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

**TDMA frame*** —

GSM air interface time frame structure comprising eight time slots. →TS

**TEI** Terminal End-point Identifier

**Terrestrial Lines** —

Communication lines between a BSC site and an RBS site, based on the CCITT G.703 standard.

**TF** Timing Function

Logical unit associated with the TM. → LU

**TG** Transceiver Group

Set of RBS equipment associated with RF transmission on one common transmitter antenna.

**TGC** Transceiver Group Control

Application for control of the logical units TX and TF, as well as O&M-bus communication.

TGC is implemented as software running in the TRXC. The TGC application software exists in all TRXCs, though active in one only.

**TIB (TIM)** Timing Bus

TG internal bus for distribution of synchronization information from a TM to all TRXCs and RTXs.

**TM** Timing Module

Set of RBS hardware units for generation of high accuracy synchronization information. Comprises a TMCB and TUs.

**TMCB** Timing Module Connection Board

RBS hardware unit for connection of cables to a TM. → TM

**TMOS** Telecommunication Management Operation Support

**TRAU** Transcoder Rate Adaption Unit

**TRI** Transmission Radio Interface

RBS hardware unit for switching of time slots, and conversion of electrical characteristics between the Terrestrial Lines and the RBS internal LIBs.

**TRS** Transceiver System

Within the Ericsson GSM system CME20, the Transceiver System (TRS) has been developed to meet the GSM recommendations of a Base Transceiver Station (BTS).

TRS is a functional structure and shall therefore not be seen as a particular set of hardware or software. →RBS

TRS is made up of five subsystems:

- TCS Transceiver Control Subsystem- RTS Radio Transceiving Subsystem- SPS Signal Processing Subsystem- TMS Timing Subsystem- CAB Cabinet Subsystem

**TRX*** Transceiver

GSM network entity for radio transmission/reception and signal processing, associated with traffic on eight BPCs, that is, all BPCs belonging to one TDMA frame. → RRX, → RTX

**TRXC** Transceiver Controller

RBS hardware unit for control of eight BPCs, by means of subordinated RRX and SPPs or SPUs.

A TRXC that is TGC host controls the TG common resources, RTXs and the TM.

**TRXCONV** Transceiver DC/DC Converter

RBS hardware unit for conversion of 24V DC to 5V DC and 12V DC, feeding a TRXC and its subordinated RRX and SPPs.

**TRXD** Transceiver Digital

Set of RBS hardware units strictly associated with one TRXC, that is, a TRXC, eight SPPs or one SPU and one RRX.

**TRXT** Transceiver Tester

A functional unit in the TRS system used for testing the functionality of the TRXs.

**TS*** Time Slot

A 0.577ms time period (TDMA frame subunit) corresponding to 156.25 raw bits of information. The eight time slots of each TDMA frame are numbered 0,..., 7. → Burst

It is also the name of the logical unit associated with the SPP. → LU

**TSW** Time Switch

**TU** Timing Unit

RBS hardware unit for generation of high accuracy synchronization signals. → TM

**TX** Transmitter

Logical Unit associated with the RTX. → LU

**TX-bus** Transmitter bus

TG internal bus for interconnection of all RTXs to a TRXC. The TX-bus is an extension of an Int. TX-bus.

**TXBP** Transmitter Band Pass filter

**TXD** Transmitter Divider

RBS hardware unit for division of transmitted RF signals for feed back to the radio transmitters.

**UPSim** User Part SIMulator

**V24I** V.24 Interface

**VAD** Voice Activity Detector

**VLR** Visiting Location Register

**VSWR** Voltage Standing Wave Ratio

| Uppgjord — *Prepared* | | Datum — *Date* | Rev | Dokumentnr — *Document no* |
|---|---|---|---|---|
| SG/ERA/LRN/ZG Lennart Wallin 850 45961 | | 1999-10-05 | A | 109 21-LZN 302 006-2 Uen |
| Godkänd — *Approved* | Kontr — *Checked* | | | Tillhör/referens — *File/reference* |
| ERA/LRN/ZGC (Leif-Olof Fager) | | | | |

# 1 Product

RBS 200 Installation Manual, G-module (LZN 302 006)

# 2 Revision Information

R-state from R6A to R7A

# 3 General Information

- Document number of the manual, and associated documents, has been changed to LZN 302 006 (previous number: EN/LZB 119 1588/1).
- The TMCB unit has been upgraded to enable TG Synch with RBS 2202 cabinets.

