EN   **RTT I/O Unit**
DK 3124.200
Assembly, Installation and Operation

Table of Contents

1   Documentation Notes

The audience for this guide is the technical specialists familiar with the assembly, installation and operation of the RTT I/O Unit.

- You should read this operating guide prior to the commissioning and store it so it is readily accessible for subsequent use.

Rittal cannot accept any liability for damage and operational malfunctions that result from the non-observance of this guide.

1.1   Associated Documents

The guides for other RTT I/O Unit components and their safety notes also apply together with this guide.

This guide can be downloaded as file from www.rittal.de:

German: 3124.200_d.pdf

English: 3124.200_e.pdf

To view the guide you require the Acrobat Reader program; Acrobat Reader can be downloaded from www.adobe.com

1.2   Retention of the Documents

This guide and all associated documents are part of the product. They must be given to the operator of the unit and must be stored so they are available when needed.

1.3   Used Symbols

The following safety and other notes are used in this guide:

Symbol for a handling instruction:

- This bullet point indicates that you should perform an action.

Safety and other notes:

Danger!
Immediate danger to health and life!

Warning!
Possible danger for the product and the environment!

Note!
Useful information and special features.

2   Safety Notes

Observe the subsequent general safety notes for the installation and operation of the unit:

− Assembly and installation of the RTT I/O Unit, in particular for wiring the enclosures with mains power, may be performed only by a trained electrician. Other tasks associated with the RTT I/O Unit, such as the assembly and installation of system components with tested standard connectors, and the operation and configuration of the RTT I/O Unit may be performed only by instructed personnel.

− Observe the valid regulations for the electrical installation for the country in which the unit is installed and operated, and the national regulations for accident prevention. Also observe any company-internal regulations (work, operating and safety regulations).

− Prior to working at the RTT I/O Unit, it must be disconnected from the power supply and protected against being switched on again.

− Use only genuine or recommended parts and accessories (see Section 3.6 Accessories). The use of other parts can void the liability for any resulting consequences.

− Do not make any changes to the RTT I/O Unit that are not described in this guide or in the associated guides.

− The operational safety of the unit is guaranteed only for its approved use. The limit values stated in the technical specifications (see Chapter 14) may not be exceeded under any circumstances. In particular, this applies to the permitted ambient temperature range and to the permitted IP protection category. When used with a higher required IP protection category, the Rittal RTT I/O Unit must be installed in a housing or enclosure with a higher IP protection category.

− The operation of the RTT I/O Unit in direct contact with water, aggressive materials or inflammable gases and vapours is prohibited.

− In addition to these general safety notes, also observe any special safety notes listed for the specific tasks in the individual sections.

3 Unit Description

The Rittal TopTherm interface card (subsequently called RTT I/O Unit) is used to forward system messages of the Rittal TopTherm enclosure cooling units with Comfort controller:

a) to the customer's PLC

or

b) in conjunction with the CMC-TC for the remote parameterisation, and the direct display of temperatures, system and alarm messages on the web user interface in the browser.

3.1 Housing

The RTT I/O Unit is contained in its own housing that can be fastened with the supplied Velcro strips to the inner side of the side wall, to the punched sections with mounting flanges or to the shelf of the enclosure. Mounting units (see Section 3.6.1 Required accessories) can also be used to install the housing.
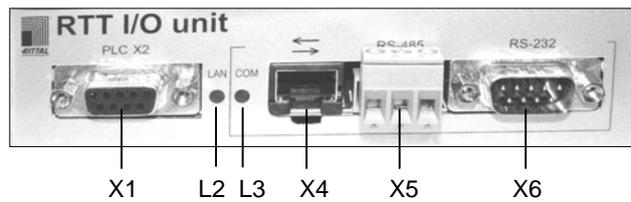

Fig. 1   RTT I/O Unit front side

Front side legend

X1	**PLC X2:**	PLC output
L2	**LAN-LED**:	Internal communication
L3	**COM-LED:**	Serial interface status
X4	**RJ45 ⇆:**	Connection to the CMC TC
X5	**RS-485:**	Interface
X6	**RS-232:**	PC interface for service (e.g. hyperterminal)
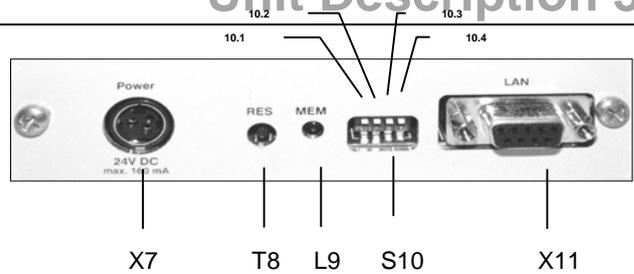
Fig. 2   RTT I/O Unit rear side

Rear side legend

X7   Power supply:

Optionally, the RTT I/O Unit can be supplied directly with 24 V DC power from this input. For applications with CMC-TC, it supplies the power directly.

T8   RES: For a restart, keep the Reset key pressed (ten seconds) until the MEM-LED (L9) starts flashing.

L9   MEM-LED: Fault EEPROM (see Tab. 1 "Memory status")

S10   DIP switch:

S10 are the changeover switches for the serial interface and switch X4 on or off.

