BENDER ⚡

PRC1470

Control and indication panel for RCMS470 and EDS47x systems

Power supply On

S1/S1   10:35

Status

Normal   Warning   Alarm

Lamp
Test

Buzzer mute
Menu ESC

Scroll Text
Menu up

Add.Text
Menu down

Menu
Enter

Test
⊗

ESC

▲

▼

Menu
↵

BENDER

Quality System
Certified
DET NORSKE VERITAS
ESTABLISHED 1864
ISO 9001

C E

Table of contents

BENDER

Table of contents

1. Safety and warranty

About the operating manual

This operating manual has been compiled with the greatest possible care. Nevertheless, errors and mistakes cannot be entirely ruled out. The BENDER companies assume no liability whatsoever for any injury to persons or damage to property which may be sustained as a result of faults or errors in these operating instructions.

The PRC1470 control and indication panel is used as a part of a system. Please read also the manual of the PC software and the other system components to become acquainted with the entire system.

Technical support

BENDER provides customers with technical support and answers to questions regarding the PRC1470 control and indication panel. Please contact technical sales or product management **+49-6401 - 807-0** or e-mail **info@bender-de.com**. We can also offer you on-site service. Please speak to our service department about this.

Delivery, storage

Please check the goods received for damage and compare these with the delivery notes. In the case of transport damage, please inform BENDER immediately. The PRC1470 control and indication panel must only be stored in areas protected from dust, damp, spray and tripping water and in which the specified storage temperatures are maintained.

Intended use

The PRC1470 control and indication panel is intended for central indication, control and setting of RCMS470 residual current monitoring systems and EDS470/473 insulation fault location systems.

Any type of use beyond this is deemed to be use other than for the intended purpose. BENDER shall not be liable for any damage arising therefrom.

Use in accordance with the intended purpose also includes:

•   Observance of all instructions in this manual

•   Observing the test intervals

Personnel

Only suitably qualified personnel may work on the PRC1470 control and indication panel. Qualified means familiar with the installation, commissioning and operation of the product and with training appropriate to the work.

Personnel must have read and understood the safety section and warning information in this operating manual.

Safe handling

Knowledge of the basic safety information and the safety regulations is a basic requirement for safe handling and fault-free operation of the PRC1470 control and indication panel.

This operating manual, especially the safety information, must be taken into account above all by personnel who work on the PRC1470 control and indication panel.

Hazards when handling the system

The PRC1470 control and indication panel is built in accordance with the state of the art and the recognized technical safety regulations. Nevertheless, danger to the life and limb of the user or third persons or damage to the PRC1470 control and indication panel or other property may occur during its use.

The PRC1470 control and indication panel must only be used:

• For the purpose for which it is intended

• When it is in perfect technical condition as far as safety is concerned

Faults which may impair safety must be eliminated immediately.

Impermissible modifications and the use of spare parts and additional equipment not sold or recommended by the manufacturer of the equipment may cause fires, electric shock and injuries.

Unauthorized persons must not have access to the control and indication panel.

Explanation of symbols and warnings

The following designations and symbols are used in BENDER documentation for symbols and warnings:

Danger !

This symbols means an immediate threat of danger to the life and health of human beings. Failure to comply with these warnings means that death, serious physical injury or substantial damage to property **will** ensue if the relevant precautions are not taken.

Warning

This symbol means a possible threat of danger to the life and health of human beings.
Failure to comply with these warnings means that death, serious physical injury or substantial damage to property **will** ensue if the relevant precautions are not taken.

Caution

This symbol means a possibly dangerous situation.

Failure to comply with these warnings means that slight physical injury or damage to property may ensue if the relevant precautions are not taken.

This symbol gives important information about the correct handling of the PRC1470.

Failure to comply with this information can result in faults in the PRC1470 or in its environment.

Where you see this symbol, you will find application tips and other particularly useful information.

These help you to make optimum use of the control and indication panel.

Warranty statement

BENDER guarantees the PRC1470 and all its components to be free of faults in manufacturing and material quality under normal storage or operating conditions for a period of **24 months** from the date of delivery.

This guarantee does not extend to maintenance work of any kind.

The warranty shall only be valid for the first purchaser, and shall not extend to products and individual parts thereof which have not been correctly used, or which have undergone modifications. Any warranty shall lapse if the PRC1470 is used other than for the intended purpose or under abnormal conditions.

The warranty obligation is limited to the repair or the exchange of a product which has been sent to BENDER within the warranty period. The qualifying conditions are that BENDER shall recognize the product as being faulty, and that the fault cannot be attributed to improper handling or modification of the device, nor to abnormal operating conditions.

Any warranty shall lapse if repairs or modifications are undertaken on the PRC1470 by persons not authorized by BENDER.

The foregoing warranty provisions apply exclusively and instead of all other contractual or legal warranty obligations including, but not restricted to, the legal warranty of marketability, suitability for use or expediency for a specified use.

BENDER shall not assume any liability for direct or indirect concomitant or subsequent damage, regardless of whether these are attributable to legal, illegal or other actions.

Warranty and liability

Warranty and liability claims in cases of personal injury or damage to property are **excluded** if they are attributable to one or more of the following causes:

• Use of the PRC1470 other than for the indended purpose

• Incorrect installation, commissioning, operation and maintenance of the PRC1470

• Operation of the PRC1470 with defective safety equipment of incorrectly fitted or non-functional safety and protection equipment

• Non-observance of information in the operating manual regarding transport, storage, installation, commissioning, operation and maintenance of the PRC1470

• Unauthorized structural modifications to the PRC1470

• Non-observance of technical data

• Incorrectly executed repairs and the use of spare parts or accessories which are not recommended by the manufacturer

• Cases of disaster and force majeure

2. System description

The PRC1470 control and indication panel provides alarm/fault message indication plus control functions for RCMS residual current monitoring systems and EDS470/473 insulation fault location systems.
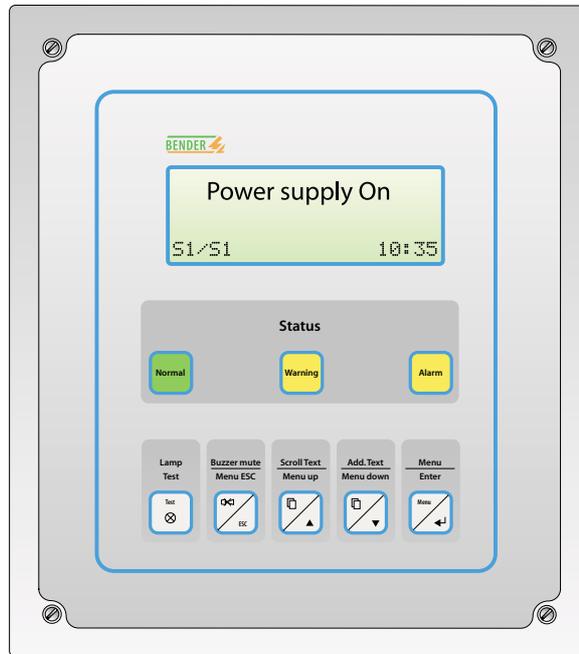
Features PRC1470

- Large, backlit 4 x 20 character text display

- Indication LEDs for normal, warning and alarm conditions

- Ease of connection to other systems via 8(16) relay outputs EIB interface and 16 digital input options

- Serial interface RS232C and EIB interface (option)

- Memory with real-time clock stores all alarm and warning messages

- Optical and audible alarm messages

- Function keys to, scroll text display, lamp test. Accept/alarm mute audible and set-up menu navigation

- Multiple PRC1470 may be connected on a single serial communication bus

- Select German or English language options

- user-programmable alarm text messages

- Communication with other BENDER devices via internal interface, respectively with other PRC1470 devices via external interface

- Set-up alarm text messages via RS232C interface, or RS485 (external) and PC software

- Easy clean Lexan front foil

- PRC1470AP   available as surface-mounting type
  PRC1470   available as flush-mounting type

Clear text display

The text display of the PRC1470 has 4 lines of 20 characters 8 mm high:

- The first three lines are intended for alarm text messages
- The fourth line includes status messages (e.g. date, time, number of messages)

The text display has a further three lines of alarm/warning information accessible via scroll keys. The alarm/warning/status text messages may be programmed via PC software.

Three LEDs are incorporated below the display to provide normal (green), warning (yellow) and alarm (yellow) indication.

Memory

Alarm/warning messages are automatically stored with date and time stamp. 650 text messages may be stored in memory; these may be accessed via the function keys or PC software. A new message automatically overwrites the oldest message (e.g. message 651 overwrites message 1).

Interfaces

The PRC1470 control and indication panel provides the following interfaces:

two RS485 interfaces with BMS protocol (BMS = **B**ender **m**easuring **i**nterface)

- **Internal** interface (RS485) for the connection to BENDER devices with BMS protocol, as for example EDS470 or RCMS470-12. The PRC1470 always represents the Master and therefore is permanently set to the internal **Address 1**.

- **External** interface (RS485) to connect to higher-level control and indication devices, as for example to PRC1470 and TM operator panels.

  To set up alarm text messages and other information, connect the external interface of the PRC1470 via an DI-2 interface coupler to a personal computer.

- Each device on an internal interface has a unique address no. and each PRC1470 has both internal and external interface address numbers and there is one master unit per interface.

- With this structured bus and addressing arrangement, it is quite easy to arrange for any PRC1470 to display messages from any other unit connected to a common system.

RS232 interface

- Optional interface to set-up alarm text messages and other information with the accompanying PC software. The scope of delivery also includes a NULL modem cable. The 9-pole Sub-D plug of the interface is only accessible after opening the frontplate of the PRC1470.

- ... is also used for software update.

Inputs and outputs

EIB interface
- Optional interface for the connection to other systems.

3 status LEDs
- 3 LEDs integrated in the frontplate **Normal**, **Warning** and **Alarm** provide optical common alarm.
- The alarm/warning/status messages can be assigned to the respective LED via PC software.

Buzzer
- acoustical common alarm
- The PC software can be used to select the respective alarm the buzzer sound.

8 relay outputs
- for signalling to other monitoring systems
- with potential-free contacts
- relay 1 and 2   = changeover contact, AC 250 V, 8 A
  relay 3 ... 8   = NO contact, AC 250 V, 5 A
- optionally a further eight relay outputs (NO contacts) can be retrofitted by means of the BMI100-16/8 snap-on module
- The outputs can be assigned to one alarm text messages each so that a switching command is triggered when the response value is exceeded.