## 3.1 Detailed Information

The following changes and/or revisions have been made:

- Chapter 3-0, General Cabinet Information:
  - Figure 12, Connection field, has been updated.
  - Section 5, “Equipping Magazines with PCBs and Units”:

    Subsections 5.1 and 5.2 have been updated.
  - The following figures and associated tables have been updated:

    Figure 26, RTX magazine

    Figure 27, TM/PSU magazine

    Figure 28, TM/PSU magazine

    Figure 29, TM magazine
  - Subsection 7.6, Signal cabling:

    TM-bus data have been removed.
- Chapter 3-1, Master Cabinet BDE 201 162/-:
  - The following cabling diagrams and associated tables have been updated:

Figure 3, +24 V DC Distribution cabling

Figure 7, RX Cabling

Figure 10 LIB and alarm cabling

- Chapter 3-3, External Cabling
  - Subsection 1.1, External Cables

    The following have been updated:

    Table 1

    Figure 2, Signal cabling, 3 cell configuration
- Chapter 5-0, Material Specification:
  - Subsection 1.2, Supplementary equipment:

    Table 5 has been updated

| Uppgjord — *Prepared* | Faktaansvarig — *Subject responsible* | Nr — *No.* | | |
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# Revision History

**Contents** **Page**

**1 Revision History 2**
1.1 R5A to R6A 2

# 1 Revision History

## 1.1 R5A to R6A

The following changes and/or revisions have been made:

- CAPTION LIST; revised from E to F.
- LIST OF DOCUMENTS; revised from E to F.
- Chapter 0; TROUBLE REPORT INSTRUCTION; Revised from A to B;
- Chapter 3; RADIO CABINET;
  - Section 2, Extension Cabinet; revised from A to B;

    Figure 13 revised from C to D.
  - Section 8; RBS 200-TRXT Installation; new document .
  - Section 9; RBS 200 Installation Instructions; new document .
- Chapter 7, REVISION HISTORY; revised from C to D.

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# Revision History

## Contents

**1 Revision History 2**
1.1 R4A to R5A 2

# 1 Revision History

All documentation has been put into SGML format. Owing to this change, nearly all documents have been assigned new document numbers to enable them to be stored centrally in GASK2. This changeover is also necessary to produce the documentation in Dynatext for electronic publishing and online viewing.

## 1.1 R4A to R5A

The following changes and/or revisions have been made:

- LIST OF DOCUMENTS; revised from E to F.
- Chapter 0; INTRODUCTION; Revised from E to F;

  Antenna Configuration reference added.

  Power Supply Appendices reference added.

  TROUBLE REPORT INSTRUCTION; revised from B to A; new document number. Trouble Report form has been incorporated into the new document.

  NUMBERING OF ERICSSON PRODUCTS AND DOCUMENTS; revised from RA to A; new document number.
- Chapter 1; SAFETY; revised from RE to A; new document number.

  Section 1.1; Label Locations; rev. A; new document number.
- Chapter 2; SITE INSTALLATION; revised from D to A; new document number.
- Chapter 3; RADIO CABINET;

  Section 0; General Cabinet Information; revised from E to A; new document number.

  Section 1; Master Cabinet; revised from D to A; new document number.

  Section 2, Extension Cabinet; revised from E to A; new document number.

  Section 3; External Cabling; rev. A; new document number.

  Section 4; Labelling; revised from B to A; new document number.

Section 5; Co-siting; revised from C to A; new document number.

Section 6; Connection of TRI;.

– Sub-section 6.0; TRI Magazine; rev. A; new document number.

– Sub-section 6.1; Connection of a Second TRI; revised from B to A; new document number.

Section 7; Installation Strapping Instructions; rev. A; new document number.

- Chapter 4; POWER SUPPLY INST. & COMMISSIONING;

Section 0; Power Supply 230V AC;

– Sub-section 4.0.0; Power Supply 230V AC, General; revised from D to A; new document number

Appendices 1/1073-BZZ 207 01 Ux, 2/ 1073-BZZ 207 01 Ux and 1911-BZZ 207 01 Ux have been removed from the manual. See reference page in the sub-section.

– Sub-section 4.0.1; Power Supply 230V AC, Installation; revised from B to A; new document number

– Sub-section 4.0.2; Power Supply 230V AC, Battery stand; revised from B to A; new document number

– Sub-section 4.0.3; Power Supply 230V AC, Commissioning; revised from C to A; new document number

Section 1; Power Supply -48V DC;

– Sub-section 4.1.0; Power Supply -48V DC, General; revised from B to A; new document number

– Sub-section 4.1.1; Power Supply -48V DC, Installation; revised from B to A; new document number

– Sub-section 4.1.2; Power Supply -48V DC, Commissioning; revised from B to A; new document number

Section 2; Power Supply +24V DC; revised from B to A; new document number

- Chapter 5; SUPPLEMENTARY INFORMATION;

  Section 1.0; Material Specification; rev. A; new document number.