Factory setting:

10.1 Switch 1: OFF (normal position – switch setting up). X4 represents the connection to the CMC-TC.

Service setting:

10.1 Switch 1: ON (switch setting down). Communication using RS 232 (X6) for service purposes.

10.2 has no function

10.3 has no function

10.4 has no function

X11   LAN: Connection to the X3 interface of the master cooling unit with comfort control.

3 Unit Description

3.2 Memory Status

The red "MEM" LED (L9) displays the status of the EEPROM and of the stored parameters:

Tab. 1   Memory status

3.3 Technical Specifications

The RTT I/O Unit has an 10/100BaseT Ethernet network connection and supports the following protocols:

− RS 232 serial interface: e.g. hyper-terminal

3.4 System Requirements

- Hardware: PC with serial interface and 10/100 Mbit network card.
- Software: Operating system (Linux or Windows) browser (IE 6.0 or equivalent).

3.5 Scope of Supply

The unit is delivered in a packaging unit in fully-assembled state.

- Check the delivered components for completeness.
- Check that the packaging does not show any signs of damage.

Quantity	Designation
1	RTT I/O Unit with network interface RJ-45 socket (10/100 BaseT)
2	Self-adhesive Velcro fasteners 90 x 15 mm
1	Guide/checklist for commissioning in German/English

Tab. 2   Scope of supply

3.6

Accessories

3.6.1 Required accessories

Depending on the country-specific specifications, you require an appropriate connection cable for the power pack of the RTT I/O Unit.

Accessories	Designation	Packs of	Required	Model No.
Power pack	Installation power pack 100-230 V AC / 24 V DC, IEC, UL approval, 3 A SELV	1	Use always. Not required in conjunction with CMC TC (7320.100)	7320.425
	Installation power pack 20-72 V AC / 24 V DC, IEC, UL approval, 3 A SELV	1		7320.435
Connection cable for power pack	Connection cable IEC connector Country version D	1	Yes, once for power pack	7200.210
	Connection cable IEC connector Country version GB	1		7200.211
	Connection cable IEC connector Country version F/B	1		7200.210
	Connection cable IEC connector Country version CH	1		7200.213
	Connection cable IEC connector Country version USA/CDN, UL approval FT1/VW1	1		7200.214
	Extension cable IEC connector and socket	1		7200.215
Assembly	1 U mounting unit	1	Optional	7320.440
	1 U single mounting unit with strain relief	1		7320.450

Tab. 3   Required accessories

3.6.2 Optional accessory for integration in the Rittal CMC monitoring concept

Accessories	Max. required number of items	Model No.
CMC-TC	1	DK 7320.120

Tab. 4   Optional accessory

3.7 Proper Use

The Rittal RTT I/O Unit serves as transmission unit of the system messages from enclosure cooling units to the PLC or, in conjunction with the CMC-TC, to the web-based transmission of system messages and to the remote parameterisation.

A use different from that described here is considered to be an improper use. Rittal cannot accept any liability for damage resulting from the improper use or the non-observance of this guide. The guides for the used accessories may apply.

4   Assembly

4.1   Assembly Notes

Install the RTT I/O Unit in an enclosure or in a suitable housing system so that it also has additional protection from external effects. Also consider the permitted ambient temperature and humidity operational areas and the application-related required IP degree of protection (see Chapter 14, page 21).

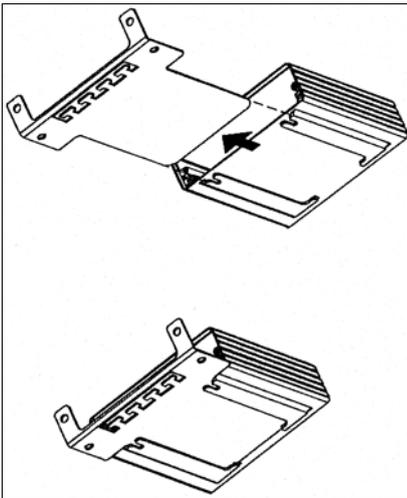### 4.2   Assembling the RTT I/O Unit

Fig. 3   Assembly with the mounting module (accessory)

- Move the RTT I/O Unit on the retaining plate of the mounting module. Ensure that the retaining plate sits between the guide rails of the RTT I/O Unit.
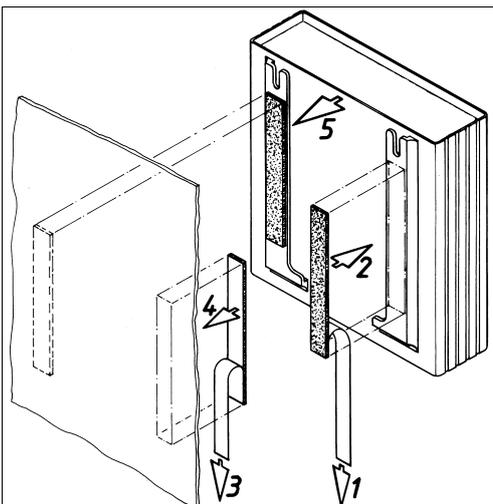
Fig. 4   Assembly with Velcro fasteners

- Take the self-adhesive Velcro fasteners from the supplied accessories and remove the protective foil from the Velcro fasteners.
- Ensure that the adhesion surfaces are free from grease and dust.