16 digital inputs
- can optionally be retrofitted by means of the BMI100-16/8 snap-on module
- The digital inputs are electrically isolated from each other. The input voltage is UC 10 ... 30 V / 3 ... 5 mA (HIGH = 10 ... 30 V / LOW = 0 ... 5 V)
- to display messages of devices and systems without an RS485 interface with BMS protocol
- text messages, lamps and switching commands can be assigned to each digital input via PC software
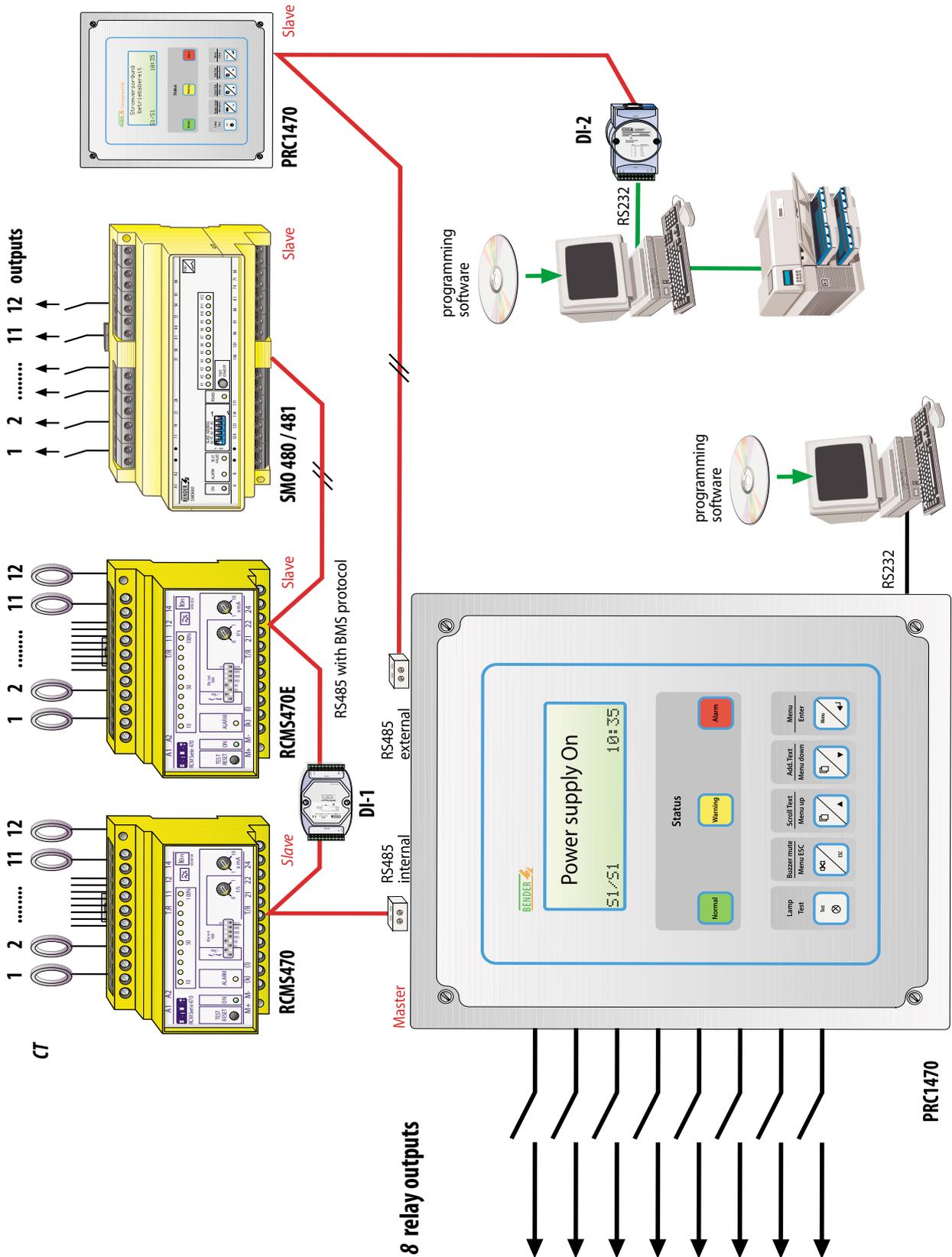
Figure 11-1:   *Inputs and outputs of the PRC1470 control and indication panel in combination with an RCMS system, for example*

BENDER

3. Installation and connection

Unpacking

- Take all the components out of the packing boxes. When unpacking avoid the use of tools with sharp edges which may damage the contents of the packaging.

- The PRC1470 must comprise the following components:
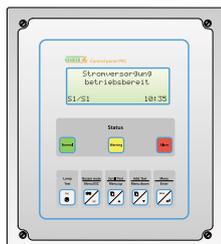
| PRC1470 | PC software | NULL modem cable | this operating manual |
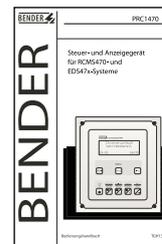
- Check against the delivery note to see whether all components are included. The article numbers printed on the nameplates will help you to identify the components.

- Check all the delivered components for obvious damage. Only use devices which are in perfect condition. If a device is damaged contact BENDER. Your next contact partner is indicated in the shipping documents.

- If the device has been stored in cold environment proceed as follows: leave the device in a location at room temperature for 3-4 hours without plugging it into a power source. Changing the device from cold to warm locations may cause dampness on the equipment. If damp devices are put into operation, electrical components may be damaged and touching the device may result in an electric shock.

Danger !

Installation and connection (only PRC1470AP)

1. Use the drilling template provided in the annex of this technical manual to mark the drilling holes at the wall. Then drill four holes (ø min. 8 mm) and insert the four plugs according to the template.

2. With the PRC1470 facing you, loosen and remove the screws to open the front plate and put it down toward the retaining cables. Take care not to break off any wires.

3. Hold the open PRC1470 to the wall, with front plate hanging down, to fix it with stainless screws.

4. Connect the supply voltage U_S to the terminals 0 and 230 of the transfromer and link all the remaining connections according to the wiring diagram (see page 13).

5. Adjust the DIP switches to the terminating resistance of the RS485 interface as described on page 15.

6. Put the front plate onto the enclosure and tighten the four screws.

Installation and connection (flush mounting or wall-recess mounting)

1. Open the device so that the front plate is hanging down. Insert the enclosure.
2. Connect the supply voltage U_S to the terminals 0 and 230 of the transformer. Also connect the PE! Then connect all the remaining connections according to the wiring diagram.
3. Set the DIP switches for the terminating resistor of the RS485 interface, as described on page 15.
4. Put the front plate onto the enclosure and tighten the four screws.

Wiring diagram

Relay output K1
11
14 12

Relay output K2
21
24 22

Relay output K3
31
34

Relay output K4
41
44

Relay output K5
51
54

Relay output K6
61
64

Relay output K7
71
74

Relay output K8
81
84

RS485 internal

RS485 external

Supply voltage AC 50...60 Hz, 230 V

For fixing the surface mount enclosure, the front plate can be removed (if required) by loosening the 2 retaining cables and the plug-in connectors.

Relay outputs

Connection A and B of the internal RS485 interface (I2)

DIP switch (JP15) for terminating resistor of the internal RS485 interface

DIP switch (JP14) for terminating resistor of the external RS485 interface

Connection A and B (I1) of the external RS485 interface

Service interface RS232, 9-pole D-sub

PE connection (protective earth)

Supply voltage +24 V DC. Two terminals are provided for the power supply of other equipment.

LC-display contrast setting

Reset button
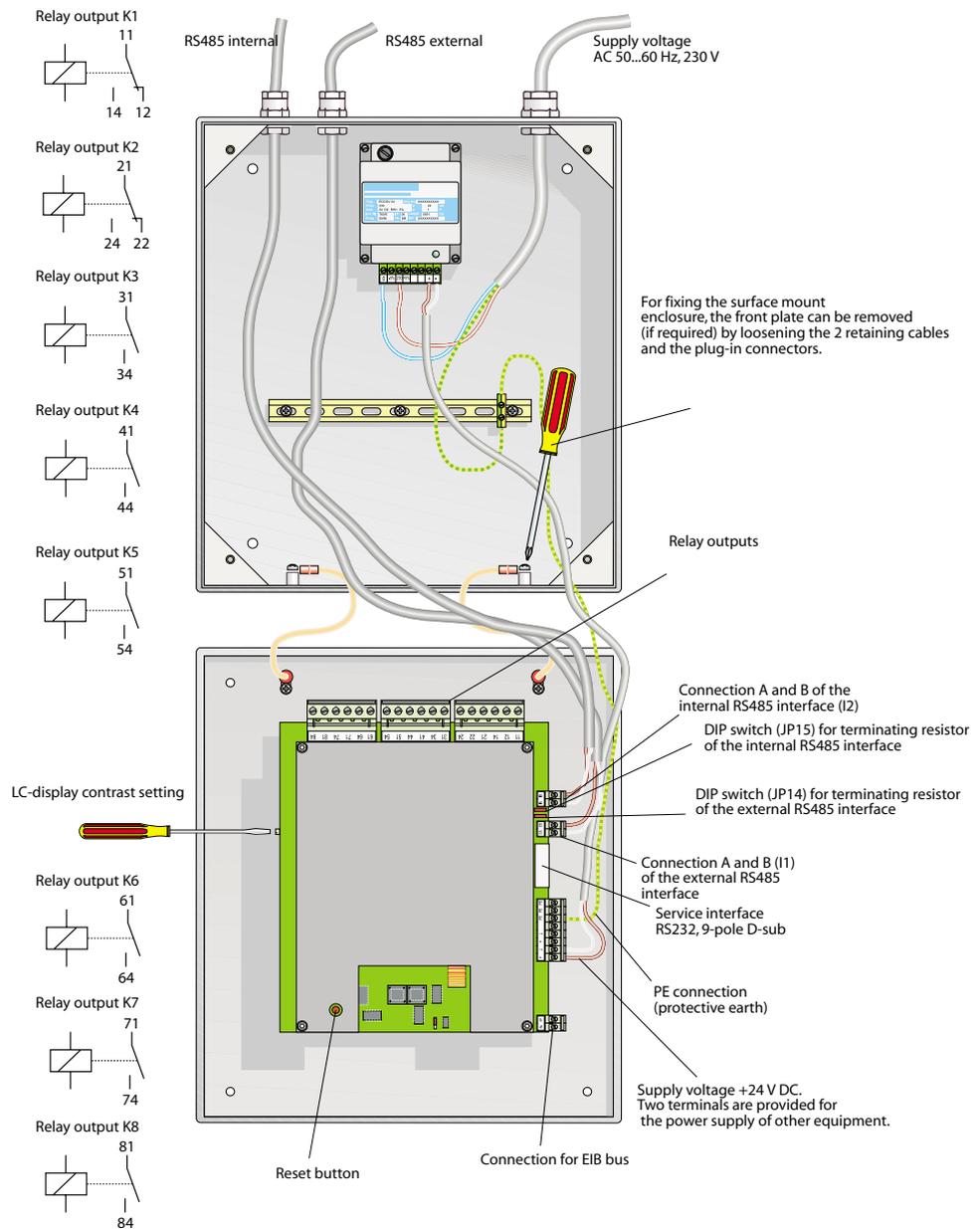
Connection for EIB bus

Figure 13-1:   Inside view PRC1470

Connection of the serial interfaces

Communication between the PRC1470 control and indication panel and the other system components takes place via the two RS485 interfaces (with BMS protocol). These are implemented as two-wire connections (device terminals A and B).