  Section 1.1; Lifting of Cabinet; revised from B to A; new document number.

- Chapter 6; GLOSSARY; revised from C to A; new document number.

- Chapter 7, REVISION HISTORY; revised from B to C; new document number.

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# Revision History

**Contents** **Page**

**1 Revision History 2**
1.1 R4A to R5A 2

# 1 Revision History

## 1.1 R4A to R5A

The following changes and/or revisions have been made:

- BINDER LABEL; revised from D to E.
- CONTENTS; revised from D to E.
- LIST OF DOCUMENTS; revised from D to E.
- Chapter 0; INTRODUCTION; Objectives revised from D to E.

**Note** Added: The G-module is backward compatible.

- Chapter 1; SAFETY; revised from RD to RE.
- Chapter 2; SITE INSTALLATION; revised from C to D.

  Page 13; Earth collection bar; The earth collection bar shall have a resistance to earth of max.10 ohms, changed to, The earth collection bar shall be connected to an earth electrode system according to IEC 1024-1.

- Chapter 3; RADIO CABINET;

  Section 0; General Cabinet Information; revised from D to E.

  Page 5; Prerequisites; the connection to earth is correct, with a resistance of less than 10 Ω changed to, the connection to earth is correct, in accordance with IEC 1024-1.

  Page 26; Table 2; all Fan Units changed from –/11 to –/1.

  Page 37; Figure 21; Hybrid Combiner inputs labeled A and B.

  Page 38; NOTE; The two combiner units must be mounted according to Figure 21. changed to The two combiner units must be mounted according to Figure 22.

  Page 40; Adapter RPM 113 12/01 has changed Product Number to Adapter KRY 101 1352/1.

  Page 40; U-link RPM 113 14/01 has changed Product Number to KRY 101 1442/1.

  Page 41; Figure 23; Adapter RPM 113 12/01 has changed Product Number to Adapter KRY 101 1352/1.

Page 41; Figure 23; Adapter RPM 113 14/01 has changed Product Number to Adapter KRY 101 1442/1.

Page 61; The earth collection bar shall have a resistance to earth of less than 10 ohms, changed to, the earth collection bar shall be connected to an earth electrode system according to IEC 1024-1.

Page 62; +24V DC; The earth collection bar must provide a resistance of less than 10 ohms, changed to, The earth collection bar shall be connected to an earth electrode system according to IEC 1024-1.

Page 62; -48V DC, DC/DC converter; The earth collection bar, to which all the mechanical equipment shall be connected, shall provide a resistance to earth of less than 10 ohms, is changed to, All converter units shall be connected to the earth collection bar, which shall be connected to an earth electrode system according to IEC 1024-1.

Section 2, Extension Cabinet; revised from D to E.

Page 4; Cabinet extension and Combiners text added.

Page 7; Vertical pos 08; text revised.

Page 25; 1) in Figure 14; revised.

Section 4; Labelling; revised from A to B.

Page 3; For the TRI, a sheet with labels is delivered with the supplementary kits NTM 201 245/3 and /4; removed.

Page 3; Labelling of the external cables has to be solved locally; removed.

Figure 1 moved from page 4 to page 3.

Section 7; Strapping Instructions; new section.

Installation Strapping Instructions; new document, Rev. A.

- Chapter 4; POWER SUPPLY INST. & COMMISSIONING;

Section 0.0; Power Supply 230V AC, General; rev. C to D.

Page 1; Contents; Wiring diagram 2/1073-BZZ 207 01 Ux (15 pages); new document.

Page 7; CAUTION; Read Safety instructions regarding handling of batteries added.

Page 8; Figure 5; revised to show BIM, BMG 701 014/- in magazine; new text and note added.

Appendix; 1/1073-BZZ 207 01 Ux; revised from J to L; 2/1073-BZZ 207 01 Ux; new document;1911-BZZ 207 01 Ux; revised from E to F.

- Chapter 5; SUPPLEMENTARY INFORMATION;

  Section 1, Lifting Cabinets; Document number changed to 0101, Rev. B.

  Section header changed to RBS 200 INST. MANUAL, and so forth.

  Page 4; revised. Extension Cabinet figure removed.

- Chapter 7, REVISION HISTORY; revised from A to B.