- Attach the Velcro fasteners to the housing of the RTT I/O Unit and position the RTT I/O Unit at the required attachment location.

Fig. 5   Assembly with 1 U mounting unit (accessory)

1.   Remove the two upper screws of the trim piece.
2.   Remove the trim piece.
3.   Move the RTT I/O Unit on the retaining plate of the mounting unit. Ensure that the retaining plate sits between the guide rails of the RTT I/O Unit.
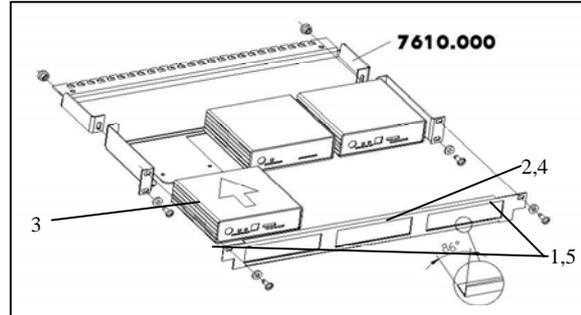4.   Replace the trim piece on the mounting unit.
5.   Screw the trim piece back on the 1 U mounting unit.

5 Installation

Danger!
The assembly and installation may be performed only by trained specialists.

5.1 Safety and Other Notes

– The Rittal RTT I/O Unit may be operated only with connected protective earth conductor. The protective earth conductor connection is made by plugging in the IEC connection cable. This requires that the IEC connection cable at the power supply side be connected with the protective earth conductor.

– The electrical connection voltage and frequency must conform to the rated values specified at the rear of the housing and in the technical specifications (see page 21).

– Before commencing any work on the Rittal RTT I/O Unit, it must always be disconnected from the power supply and secured to prevent inadvertent reconnection.

– Protect the connection cables using cable ties on the used housing or enclosure.

– To prevent unnecessary cable losses, the used cable lengths must not exceed the lengths specified in the technical specifications (see Chapter 16, page 21).
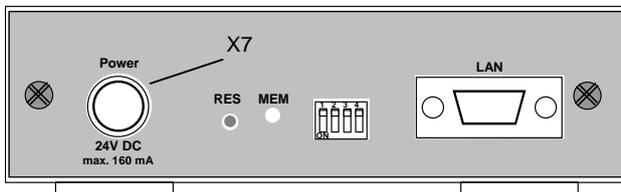
5.2 Connecting the Power Supply

Fig. 6   Connecting the power supply

Key

X7   Power supply connection

If the RTT I/O Unit is operated by itself without CMC-TC, it must be connected to the power supply using one of the power packs mentioned in Section 3.6.1 "Required accessories".

• Insert the power pack plug in the "Power" socket of the RTT I/O Unit. Ensure that the ⬆ marking arrow points to the "Power" socket designation.

The plug latches itself. After being connected to the power supply, the RTT I/O Unit automatically begins a boot task that takes approximately three minutes.

5.3

Establishing a Connection to the Master Cooling Unit and to the Customer's PLC
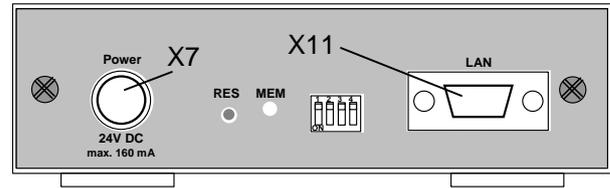
Fig. 7   Establishing a connection to the master cooling unit

Once the power supply (X7) has been realised, you can connect the master cooling unit to its X3 interface on the cooling unit rear side with the LAN socket (X11) of the interface card.
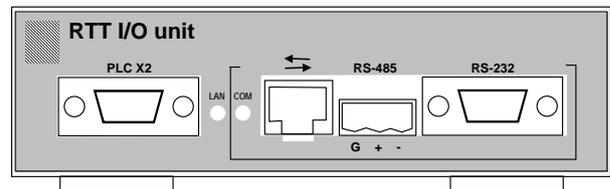
Fig. 8   Establishing a connection to the PLC

Connect the "PLC X2" (X1) socket to your PLC using a cable. Setting, signal transmission and parameterisation, see Chapters 6 and 7.

5 Installation

5.4 Operation with CMC-TC

In conjunction with the CMC-TC, you can use the full function scope of the RTT I/O Unit.

The following diagram clarifies the device assignment in the unit:
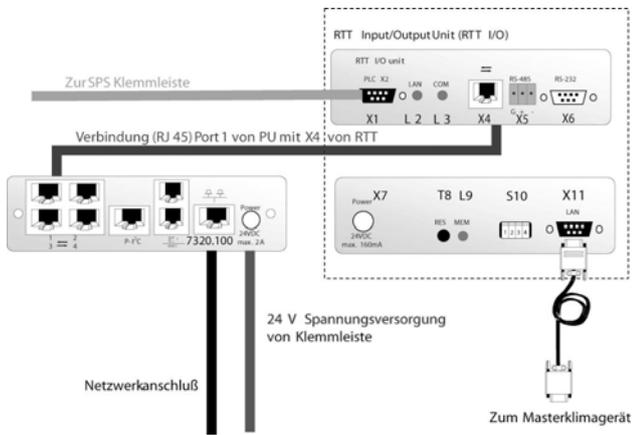
Fig. 9 RTT I/O Unit and CMC-TC device group