Bus topology

The optimum topology for the RS485 interface is a point-to-point connection. In this connection , device 1 is connected to device 2, device 2 to device 3, device 3 to device n (daisy chain connection). The RS485 bus therefore represents a continuous path without subcircuits.

These are three examples of a favourable arrangement:
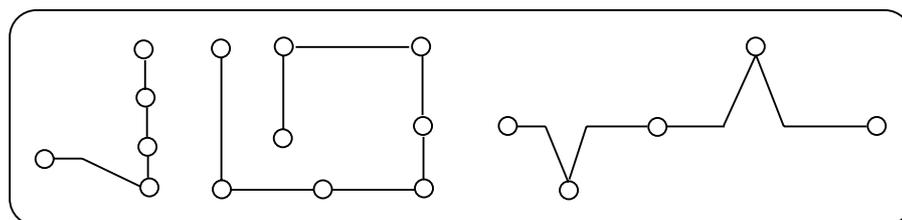
Figure 14-1: favourable arrangements for an RS485 bus

The sketch below shows bus systems that have extremely **unfavourable** arrangements. Bus topologies as shown in these three examples must be avoided:
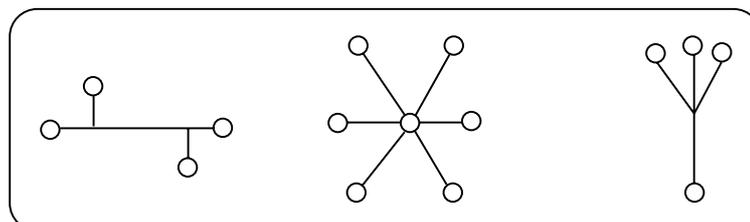
Figure 14-2: very unfavourable arrangements for an RS485 bus

Cables, cable lengths

The specification of the RS485 interface limits the maximum length of the interface to 1200 m. With longer cables, additional measures are necessary (installation of DI-1 repeaters).
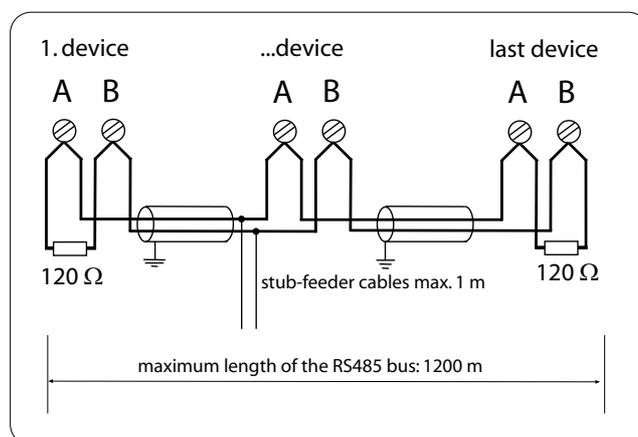
A shielded cable should be used for the interface cable. A suitable type of cable is, for example, IY(ST)Y 2x2x0.8.

If interface cables are implemented as spur cables, the maximum length of the spur is limited to 1 m. If longer spur cables are used, safe communication cannot be guaranteed.

Figure 14-3: cable length

Bus terminations

The RS485 interface must be terminated at both ends with a 120 Ω resistance (0.4 W). The PRC1470 control and indication panel is equipped with one terminating resistor each for both the internal and external bus. It can be switched off by means of the DIP switch (see page 13) -please observe the marking on/off on the DIP switch. If several PRC1470 control and indication panels are connected via an RS485 bus, the terminating resistor must be removed from those modules that are not located at the end of the bus.

The data transmission protocol corresponds to the format for BENDER measuring device interfaces (BMS protocol). Information about the interface commands can be obtained by BENDER.

Data transmission is by ASCII characters. The data of the internal and external interface is:

Baud rate: 9600 baud (adjustable with the external interface)
Transmission: 1 start bit, 7 data bits, 1 parity bit, 1 stop bit (1,7,E,1)
Parity: even
Checksum: sum of all bytes transmitted = 0 (without CR and LF)
Address: 001 ... 255 and 000 as general address

MASTER-SLAVE concept

The RS485 network with PRC1470 works according to the MASTER-SLAVE principle. That means that one device represents the MASTER and all other bus nodes are SLAVES.

It is important that only **one** MASTER is present in each network. Address **1** is assigned to the MASTER. All bus nodes are identified by a unique address. The MASTER scans all other devices on the bus cyclically, listens to their signals and then carries out specific commands.

One DI-1 repeater should be installed after approximately 30 devices.

Internal interface

Theoretically, 150 devices with BMS protocol can be connected to the internal interface. In practice, however, much fewer devices are connected since individual address ranges are assigned to specific devices. These are for example:

Address	Device types	Device types
0	There is no device assigned to address 0! Messages sent to address 0 will be assigned to all devices connected to the interface (broadcast function).	
1...30	Monitoring devices generating alarm and/or operating messages. Features: address 1: Master for MK2418..., TM..., PRC1470, FTC470...	EDS..., RCMS..., SMI..., PRC1470, FTC470..., MK2418..., 107TD47, IRDH375-B/575
31...60	Switching devices switching a relay contact in case of alarm or a switching command.	SMO...., EDS....E2...
61...90	Monitoring devices with extended address range which generate alarm and/or operating messages. These devices have the suffix "-E".	EDS...E..., RCMS...E
91...99	Devices without own measuring tasks, e.g. data logger (under consideration).	
100	Master, without own measuring tasks	PRC470
101...103	Additional Master which temporarily may take over the master function. Example: gateway to other field buses (under consideration).	FTC470... (address 103)
111...119	Test devices for insulation fault location	PGH...
121...150	Test device for insulation fault location with extended address range. These devices have the suffix "-E".	PGH...E

On the internal interface the PRC1470 always has address 1.

External interface

The external interface is mainly used to connect several PRC1470 control and indication panels. But also other devices can be connected, such as TM operator panels. Up to 60 devices can be connected. The external interface works without address ranges.

For the external interface the following applies:

• If the PRC1470 control and indication panel is the only control device in the system, it must be set to address 1

• Additional PRC1470 control and indication panels are serially set to adresses 2, 3 etc. The function of the system can only be guaranteed if there are **no gaps** between the addresses.

Example for the address assignment

RS485 external	address 1	address 2	address 3
	PRC1470	**PRC1470**	**RCMS470-12**
RS485 internal	address 1	address 1	
	001e/001i	002e/001i	003e/000i

RS485	address 2	address 2
	BENDER device with BMS	**BENDER device with BMS**
	001e/002i	002e/002i
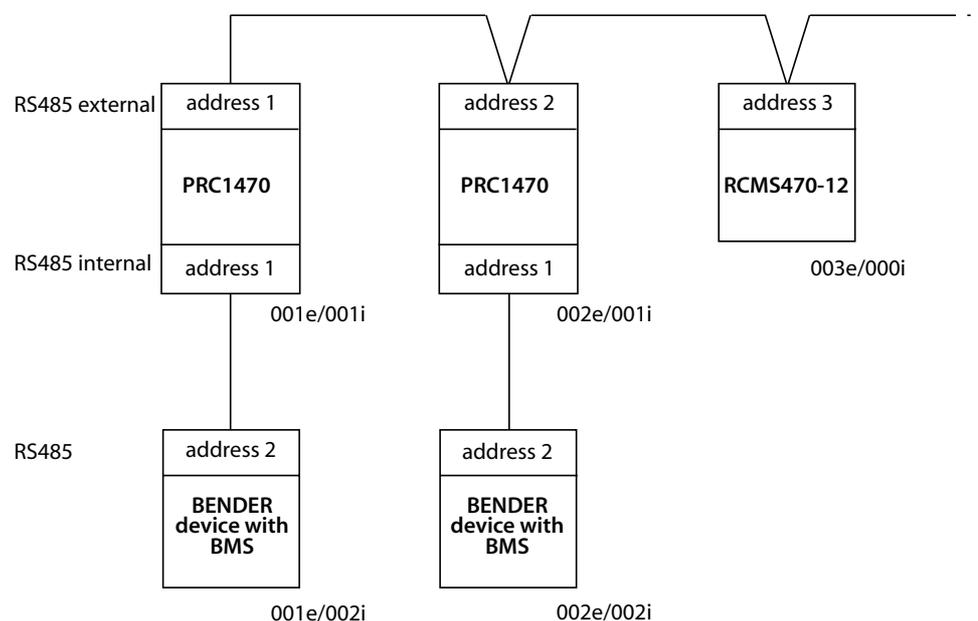
10 golden rules for structuring BMS networks

1. Every network must be controlled by a MASTER.
2. There may only be one MASTER in each network.
3. The MASTER must be set to address 1.
4. To each SLAVE a specific address must be assigned, but in no case address 1.
5. Addresses must not be duplicate assigned.
6. The network must be terminated at **both** ends with terminating resistors of 120 Ω .
7. The network length must not exceed 1200 m unless DI-1 repeaters are used.
8. The number of devices on a network must not exceed 32 unless a DI-1 repeater is used.
9. The network must have a favourable topology (see page 14).
10. The interface cable must be shielded and earthed at **one** side.

If the basic rules are observed, you will have no problems with your BENDER system.