The detailed description and configuration is contained in the CMC-TC DK 7320.100 operating instructions that can be downloaded as file from www.rittal.de:

German: 7320.100_d.pdf

English: 7320.100_e.pdf

To view the guide, you require the Acrobat Reader program; Acrobat Reader can be downloaded from www.adobe.com

6 Connection to the PLC

6.1 Connecting the RTT I/O Unit to the PLC (PLC X2)

The RTT I/O Unit can be used directly to transmit the actual values of the enclosure internal temperature and the system messages of the cooling unit to the programmable logic controller (PLC). The transmitted information can be displayed by means of the connected output devices (e.g. text display) or via the serial interface of the PLC on a higher-level computer.

To transmit the signals, the PLC must be connected with the appropriate cable to the PLC X2 (X1) RTT I/O Unit socket (see also Section 3.1, Fig. 1).

6.2 Structure of the PLC Interface

The structure is metallically separated using optical couplers. The customer must make the connection between the 9-pole PLC X2 (X1) socket of the RTT I/O Unit and the PLC input card.

It is possible to select the protocol for data transmission via the PLC interface by means of the "Protocol PLC" configuration parameter.

6.3 Standard Mode

The communication between the enclosure internal temperature and the error messages is made successively in the 2-second cycle. Because this is an 8-bit parallel transmission, input signals should be accepted only when they are present for longer than five seconds. This ensures that in case of signal changes at the inputs, no invalid input information is processed.
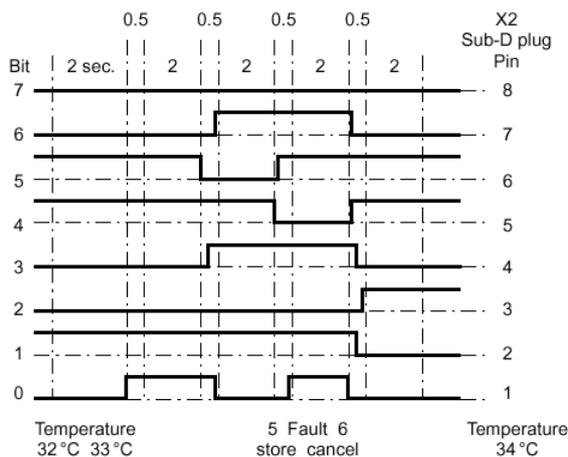
Internal enclosure temperature: Two-digit transmission in BCD format.
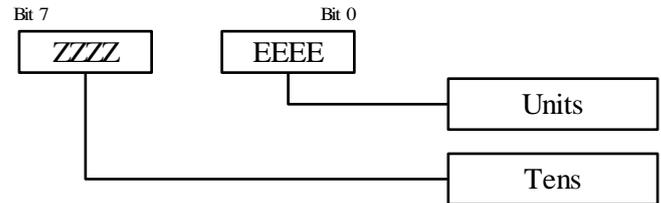
The internal temperature is transferred in °C. In case of sensor fracture, the transferred temperature value is 99. You can use the "Parameter temperature" function to display the enclosure internal temperature of the master or one of the slave cooling units (1–9). The assignment which device temperature is displayed is made using the input commands 9.1, parameter 10.

6.4 System Messages

The system messages are transmitted by identifier and fault numbers in accordance with the following structure:
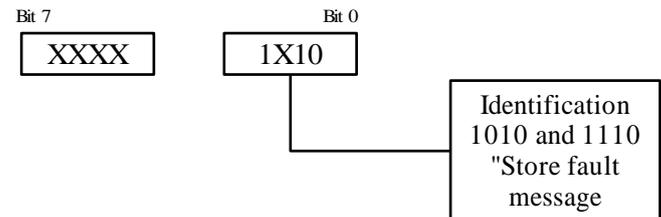
XXXXX: fault number 0 to 31

In case of a fault XXXXX (binary), the identifier is transmitted cyclically. This information can be used to save the fault message in the PLC.
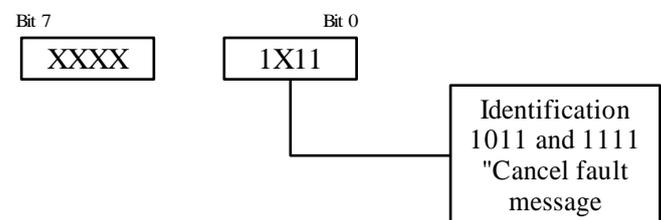
XXXXX: fault number 0 to 31

The identifier is transmitted once as soon as the fault with the number XXXXX (binary) has been rectified. This information can be used to delete the fault message in the PLC.

The saved and the deleted messages are the logical system messages of all devices in the LAN (master and slave 1-9).

6.5 Main Settings

6.5.1 System messages

In standard mode, the temperature is displayed alternately with the error code (every two seconds). The differentiation is made as follows:

If bit 1 and bit 3 of the input byte are "1", the transmitted message is a system message. In this case, bit 0 either means „Save fault message" (bit 0 = 0) or „Delete fault message" (bit 0 = 1).

Bit 2 and bits 4 to 7 represent the corresponding message numbers (binary).

6.5.2 Temperature

If the AND operation of bit 1 and bit 3 is not TRUE, the input information represents the actual value of the enclosure internal temperature. In this case the two BCD figures have a valid value (<=9).

6.5.3 Parallel mode

Each of the eight outputs represents a specific system message. The outputs are assigned using the "PLC output x" (where x = 1-8) configuration parameter (see Chapter 9).

The displayed alarm code corresponds to that on the cooling device display. The alarms are the logical OR from all connected cooling units in the master-slave unit (master and slave 1-9).

System messages and the enclosure internal temperature cannot be displayed concurrently.

7 Standard Protocol

The standard protocol is used with the RS-485 interface. This protocol gives you read and write access to all variables of the cooling unit controller connected with the serial interface. The input of the "protocol" configuration parameter makes it possible to select the standard protocol.

The standard protocol specifies that the number of devices (master and slave devices) that can be connected with the RS-485 interface is 200.

You can use the "base address" configuration parameter to select various base addresses for each serial interface and all connected devices.

8 Monitor Protocol

This protocol is used together with the RS-232 (X6) interface. It is used to fetch and set the configuration parameters of the serial interface. You can select this protocol by entering the "protocol" configuration parameter. By setting the DIP switch (10.1 to the ON position), you can select the monitor protocol and parameterise the RS-232 interface independent of the values of all configuration parameters. In this case, use the "setting parameters" list. Connect the RS-232 interface with a PC and select the Hyper-Terminal program from Windows.

Connection settings:

- Port: used port
- Bits per second (baud rate): 19200
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: none

Setting parameters:

h	List of all available functions
?	List of all available parameters
c(x)	Display/setting of the parameter x value
r	Restart the serial interface
d(x)	Information display for device x
v(x, y, z)	Display/setting of the variable y, z value of controller x (connected with the serial interface x)

8.1 Examples for Input Commands

List of all available functions:

```
>h↵
h      list of all the available
       function
?      list of all the available
       parameter
c(p)   display/set the value of the
       parameter p
r      reboot the Serial Interface
d(x)   display the information about
       the device x
v(x,y,z)
       display/set the value of the va-
       riable y, z of the device x


>_
```

List of all available parameters:

```
>? ↵1-state 0
2-state ctrl 0
3-state input 0
4-output ctrl 0
5-output plc 0
6-output leds 0
7-password 0
8-fw version 0
9-protocol plc 0
10-temperature 0
11-plc output-1 2
12-plc output-2 3
13-plc output-3 5
14-plc output-4 6
15-plc output-5 7
16-plc output-6 9
17-plc output-7 10
18-plc output-8 11
19-name "RTT I/O UNIT"
20-serial number 12345
21-configuration 0
22-protocol 0
23-data frame 51
24-base address 0

>_
```

Parameter 1 (write-protected)

```
> c(1) ↵
state 0

>_
```

Parameter 2 (write-protected)

```
> c(2) ↵
state ctrl 31

>_
```

Parameter 3 (write-protected)

```
> c(3) ↵
state input 29

>_
```

Parameter 4

```
> c(4)=200 ↵
output ctrl 200

>_
```

Parameter 5

```
> c(5)=10 ↵
output plc 10

>_
```

Parameter 6

```
> c(6)=112 ↵
output leds 112

>_
```

Parameter 7

```
> c(7)=22 ↵
password 22

>_
```

Parameter 8 (write-protected)

```
> c(8) ↵
fw version 10

>_
```

Parameter 9

```
> c(9)=1 ↵
protocol plc 1

>_
```

Parameter 10

```
> c(10)=6 ↵
temperature 6

>_
```

8 Monitor Protocol

Parameter 11-18

```
> c(11)=2 ↵
plc output-1 2

>_
```

Restart

```
> r ↵

bye...
>_
```

Parameter 19

```
> c(19)=NEW-NAME
name NEW-NAME

>_
```

Information display of device x (write-protected)

```
> d(1)↵
Unit ON-LINE, Type code 123

>_
```

Parameter 20 (write-protected)

```
> c(20)↵
serial number 12345

>_
```

Display/setting of the variable y, z value of controller x

```
> v(1,A,5)↵
v(1,A,5) 0

>_
```

Parameter 21

```
> c(21)=0 ↵
configuration 0

>_
```

x is the controller connected with the serial interface (0 = master, 1-9 = slave)

y is the variable type (A analogue, I integer, D digital)

z is the variable index.

Parameter 22

```
> c(22)=0 ↵
protocol 0

>_
```

Note: To change the parameters, you must enter the password "22". If you do not enter the password, an error message will be issued.

After five minutes without communication, the password must be re-entered.

Parameter 23

```
> c(23)=51 ↵
data frame 51

>_
```

Parameter 24

```
> c(24)=0 ↵
dase address 0

>_
```

Fault messages:

wrong password	No parameter change possible because the password is incorrect.
read only parameter	The selected parameter does not exist.
out of range	The parameter value lies outside the permitted range.
parameter not found	The selected parameter does not exist.
controller not found	The selected controller does not exist.
type not found	The selected type does not exist.
variable not found	The selected variable does not exist.
read only variable	The selected variable does not exist.
unknown command	Incorrect command.
Unit OFF-LINE	Device not connected.