4. Commissioning and testing

Before switching on

1. Check all connections of the PRC1470 to the entire system

   - Is the system voltage identical with the indication on the nameplate of the PRC1470? .... ❐

   - Is the power supply cable of the PRC1470 properly connected?.............. ❐

   - Are the interface cables (internal and external) properly connected?....... ❐

   - Are the terminating resistors properly connected??................................... ❐

   - Are the relay outputs properly connected ? .... ❐

   - Are possible EIB interface connections correctly connected? .... ❐

2. Close the cover of the PRC1470... ❐

3. Check the readiness for operation of the other system components

   - Are the other devices properly connected?... ❐

   - Are all other device addresses set for the RS485 interface
     (no address double assigned)?... ❐

   - If older devices exist in the system: has the software of these devices been updated (firmware version) ?.. ❐

After switching on

1. Measure the supply voltage of the PRC1470 (terminals, +, ⊥ .... ❐

2. Does the green LED **Normal** light up at the PRC1470?............................... ❐

3. What kind of text is indicated on the PRC1470 display? -If the settings of the PRC1470 have not yet been adapted to the system, error messages are likely to occur. Make a note of these messages .... ❐

4. Check once more the addresses and the firmware version of the connected devices: connect a personal computer with the accompanying software to the external interface of the PRC1470. Call up the function **bus scanning**. .... ❐

5. Carry out all the settings as described in chapter **5. operation and settings** and write them down into the table .... ❐

6. Select **4. Test mode** from the menu **9. system technique** in order to check the settings of all external devices .... ❐

7. Use the PC software to program the text of the error messages to be displayed on the PRC1470 .... ❐

8. Check whether error messages are correctly displayed on the PRC1470. For that purpose simulate individual faults such as device failure or an insulation fault .... ❐

Maintenance

The PRC1470 control and indication panel does not require regular maintenance.

5. Operation and setting

PRC1470 operating keys

The PRC1470 is operated via five LEDs with the following functions:

	In the operating mode	**In the menu mode**
Lamp Test ⊗	Test of all LEDs integrated in the PRC1470	Test of all LEDs integrated in the PRC1470
Buzzer mute / Menu ESC	To mute the buzzer after alarm indication	To leave the menu
Scroll Text / Menu up ▲	To scroll through the indicated alarm/warning messages if more than 1 message exists	To scroll upwards in the menu
Add. Text / Menu down ▼	Alternate indication between normal text and additional text	To scroll downwards in the menu
Menu Enter ↵	To start the menu mode to carry out the settings at the PRC1470	confirmation of the selected sub menu

Note: If messages exist and the key "scroll text" or "Add. text" are pressed, the current message appears on the display. If no further key is pressed, this indication will be kept for 15 s.

Settings

If supply voltage is applied at the PRC1470, the adjacent display appears for approx. 3 sec.. The address and the firmware version of the device are indicated.

```
** Control panel ***
** PRC1470/Adr.:001**
*Ver. 1.50 *06/11/01*
```

The adjacent display always appears when no messages exist (standard display). The clock starts running.

```
  Bender PRC1470
  Control Panel
for EDS & RCMS systems
              09:50
```

To change the settings, press the key Menu/↵.The main menu appears. The last line (status line) shows which keys are activated:

```
  1. Exit
  2.Password
  3.Time/message
  |ESC|     |↓|    |↵|
```

ESC   To leave the menu
↓   downwards the menu to other functions
↑   upwards the menu to other functions
↵   Enter: confirmation of the selected menu point

Now you have opened the main menu. Use the arrow keys to select the respective sub menu; confirm with the ENTER key.

Menu mode

The following sub menus are available:

1. Exit	To leave the menu mode.
2. Password	To switch the password query on or off. The password is required for the transmission of the configuration between the panel and the personal computer as well as for some changes of the basic settings.
3. Time/message	To set the time interval for the indication of alarm/warning messages when several messages are to be displayed alternately.
4. Buzzer	To set the frequency of the buzzer signal.
5. Common reset	To enable (On) or disable (Off) the acoustical alarm of this PRC1470 by an external reset button. A separate setting is necessary for the internal and external RS485 interface.
6. Date/time	To set time and date of the real-time clock.
7. RS485 external	To set the address and transmission rate (baud rate) of the RS485 interface.
8. External devices	To carry out the settings at the connected evaluators (e.g. EDS470 and RCMS470).
9. System engineering	This menu offers various possibilities for controlling the entire system.
10. Setup transfer	without function
11. Assignment transfer	without function
12. History	Indication of the history with information about messages, acknowledgement times.
13. Change password	To change the password.
14. Language/Sprache	To select German or English language options
15. Info	Information about the device type, the firmware version and the last transfer of assignments.

The menu mode is automatically quitted when in one of the sub menus no key is pressed for longer than 2 minutes (Exception: **Position mode** in the menu **9. System engineering**).

The programming of the alarm text messages is carried out via the accompanying PC software.

1. Exit

The menu mode is quitted.

```
▓ 1. Exit
  2. Password
  3. Time/message
  |ESC|      |↓|   |↵|
```

2. Password

The transmission of basic settings between the PRC1470 and the personal computer as well as the modification of essential settings (as for example in menu **8. External devices**) can be protected with a password.

```
1. Quit
2. Password: x x x
3. Passw. On/Off:  Off
  |ESC|      |↓|  |↵|
```

For that purpose, activate the password query with "On" and then enter the password.

|	
1. Quit	Back to the main menu.
2. Password	Enter the password which consists of 3 numbers. Select the sub menu 2 with the arrow key and confirm with ENTER. Select the first number of the password with the arrow keys, then jump to the next number with ENTER and select the number with the arrow keys, then proceed in the same way with the third number. **The password is factory-set to 807.** If the password is entered correctly, this entry is valid until the menu is quitted and two minutes after.
3. Passw. On/Off	Setting the password query to On (active) or Off (inactive). **Factory setting: On.** Select sub menu 3 with the arrow key and confirm with ENTER. Then choose On or Off with the arrow key and confirm with ENTER.
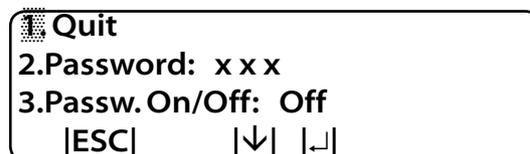
3. Time/message

If several warning/alarm messages accumulate which are to be displayed, these will be indicated alternately. The time a message is to be displayed can be selected in the sub menu 2.Time per message. Setting range: 3 to 8 seconds. **Factory setting: 5 seconds.**

```
1. Quit
2. Time:  8 sec.
   (time per message)
  |ESC|      |↓|  |↵|
```

1.Quit	Back to the main menu.
2. Time per message	Setting of the display time: select sub menu 2 with the arrow key and confirm with ENTER. Then scroll with the arrow key to set the time and confirm with ENTER.
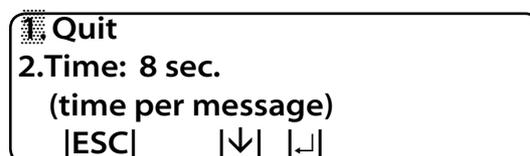
4. Buzzer setting

Setting of the buzzer frequency in the case of a warning/alarm message.

```
▓ Quit
2. Buzzer signal:  3

  |ESC|      |↓|  |↵|
```

1.Quit	Back to the main menu.
2.Buzzer signal	adjustable between 1 and 5.

1 = permanent signal

5 = long breaks between the buzzer signals

During the setting the button „buzzer" lights up and the selected buzzer signal sounds.
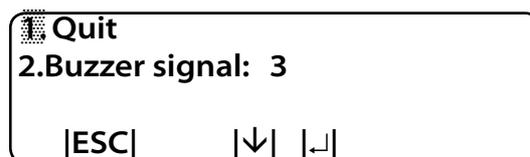
5. Common reset

Setting for this PRC1470: enables (On) or disables (Off) the acknowledgement of the buzzer with the button „buzzer mute" of another indication device (e.g. PRC1470).

```
1. Quit
2. Common reset Int.: On
3. Common reset Ext.: On
 |ESC|        |↓| |↵|
```

When common reset is activated, for example, the alarm (buzzer signal) of a PRC1470 located in the next building can be reset by a centrally arranged PRC1470. The alarm message itself will be indicated until the fault is removed.

1. Quit   Back to the main menu

2. Common reset Int.: to activate common reset for the internal RS485 interface.
           Factory setting: On.
           Allows external reset of the buzzer.

3. Common reset Ext.: to activate common reset for the external RS485 interface.
           Factory setting: On.
           Allows external reset of the buzzer.

6. Time/date

To set the date and time of the real-time clock. The settings remain stored for another 5 days in the case of power interruption. The clock automatically changes from summer to winter time.

```
1. Quit
2. Time    17:45
3. Date  01.01.04
 |ESC|        |↓| |↵|
```

This automatic change complies with the Central European Time. Set the time once more if the time is no longer identical with the local time after automatic change.

1. Quit   Back to the main menu.

2. Time   Setting the time (hours and minutes).

3. Date   Setting the date (DD.MM.YY)

7. RS485 external

Setting the device address and the transmission rate (baudrate) of the **external** RS485 interface.

1. Quit   Back to the main menu

```
1. Quit
2. Addr.  RS485E:    001
3. Baud RS485E: 09600
 |ESC|        |↓| |↵|
```

2. Address   Setting the device address. Selectable range 1 to 250,
           Factory setting: address 1.

3. Baud   Setting the transmission rate (baudrate) of the external interface

           Factory setting: 9600 baud.

Change the device address if several PRC1470 are connected to one external RS485 interface. One PRC1470 must have the address 1 (Master). All the other PRC1470 are serially set to: 2, 3, 4... The function of the system can only be guaranteed when there are **no gaps** between the address numbers.

It is recommended not to change the baudrate. Data exchange can only take place between devices having the same baudrate.

8. External devices

Setting of the interface for the connection to external devices, as for example EDS470-12 or RCMS470-12.

```
Device: input address
Address:  ▓ 001e/ 002i

  |ESC|   |↑|  |↓| |↵|
```
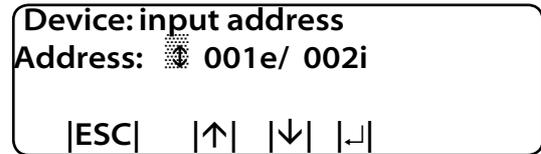
xxxe	Set the address of the PRC1470 on the external interface the external device is to be addressed to. The PRC1470 suggests its own address in this case. It is also possible to set the addresses of other PRC1470 devices.
xxxi	To set the address of the device connected to the internal interface.