8.2 Memory Status

The red LED (MEM/L9) displays the status of the EEPROM (non-volatile, electronic memory module) and of the stored parameters:

LED off	EEPROM OK
LED on	EEPROM error
LED flashing	EEPROM being written

8.3 Standard Setting of the Configuration Parameters

Press the Reset key for ten seconds to restore the default values of the configuration parameters (except the serial number parameters). The Reset procedure is confirmed by the red LED (MEM/L9) flashing once.

8.4

LAN/Master Cooling Unit Connection Status

The green LED (LAN/L2) indicates the status of the connection between the serial interface and the master cooling unit.

LED on	No communication
LED flashing	Communication OK
LED off	Switched off or fault

8.5 COM Interface Connection Status

The green LED (COM/L3) indicates the status of the connection between the serial interface and the device connected with the RS-232, RS-485, RS-422 interface or, for example, the CMC-TC.

LED on	No communication
LED flashing	Communication OK
LED off	Switched off or fault

9 Status Display Using a Browser

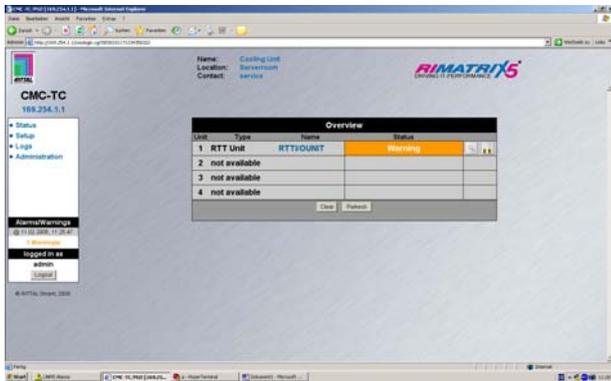(Possible only in conjunction with CMC TC)

Fig. 10 Status display with one cooling unit and warning message

This illustration shows the browser window with the device. This is displayed as 'RTT Unit'; the name of the RTT I/O Unit is also displayed. Click in the 'Setup menu' to make the settings.

The above illustration shows a system with one cooling unit (i.e. master only / no slaves). In this case, the values for the internal temperature and the filter mat difference are displayed directly; when there is at least one additional slave, the messages for all cooling units are combined and shown as a combined status message in this status summary (see Fig. 10).

In the above illustration a warning message is shown; to specify the cause of the warning in more detail, it is also possible to click the Setup menu to show the detailed cause (see Fig. 11).
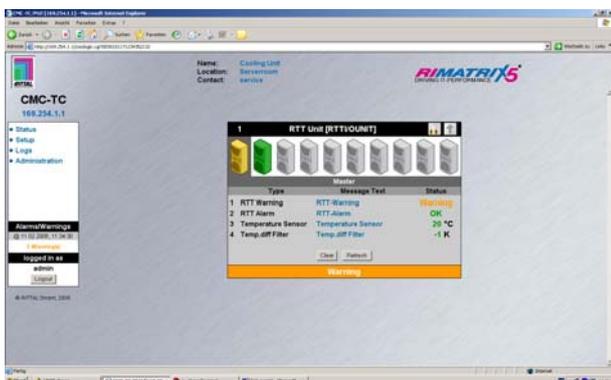

Fig. 11 Status display with several cooling units and warning message

Fig. 11 shows the coloured status of all cooling units in the master-slave unit. This shows that the internal temperature is no longer displayed directly but only as collective message.

In order to specify which warning is present and which cooling unit is involved, the 'Warning Status' line can be clicked and a branch made into a selection menu in which the individual cooling units can be selected (see Figs. 10 and 11).

The status and warning message, the setpoints (set temperature, over-temperature message), and the temperature differences of the filter mat monitoring for the individual cooling units can then be displayed.
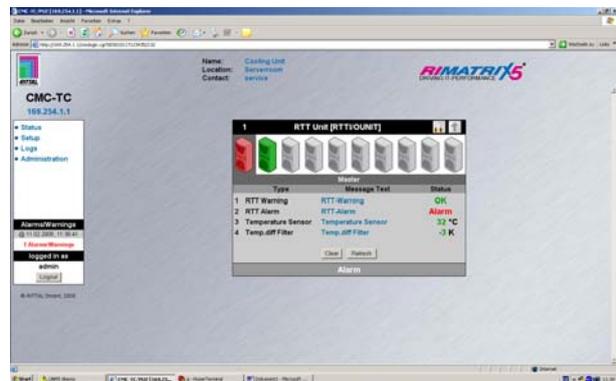
Fig. 12 Status display with several cooling units and an alarm message

Fig. 12 shows an alarm message. In order to specify which alarm is present and which cooling unit is involved, the icon of the involved device can be clicked and a branch made into a selection menu.
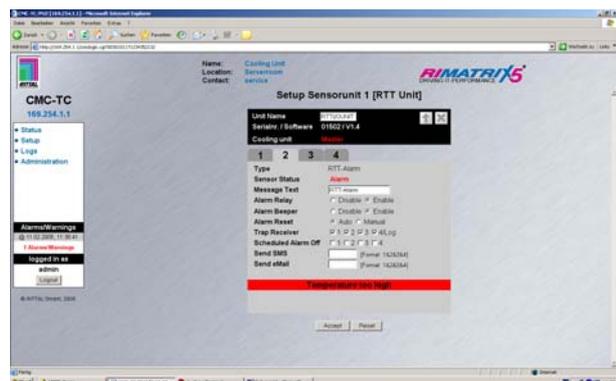
Fig. 13 Drop-down menu for cooling unit selection

If more than one cooling units are connected to the RTT I/O Unit, the above shown select menu appears first after selection of one of the four system messages for entering into the setup menu.