Example:

|	
001e/ 002i	An external device with address 2 (for example an EDS470-12) is addressed via the own PRC1470 with address 1 on the internal interface.
001e/ 003i	An external device with address 3 (for example an RCMS470) is addressed via the own PRC1470 with address 1 on the internal interface.

1. Use the arrow keys ↑↓ to select the external address of the PRC1470 and confirm with Enter ↵.

2. Use the arrow keys ↑↓ to select the internal address of the external device and confirm with Enter ↵.

Are all settings correct?

ESC Return to enter the address

↵ to accept the address setting.

```
Device: input address
Address:   001e/ 002i
Input OK?
  |ESC|            |↵|
```
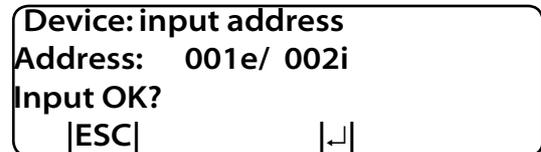
If the device has been recognized, the PRC1470 reads the current settings of the connected device. The first line indicates the device type. To change the device settings proceed as follows:

```
Device: EDS470-12
Setting of device is possible!
Setting OK?  Ent./ESC
           ▓
```

ESC to enter the address again

Ent. to start the parameterization of EDS470-12 or RCMS470-12

The EDS menu and RCM menu offer various possibilities how to set the devices which are described in detail in the technical manuals of the respective systems:

RCMS system	TGH 1270
EDS system	TGH 1243

EDS menu

The EDS470-12 can be set in the menu **8. External devices** of the PRC1470. The following sub menus are available:

1. Exit EDS menu	to leave the EDS menu
2. Relay (NO/NC)	to set the switching behaviour of the alarm relay to N/O or N/C operation
3. Fault memory	to switch on or switch off the fault memory
4. CT type	to set for each of the 12 channels whether a standard CT, a split-core CT or no CT is connected
5. CT monitoring	monitors whether a CT is connected, whether its connection is interrupted or short-circuited or if the CT monitoring is switched off
6. Meas. time (peak)	guarantees effective insulation fault location. To set how often the measurement is to be repeated for each CT in case of a fault.

1. Exit EDS menu

To leave the EDS menu, return to the main menu of the PRC1470.

```
1. Exit EDS menu
2. Relay (NO/NC)
3. Fault memory
   |ESC|        |↓|  |↵|
```
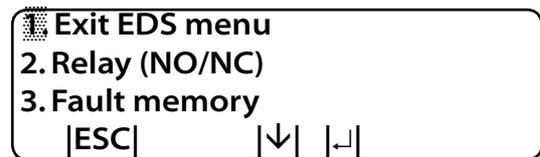
2. Relay (NO/NC)

To set the switching behaviour of the alarm relay to N/O operation or to N/C operation. Choose:

- N/O operation (no)   or

- N/C operation (nc)

```
1. Quit
2.Switching:
   normally open (NO)
   |ESC|        |↓|  |↵|
```
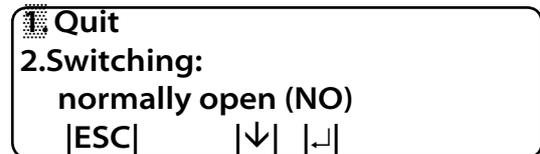
3. Fault memory

To set the fault memory. Choose

- Off or

- On

```
1. Quit
2.Fault memory:
   Off
   |ESC|        |↓|  |↵|
```
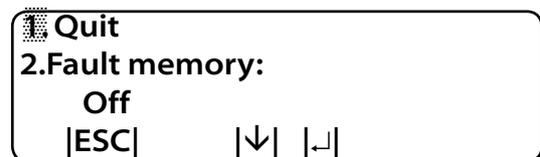
4. CT type

To set the CT type for each channel.

1. Choose one of the channels between 01 and 12.

2. Choose the CT type connected:

off	no CT
STAND	standard CT
SPLIT	split-core CT

Repeat step 1 and 2 for all the channels to be set.

```
1. Quit
2.CT type:
Channel:           01:    STAND
   |ESC|        |↓|  |↵|
```
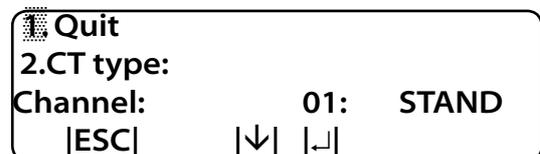
5. CT monitoring

Monitors whether a CT is connected, interrupted or short-circuited.

1. Choose one of the channels between 01 and 12.

2. Choose
   - Off or
   - On

Repeat step 1 and 2 for all the channels to be set.

```
1. Quit
2.CT monitoring:
Channel:          01:    On
   |ESC|       |↓| |↵|
```
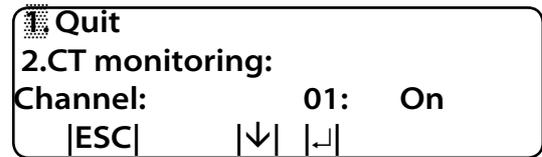
6. Meas. time (peak)

This function allows effective insulation fault location. For each CT it can be set how often the measurement should be repeated in the case of a fault.

Set how often the measurement is to be repeated for each CT (0 ... 255 mal).

```
1. Quit
2.Maximum measuring:
   count:    001
   |ESC|       |↓| |↵|
```
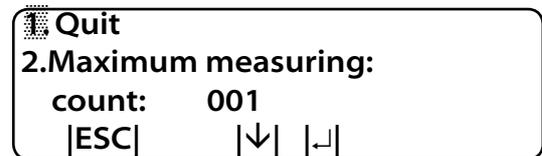
Enter the settings in the tables on page 35 where you also find the factory settings,

RCMS menu

The RCMS470-12 can be set in the menu **8. External devices** of the PRC1470. The following sub menus are available:

|	
1. Exit RCMS menu	to leave the RCMS menu
2. Response values	to set the response values and prewarning
3. Relay (no/nc)	to set the switching behaviour of the alarm relay to N/O or N/C operation.
4. Fault memory	to switch the fault memory on or off
5. Factor	setting of the factor to adapt the RCMS470-12 to the connected CT
6. CT monitoring	monitors whether a CT is connected, interrupted or short-circuited or whether the CT monitoring is switched off.
7. Function	to set the channel monitoring to undercurrent or overcurrent function or to switch the channel off.

1. Exit RCMS menu

To leave the RCMS menu and to return to the main menu of the PRC1470.

```
1. Exit RCMS menu
2. Response values
3. Relay (no/nc)
   |ESC|        |↓|  |↵|
```
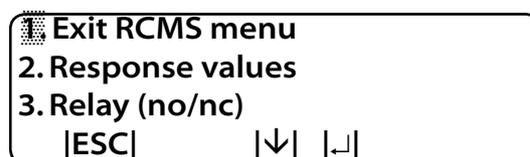
2. Response values.

To set the response value and pre-warning as a percentage of the set response value.

```
1. Quit
2. Set response value:
Chan.:        01:   0050mA
   |ESC|        |↓|        |↵|
```
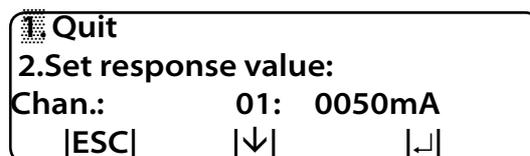
At first set the factor of each channel in menu 5!

Not all response values are sensible. The PRC1470 suggests the next smaller appropriate response value if an inappropriate response value has been selected.

Setting of the response values:

1. Choose

   channel: xx   to set the response value of the selected channel 1 ... 12,

2. Choose the response value:

Response range	Step width	
1 mA ... 9 mA	1 mA	Measuring range extension by using the factor /1 .../ 10
10mA ... 19 mA	1mA	
20 mA ... 490 mA	10 mA	Measuring range of the RCMS470-12 with the factor * 1 (10mA-10A).
500 mA ... 950 mA	50 mA	
1 A ... 9,9 A	0,1 A	
10 A ... 19 A	1 A	Measuring range extension by using the factor *1 ... * 225
20A ... 190 A	10 A	
200 A ... 2250 A	50A	

Repeat step 1 and 2 for all the channels to be set.

Setting of the prewarning:

1. Choose

   channel: 1-12   to set the prewarning (only with Id > Y) as a percentage of the set response value for **all** channels 1-12.

2. Choose the percentage of the respective response value at which a prewarning is to be effected: 010 %, 020 %, ... up to 100 %.

BENDER

3. Relay (no/nc)

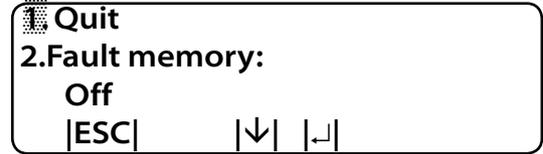To set the switching behaviour of the alarm relay to N/O operation or N/C operation. Choose:

- N/O operation (no)   or

- N/C operation (nc)

```
1. Quit
2.Switching:
   normally open (no)
|ESC|        |↓| |↵|
```
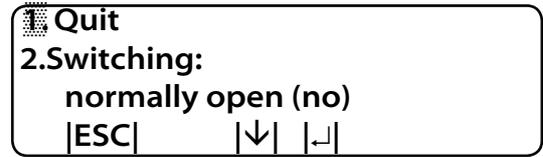
4. Fault memory

To set the fault memory (alarm LED and relay). Choose:

- Off or

- On

```
1. Quit
2.Fault memory:
   Off
|ESC|        |↓| |↵|
```

5. Factor

Setting of a factor to adapt the RCMS470-12 channels to the connected current transformers.

```
1. Quit
2.Set factor:
Channel:          01:  *117
   |ESC|      |↓|          |↵|
```

1. Choose one of the channels between 01 and 12.

2. Choose the factor. The following factor setting ranges are available depending on the CT type and the application.

   Choose:

   *001   - for BENDER residual current transfromers with a
                     transformation ratio of 600/1 (standard);

   *001 ... *225   - for current transformers with a different transformation ratio:

                   - for current transformers with an external shunt
                     (shunt load resistor);

                   - for external transformers which are connected via a BENDER
                     residual current transfromer;

   /002 ... /010   - when the wire to be measured is "pin-wound" several times
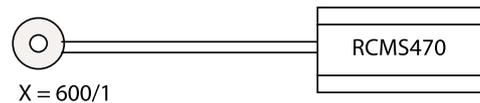   through the current transfromer in order to amplify the signal.