If only one cooling unit (master) is connected, this select menu will be skipped and a direct branch made into the setting level.

Fig. 11 shows, as example, a system with two Top-Therm cooling units (master + 2 slaves). When the cooling unit is selected, the status of the respective device is displayed with a colour code to show immediately which unit is defect-free (green) and for which a warning (yellow) or an alarm (red) has been issued.

The drop-down menu can be used to select the associated device and confirm with 'Accept'; a branch is then made to the setup menu and the status of the selected device displayed (Figs. 11 and 12).
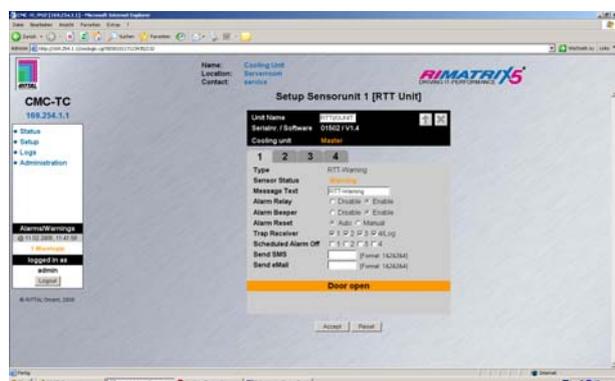

Fig. 14   Setup setting for warning messages

In this setup setting for the warning message the following values are displayed or following settings can be made:

- **Unit Name:**
  Name of RTT I/O Unit (max. ten characters).
- **Serial No./Software:**
  Serial number and software revision of RTT I/O Unit.
- **Cooling Unit:**
  Master or slave 1...9; the overall status of the cooling unit (OK / Warning / Alarm) is displayed by colour. Click the 'Master/Slave' text to return to the selection menu (see Fig. 13).
- **Type:**
  Message type.
- **Sensor Status:**
  The status of the message is displayed coloured.
- **Message Text:**
  The text message that appears in the status window can be edited.
- **Alarm Relay:**
  Should an alarm be issued, the alarm relay

of the PU will be switched. If required, this function can also be deactivated.

- **Alarm Beeper:**
  Used for switching on and off the alarm beeper of the PU.
- **Alarm Reset:**
  After an alarm has been initiated, it can either be deleted automatically (Auto) or manually (Manual).
- **Trap Receiver:**
  Selection to which receiver a trap is sent in case of status modification.
- **Send SMS:**
  Selection of target number 1…4, to which in case of status modification an SMS is to be sent
- **Send E-Mail**

In addition, the exact cause for the warning message is shown in plain text (it is possible to display several causes):

- Door open
- Filter warning (filter mat dirty)
- External temperature high/low
- Level warning (condensate level warning)

Click the Accept button to accept the modified values.
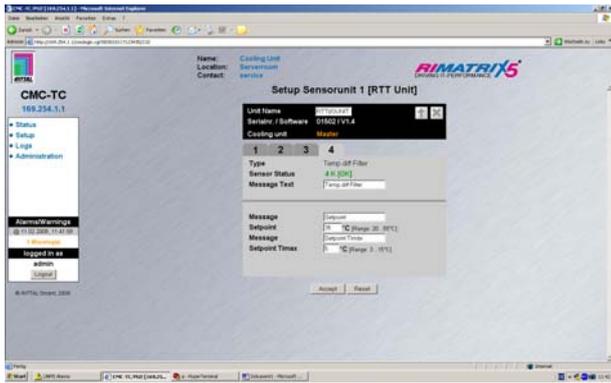
9 Status Display Using a Browser

Fig. 15   Setup setting for alarm messages

In the setup setting for the alarm message, the following values are displayed or following settings can be made:

- **Unit Name:**
  Name of RTT I/O Unit (max. ten characters).

- **Serial No./Software:**
  Serial number and software revision of the RTT I/O Unit.

- **Cooling Unit:**
  Master or slave 1...9; the overall status of the cooling unit (OK / Alarm) is displayed by colour. Click the 'Master/Slave' text to return to the selection menu (see Fig. 14).

- **Type:**
  Message type.

- **Sensor Status:**
  The status of the message is displayed coloured.

- **Message Text:**
  The text message that appears in the status window can be edited.

- **Alarm Relay:**
  Should an alarm be issued, the alarm relay of the PU will be switched. If required, this function can also be deactivated.

- **Alarm Beeper:**
  Used for switching on and off the alarm beeper of the PU.

- **Alarm Reset:**
  After an alarm has been initiated, it can either be deleted automatically (Auto) or manually (Manual).

- **Trap Receiver:**
  Selection to which receiver a trap is sent in case of status modification.

- **Send SMS:**
  Selection of target number 1…4, to which in case of status modification an SMS is to be sent.