Repeat step 1 and 2 for all channels to be set.

Example for the determination of the factor

X = transformation ratio,

N = number of turns through the current transformer (wire up)

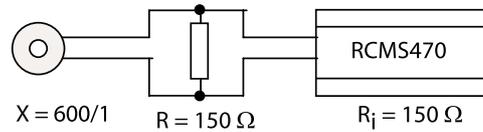Example 1: Bender residual current transformers with a transformer ratio of 600/1

X = 600/1

Factory setting:
Factor: F = *001
CT monitoring: On

Example 2: Bender residual current transformer with an external shunt R= 150 Ω

$X = 600/1$ $R = 150\,\Omega$ $R_i = 150\,\Omega$

$$F = \frac{R_i}{R} + 1 = \frac{150\,\Omega}{150\,\Omega} + 1 = 2$$

Setting:

Factor: F = *002
CT monitoring: Off
Since the internal resistance of a channel of the RCMS470-12 also is 150 Ohm, half of the current flows via the RCMS470-12. Hence, the factor must be *002 in order to indicate the full value.

Example 3:   Flexible BENDER wrap-around CTs W500 ... W1000 with external shunt R= 50 Ω

$X = 10000 /1$ $R = 50\,\Omega$ $R_i = 150\,\Omega$
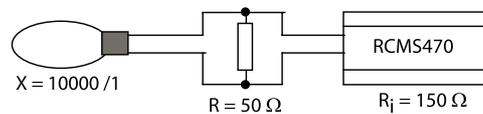
$$F = \frac{10000}{600} * \left(\frac{150\,\Omega}{50\,\Omega} + 1 \right)$$

Settings:

Factor: F = *066
CT monitoring: Off
Response range: 1A to 12A !!!

Example 4:   Connection of external transformers via BENDER residual current transformers

external current transformer
X = 1000 A / 5 A

BENDER current transformer
X = 600 / 1

RCMS470

X = 500 A / 5 A

Holmgreen connection
3 phases + N
F = X / 1

BENDER current transformer
X = 600 / 1
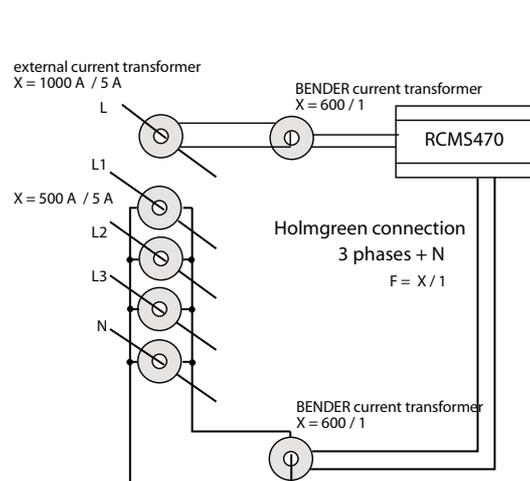
Settings for the individual transformer:

Factor   F = (X / N)
                              = 200 / 1
                              = *200

CT monitoring: On

Settings for Holmgreen connection:

Factor: F = (X / N)
                              = * 100
CT monitoring: On

Example 5: The wire to be measured is "pin-wound" several times through the BENDER current transformer in order to amplify the signal.

$X = 600/1$

RCMS470
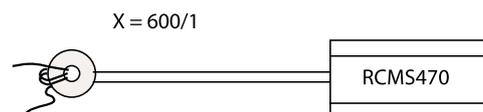
$$F = \frac{1}{N} = /003$$

Setting

Factor: F = /003
CT monitoring: On

6. CT monitoring

Monitors whether the current transformer is connected, whether its connection is interrupted or short-circuited, or whether the CT monitoring is switched off.

```
▓ Quit
2.CT monitoring:
Channel:          01:    On
   |ESC|      |↓|  |↵|
```
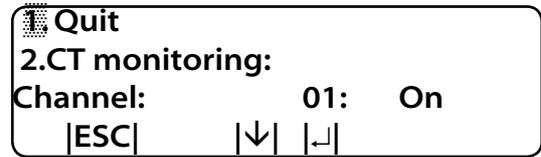
1. Choose one of the channels between 01 and 12.

2. Choose
   - Off or
   - On

Repeat step 1 and 2 for all the channels to be set.

7. Function

To set the channel monitoring to undercurrent or overcurrent or to switch the channel off.

```
▓ Quit
2. Set function
Channel:          01:    Id<Y
   |ESC|      |↓|  |↵|
```
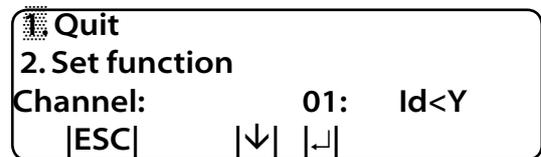
1. Choose one channel between 01 and 12.

2. Choose

   Id>Y   overcurrent function

   Id<Y   undercurrent function

   off   no current transformer connected

Repeat step 1 and 2 for all the channels set.

Enter the settings in the table on page 35 where you also find the factory settings.

9. System engineering

This menu offers various possibilities to control the entire system:

1. Quit	to leave the menu system engineering.
2. EDS start/stop	Manual start and stop of the measuring sequence of the EDS system.
3. EDS/RCMS reset	To reset all fault indications existing at the RS485 interface of the connected EDS470-12 and RCMS470-12.
4. Test mode	Provides information about all connected devices (address, software version, device type).
5. Position mode	Continuous indication of the measuring value of the channel of a connected evaluator.

1. Quit

To leave the menu "system engineering".

```
1. Quit
2. EDS start/stop
3. EDS/RCMS reset
 |ESC|          |↓|  |↵|
```

2. EDS start/stop

Manual start and stop of the measuring sequence of the EDS system by pressing the ↵ key.

```
1. Quit
2. EDS start/stop
3. EDS/RCMS reset
EDS system stop
```

EDS system running	After starting insulation fault location, the EDS470-12 and PGH47x keep running continuously. If the menu is quitted, the last line of the standard display indicates „EDSp" in order to indicate the permanent sequence*.
EDS system stop	The permanent measuring sequence of the EDS470-12 and PGH47x is stopped. If the menu is quitted, the last line of the standard display indicates „EDS" until the current measuring sequence is finished.

*Further abbreviations which may be indicated in the last line of the display:

EDSa	Automatic mode: insulation fault location has been started at the PGH471 by the Isometer.
EDSs	Single mode: A single pass has been started via IN2 at the PGH471.

3. EDS/RCMS reset

Reset of all fault messages of EDS470-12 and RCMS470-12 existing at the RS485 interface .

```
1. Quit
2. EDS start/stop
3. EDS/RCMS reset
Reset done
```

4. Test mode

Provides information about the connected EDS470-12 and RCMS470-12.

```
Device: input address
Address:    001e/ 003i

    |ESC|              |↵|
```

xxxe   to set the PRC1470 address the external device is to be addressed to on the external interface .

xxxi   to set the address of the device connected to the internal interface.

Example:

001e/ 003i   Via the own PRC1470 with address 1 an external device with address 3 (e.g. an RCMS470-12) is adressed on the internal interface.

Set the external address of the PRC1470 and the internal address of the external device and confirm with Enter ↵.

Has everything correctly been entered?

ESC   Return to enter the address
↵   to confirm the address setting

If the device has been recognized the device type will be indicated in the first line.

After finishing the test information about the connected device is given under the respective address:

```
Device: input address
Address:    001e/ 003i
input OK?
   |ESC|              |↵|
```

```
Device: RCMS470-12
    Test running !

    Please wait!
```

Indication	Meaning:	Example:
1. Exit	Leaving the test mode	
Device:	device designation	RCMS470
Type:	device type	-12
Software version:	version of the internal software	2.01
Channel xx:	The following indications are possible for the channels 1-12: ok transformer OK off channel is not being measured short transformer is short-circuited open no transformer connected	1: ok 2: short ... 12: off
Relay mode:	Operating mode of the alarm relay: n. open N/O operation n.closed N/C operation	n.open
Memory:	State of the fault memory on switched on off switched off	off

5. Position mode

Permanent indication of the measuring value of a channel of EDS470-12, RCMS470-12 or an Isometer with BMS (Bender measuring interface) protocol.

```
Device: input address
Address:   001e/ 002i
Channel: 01:
   |ESC|              |↵|
```

xxxe to set the address of the **PRC1470** that is to be addressed to on the external interface. The PRC1470 suggests its own address in that case. But addresses of other PRC1470 panels can also be set.

xxxi to set the address of the **device** that is to be connected on the internal interface of the respective PRC1470.

Channel: xx: Selection of the measuring channel 01 ... 12

Set the PRC1470 address, the address of the external device and the appropriate channel, then confirm with Enter ↵.

Example: 002e/ 003i, channel 05

A device with address 3 (e.g. an RCMS470-12) connected to the internal interface is addressed via another PRC1470 with address 2 connected via the external interface. Now, the measuring value of channel 5 is being indicated continuously.

```
Device: RCMS470
Address:   002e/ 003i
Channel: 05:13 mA
   |ESC|              |↵|
```

Pressing the ESC key interrupts the continuous indication and returns to menu **9. System engineering**.

The function to address internal device addresses of another PRC1470 **cannot** be carried out with the EDS470 system.

10. Setup transfer

This menu is without function in the PRC1470

11. Assignment transfer

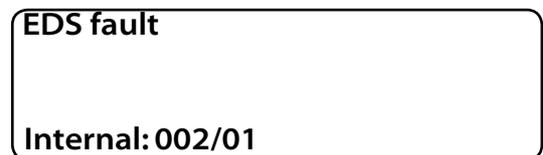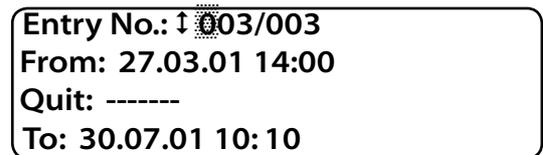This menu is without function in the PRC1470

12. Memory

The PRC1470 stores up to 650 messages with date and time in the memory (ring memory). When more than 650 messages are recorded by the PRC1470, the 651th message overwrite message 1.

This menu informs about messages and acknowledgements with date and time. It also indicates if an alarm still exists or it indicates at what time the alarm was reset. The complete contents of the memory with additional text and address of the indicating device can be printed and indicated on a PC with the appropriate software.

1. Choose

    "Quit" to leave the menu or "View history" to view the memory.

2. Choose the desired entry with the arrow keys.

    The display presents the last entry. Older entries can be selected with the arrow keys.

3. Call up the alarm text of the entry selected with ↵ . The last line indicates the path of the message to the PRC (in this case: internal interface, address 002, channel 01)

4. Press ↵ again to return to the selection of the entry.

Repeat step 2 and 4 for all messages to be displayed. Press ESC to leave the menu.

```
1. Quit
2. View history

   |ESC|        |↓|  |↵|
```

```
Entry No.: ↕ 003/003
From: 27.03.01 14:00
Quit: -------
To: 30.07.01 10:10
```

```
EDS fault



Internal: 002/01
```

13. Change password

To set a password consisting of numbers.

```
1. Quit
2. Change PW: X X X

   |ESC|        |↓|  |↵|
```

1. Choose "change password" and press ↵ .

2. Change the first number and press ↵ .

3. Change the second and third number.

    After confirming the last number with ↵ your password will be set. But it will only be effective when it is switched on with the **2. Password menu**.
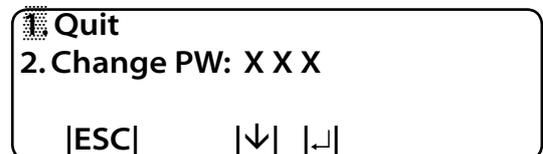
14. Language

Select the language for the PRC1470 menus (German or English).

Choose the appropriate language and confirm with ⏎ .

```
1. Quit
2. German
3. English
  |ESC|        |↓|  |⏎|
```
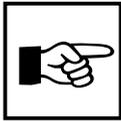
From now the menu text will appear in the selected language.

The user-programmable alarm text messages, however, remain unchanged.

15. Info

Information about device type, firmware version and the last assignment transfer.

```
** Control panel ***
** PRC1470/Adr.:001**
*Ver. 1.50 *06/11/01*
  |ESC|        |↓|  |⏎|
```

Assignments are settings carried out via a PC software (e.g. Medi-Set). These settings assign text messages and functions to lamps, pushbuttons, digital inputs and relay outputs of the PRC1470.

Choose:

ESC   to leave the menu mode

⏎   to indicate the date of the last assignment transfer

⏎   return to **1. Exit** in the menu mode

PRC1470 settings

The following tables give you an overview about the PRC1470 factory settings. Please use the marked columns to enter your own specific settings after changing.

Abbreviations:

FS   Factory setting

CS   Customer setting

Basic settings

Menu	Factory setting FS	customer settin CS
2. Password	Password: On	
3. Time/Message	5 sec.	
4. Buzzer	buzzer signal: 2	
5. Common Reset	C. Reset Int.: On	
	C. Reset Ext.: On	
6. Date/Time	Uhrzeit: 00:00	
	Datum: 01.01.00	
7. RS485 External	Address: 1	
	Baud: 09600	
8. External devices	-> these settings are described in an extra table	
9. System engineering		
10. Setup Transfer	—————	—————
11. Assignment Transfer	—————	—————
12. History	—————	—————
13. Change Password	PW: 807	—————
14. Language	GERMAN	
15. Info		
	—————	—————

Setting of external devices

Factory settings of external devices are not stored in the PRC1470. The tables with the settings for EDS470-12 and RCMS470-12 inform about the factory settings of the connected devices. Make notes of your modifications in the lines marked with CS (customer setting).

Setting of external devices

RCMS menu

Setting menu

8. External devices RCMS menu	Mode	Setting for all channels	channels											
			1	2	3	4	5	6	7	8	9	10	11	12
8.2.Response values	FS	pre-warning at 100 %	100 mA	100 mA	100 mA	100 mA	100 mA	100 mA	100 mA	100 mA	100 mA	100 mA	100 mA	100 mA
	CS													
8.3. Relay	FS	N/O operation	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	CS		-	-	-	-	-	-	-	-	-	-	-	-
8.4 Fault memory	FS	Off	-	-	-	-	-	-	-	-	-	-	-	-
	CS		-	-	-	-	-	-	-	-	-	-	-	-
8.5. Factor	FS	- -	*001	*001	*001	*001	*001	*001	*001	*001	*001	*001	*001	*001
	CS	-												
8.6. CT monitoring	FS	- -	On	On	On	On	On	On	On	On	On	On	On	On
	CS	-												
8.7. Function	FS	- -	Id>Y	Id>Y	Id>Y	Id>Y	Id>Y	Id>Y	Id>Y	Id>Y	Id>Y	Id>Y	Id>Y	Id>Y
	CS	-												

Setting of external devices EDS menu

Channels

Setting menu 8. External devices EDS menu	Mode	Setting for all channels	1	2	3	4	5	6	7	8	9	10	11	12
8.2.Relay	FS	N/O operation	--	--	--	--	--	--	--	--	--	--	--	--
	CS		--	--	--	--	--	--	--	--	--	--	--	--
8.3.Fault memory	FS	Off	--	--	--	--	--	--	--	--	--	--	--	--
	CS		--	--	--	--	--	--	--	--	--	--	--	--
8.4. CT type	FS		standard	standard	standard	standard	standard	standard	standard	standard	standard	standard	standard	standard
	CS	--												
8.5. CT monitoring	FS	--	On	On	On	On	On	On	On	On	On	On	On	On
	CS	--												
8.6. Measuring time (peak)	FS	001	--	--	--	--	--	--	--	--	--	--	--	--
	CS		--	--	--	--	--	--	--	--	--	--	--	--

6. Technical data, ordering details, dimensions

Technical data

Insulation coordination acc. to IEC 60664-1:

Rated insulation voltage	AC 250 V
Rated impulse withstand voltage/contamination level	4 kV/3

Voltage ranges:

Supply voltage U_S	$U_S = 230$ V
Nominal voltage range	$0.85 ... 1.1$ x U_S
Power consumption	max. 5 W

Features:

LC display (backlit)	4x20 characters, 8 mm high
Real time clock	
Text messages	750
Memory (text messages)	650

Inputs:

Digital inputs (optional)	16
Operating principle, selectable	N/C or N/O operation
Voltage range AC/DC	high 10-30 V / low 0-5 V

Outputs:

Change-over contacts	2
NO contacts	6
Rated contact voltage	AC 250 V / DC 300 V
Contact circuit with protective separation acc. to pr EN 50178	
Admissible no. of operations	12000 cycles
Making capacity	UC 8 A (NO contact 5 A)
Breaking capacity AC/DC	2 A / 0.2 A
Operating principle, selectable	N/C or N/O operation / no fault memory behaviour

Interfaces:

RS485	2
RS232	1
EIB bus (optional)	1

Test of the electromagnetic compatibility (EMC):

|	
Interferences acc. to EN 61000-6-2	
Emissions acc. to EN50081-2	class B
(For use in the household and industrial use)	

General data:

Ambient temperature, during operation	-5 °C ... +55 °C/268 K...328 K
Storage temperature range	-25 °C ... +60 °C/248 K...333 K
Climatic class acc. to IEC 60721	3K5, except condensation and formation of ice
Mounting	any position
Connection/cable	screw terminals/aluminium or copper
Temperature range cable	60°C(18...16AWG)/75°C(14...12AWG)
Cross sectional area of connecting cable:	
single wire/flexible	$0.2...4$ mm^2 / $0.2...2.5$ mm^2 (AWG 24-12)
Protection class acc. to EN 60529:	
Internal components/terminals	IP 30 / IP 20
Flammability class	UL94V-0
Weight approx.	3000 g

Ordering details

| Type	Description	Art. No.
PRC1470AP	surface-mounting type	B 950 12024
PRC1470	flush-mounting type	B 950 12027
BMI100-16/8	Expansion board with 16 digital inputs (electrically isolated) and 8 additional relay outputs	B 950 24006
EIB1000	Expansion board with16 EIB inputs each and 16 EIB outputs	B 950 12025
DI-3 kit	Interface converter	B 950 12028
DI-1	Repeater	B 950 12015

Dimension diagram enclosure for flush-mounting
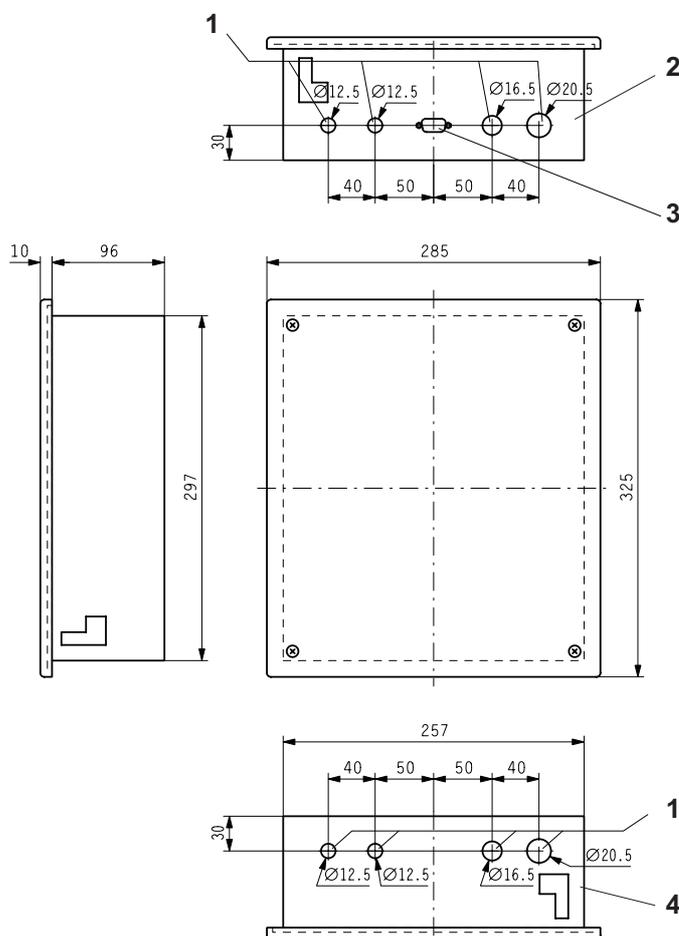
Legend to dimension diagram:

1   Drill holes as provision for strain reliefs or conduits
2   Bottom side panel
3   Interface plug RS232
4   Top side panel

Dimension diagram enclosure for surface-mounting
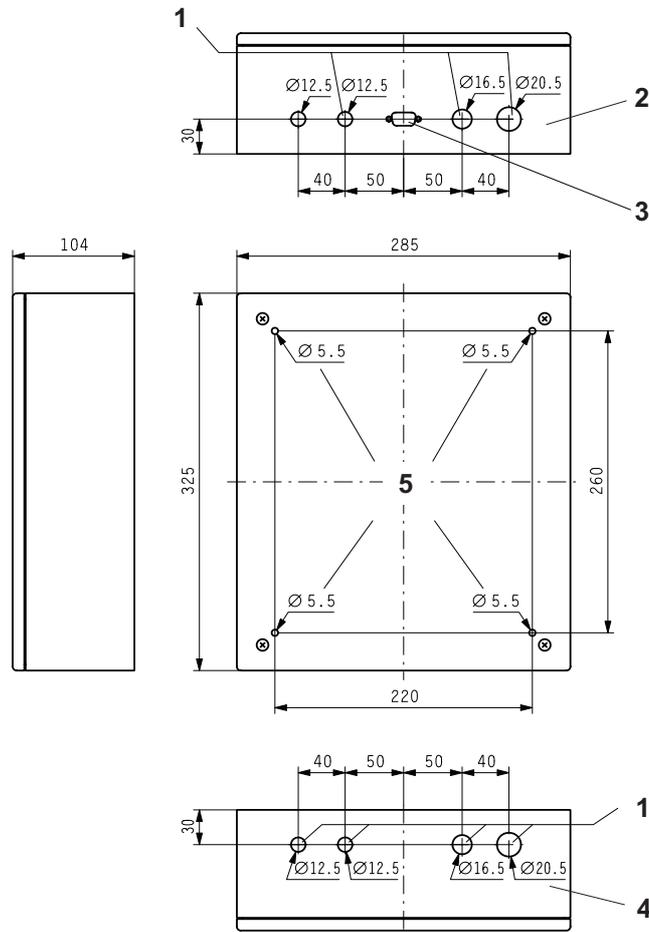
Legend to dimension diagram:

1   Drill holes as provision for strain reliefs or conduits
2   Bottom side panel
3   Interface plug RS232
4   Top side panel
5   Fixing holes in the bottom of the housing (material thickness: 4 mm)

Option BMI1000-16/8

Expansion board with 16 digital inputs (electrically isolated) and 5 additional relay outputs.

Terminal diagram
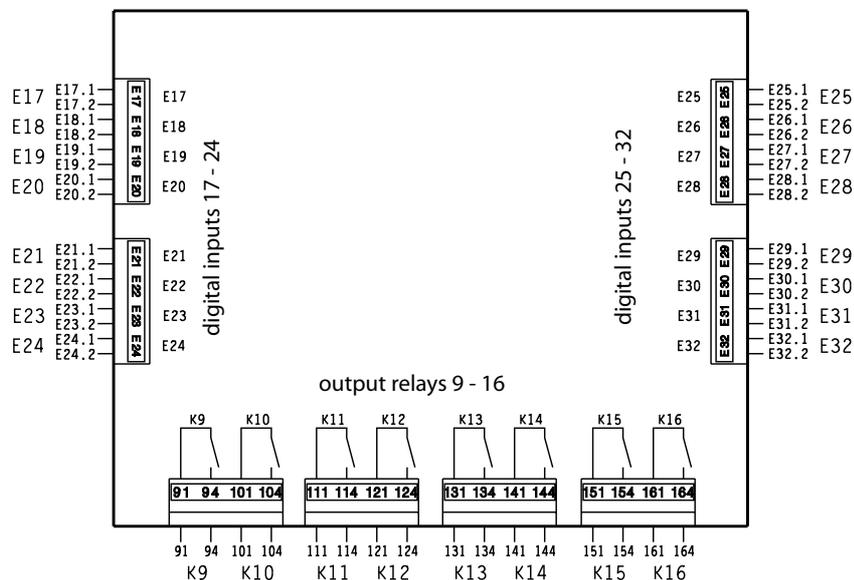
Legend to terminal diagram

	Connection	Description
E17	E17.1	terminal 1 of digital input E17
E17	E17.2	terminal 2 of digital input E17
E18	E18.1	terminal 1 of digital input E18
E18	E18.2	terminal 2 of digital input E18
E19	E19.1	terminal 1 of digital input E19
E19	E19.2	terminal 2 of digital input E19
E20	E20.1	terminal 1 of digital input E20
E20	E20.2	terminal 2 of digital input E20
E21	E21.1	terminal 1 of digital input E21
E21	E21.2	terminal 2 of digital input E21
E22	E22.1	terminal 1 of digital input E22
E22	E22.2	terminal 2 of digital input E22
E23	E23.1	terminal 1 of digital input E23
E23	E23.2	terminal 2 of digital input E23
E24	E24.1	terminal 1 of digital input E24
E24	E24.2	terminal 2 of digital input E24
E25	E25.1	terminal 1 of digital input E25
E25	E25.2	terminal 2 of digital input E25
E26	E26.1	terminal 1 of digital input E26
E26	E26.2	terminal 2 of digital input E26
E27	E27.1	terminal 1 of digital input E27
E27	E27.2	terminal 2 of digital input E27
E28	E28.1	terminal 1 of digital input E28
E28	E28.2	terminal 2 of digital input E28
E29	E29.1	terminal 1 of digital input E29
E29	E29.2	terminal 2 of digital input E29
E30	E30.1	terminal 1 of digital input E30
E30	E30.2	terminal 2 of digital input E30
E31	E31.1	terminal 1 of digital input E31
E31	E31.2	terminal 2 of digital input E31
E32	E32.1	terminal 1 of digital input E32
E32	E32.2	terminal 2 of digital input E32
K9	91	terminal 91 of relay output K9 (NO contact)
K9	94	terminal 94 of relay output K9 (NO contact)
K10	101	terminal 101 of relay output K10 (NO contact)
K10	104	terminal 104 of relay output K10 (NO contact)
K11	111	terminal 111 of relay output K11 (NO contact)
K11	114	terminal 114 of relay output K11 (NO contact)
K12	121	terminal 121 of relay output K12 (NO contact)
K12	124	terminal 124 of relay output K12 (NO contact)
K13	131	terminal 131 of relay output K13 (NO contact)
K13	134	terminal 134 of relay output K13 (NO contact)
K14	141	terminal 141 of relay output K14 (NO contact)
K14	144	terminal 144 of relay output K14 (NO contact)
K15	151	terminal 151 of relay output K15 (NO contact)
K15	154	terminal 154 of relay output K15 (NO contact)
K16	161	terminal 161 of relay output K16 (NO contact)
K16	164	terminal 164 of relay output K16 (NO contact)

Expansion board EIB1000

The EIB1000 expansion board offers 16 EIB inputs and 16 EIB outputs.

That allows to address EIB devices via the PRC1470 or to indicate messages of the EIB at the PRC1470.

EIB1000 is based on the EIB module from ABB company (ABB i-bus EIB). Each EIB1000 is delivered with the respective device database that can be imported with the ETS2 software (EIB Tool Software).

Preconditions for use

The PRC1470 must be equipped with firmware version 1.5 or higher. For configuration, the software Mediset, version 1.10 or higher is required.

As an option, the EIB1000 can be incorporated in the existing enclosure of the PRC1470 at factory.

The connection for the EIB bus is located on the main board of the PRC1470 (plug X1, contacts e+ and e-). A suitable cable type is, for example, J-Y(ST)Y, 0.8 mm², maximum length 700 m.

EIB connection

Addressing

The address of the EIB1000 expansion board is factory-set to 01.01.001. This address can be changed via the ETS2 PC software.

Inputs and outputs

For the indication of alarm/fault and status messages of EIB devices, the EIB1000 expansion board provides 16 input channels (channel 1-16, setting: device driver). 16 output channels are provided for commands to EIB devices (channel 17-32, setting: switching sensor)). The outputs can be activated via PRC1470 keys, via status messages and alarm/fault messages. The EIB1000 is supplied with DC 24 V from the PRC1470. The EIB can be programmed with the ETS2 software. Please note: ETS2 is not included in the scope of delivery of the EIB1000. Please contact EIBA (http://www.eiba.org) to order the software.

The file EIB1000.PR1, a programming template, is required to enable the communication between the ETS2 software and the EIB1000 expansion board. This programming template is available as a data medium and is included in the scope of delivery in each EIB1000 respectively each PRC1470 with EIB1000 module. Import this file into the ETS2 software.

The inputs and outputs can be programmed with the ETS2 software. Outputs can obtain the functions SWITCHING, DIMMING, SUN SHADE CONTROL, or VALUE. Inputs can control signal lamps or LEDs.

For example, the signal lamp/LEDs can be configured to indicate On or Off status or to flash in one of three selectable frequencies
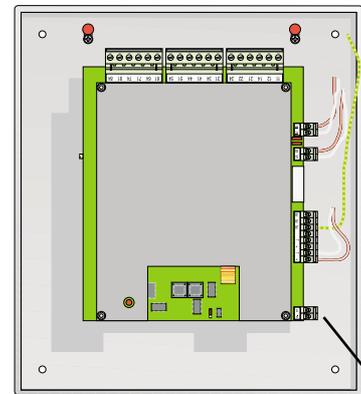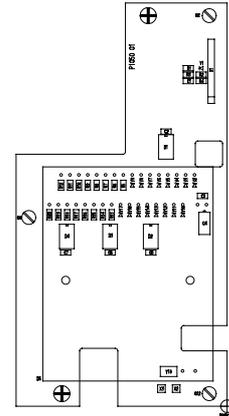
Monitoring of the supply voltage

If the parameter FUNCTION of channel 32 is set to "none", this channel will be used to monitor the supply voltage. In the event of a supply failure, the object "Telegram supply voltage failure" sends a telegram with the value 1. As a result of this all input channels are locked. Approximately 1 second after the restoration of the supply the value of the object "Telegram supply voltage disturbed" will be re-set to 0 and all inputs are enabled again. If the input channel 16 is also used as a general input, the supply voltage is not monitored. We recommend to monitor the supply voltage via channel 32.

EIB1000.PR1 file

After importing the EIB1000.PR1 file, the basic functions of the channels are preset. These basic functions must not be changed! Even when there is the possibility of changing the functions with ETS2, the function of the channels 1-16 must remain unchanged as "device driver", the channels 17-31 as "switching sensor" (switching/dimming sensor, sun shade sensor, value) and channel 32 must remain "none".

32

32

220

32

260

PRC1470

Bohrschablone

drilling template

32