- **Send E-Mail**

Click the Accept button to accept the modified values.

In addition, the exact cause for the warning message is shown in plain text (it is possible to display several causes):

Fault messages:

- High internal temperature
- Anti-freeze
- High pressure
- Leakage of refrigerant
- Condenser fan overload
- Evaporator fan overload
- Compressor overload
- Temp. sensor condenser fault
- Temp. sensor external fault
- Temp. sensor anti-freeze fault
- Level sensor fault
- Temp. sensor internal fault
- Phase rotation fault
- EEPROM error
- LAN, master-slave failure

For detailed fault description, causes, and corrective action, see Standard Rittal TopTherm Cooling Units Operating and Installation Instructions (www.rittal.de) section **"Control via Comfort Controller"**.
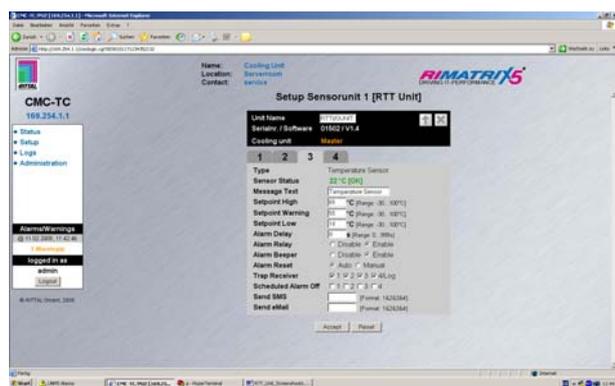
Fig. 16   Setup setting for internal temperature

In this setup setting for the internal temperature sensors, the following values are displayed or the following settings can be made:

-   **Unit Name:**
    Name of RTT I/O Unit (max. ten characters).
-   **Serial No./Software:**
    Serial number and software revision of the RTT I/O Unit.
-   **Cooling Unit:**
    Master or slave 1...9; the overall status of the cooling unit (OK / Alarm) is displayed by colour. Click the 'Master/Slave' text to return to the selection menu (see Fig. 14).
-   **Type:**
    Message type.
-   **Sensor Status:**
    The temperature and status of the message is displayed coloured.
-   **Message Text:**
    The text message that appears in the status window can be edited.
-   **Setpoint High:**
    This setpoint can be used as usual to generate and transmit an alarm message.
-   **Setpoint Warning:**
    This setpoint can be used as usual to generate and transmit a warning message.
-   **Setpoint Low:**
    'Too low' alarm message.
-   **Alarm Relay:**
    Should an alarm be issued, the alarm relay of the PU will be switched. If required, this function can also be deactivated.
-   **Alarm Beeper:**
    Used for switching on and off the alarm beeper of the PU.
-   **Alarm Reset:**
    After an alarm has been initiated, it can either be deleted automatically (Auto) or manually (Manual).

-   **Trap Receiver:**
    Selection to which receiver a trap is sent in case of status modification.
-   **Send SMS:**
    Selection of target number 1…4, to which in case of status modification an SMS is to be sent.
-   **Send E-Mail**

Click the Accept button to accept the modified values.

RTT I/O Unit

19

10 Maintenance and Cleaning

The Rittal RTT I/O Unit is a maintenance-free system. The housing does not need to be opened for the installation or during operation.

> ☞ **Note!**
>
> Opening the housing or any accessory components will void any warranty and liability claims.

10.1 Cleaning

> ⚠ **Warning!**
>
> **Danger of damage!**
> **Do not use any aggressive substances, such as white spirit, acid, etc., for cleaning because such substances can damage the unit.**

Use a slightly moistened soft cloth to clean the housing.

11 Storage and Disposal

11.1 Storage

If the device is not used for a longer period, we recommend that it is disconnected from the mains power supply and protected from dampness and dust.

Further information concerning the operating conditions is contained in the technical specifications.

11.2 Disposal

Because the RTT I/O Unit consists primarily of the housing and PCB, the unit must be disposed of through the electronic waste recycling system when it is no longer required.

12 Customer Service

If you have any technical questions or questions concerning our product spectrum, contact the following service address:

Tel.: +49 (0)2772/505-1855
http://www.rimatrix5.de
E-mail: info@rittal.de

> ☞ **Note!**
>
> To allow us to process your enquiry quickly and correctly, please always specify the article number in the subject line for e-mails.

Further information and the current operating guides and updates of the Rittal RTT I/O Unit are available for download under Security on the Rimatrix5 homepage.

13 Technical Specifications

Designation	RTT I/O
Housing	
Housing type	Plastic covering with metal trim
Height	1 U / 44.5 mm
Width	136 mm
Depth	129 mm
Weight without packaging	approx. 0.6 kg
Potential equalisation	- [1]
Earthing	- [1]
Protection category	IP 40 to EN 60529
Interfaces	
Pushbuttons	1 membrane pushbutton, acknowledge pushbutton
Front socket	1 x RJ10 socket (RS 232 serial interface)
LED display	6 x (active/alarm, link, for each connectable sensor island)
I^2C connection	RJ45 socket (P-I^2C), shielded
Alarm relay	
Rated voltage	24 V DC, internal or 24 V for external power supply
Current	160 mA
Operational area	
Temperature	+5 to +45 °C +42 to +113 °F
Humidity	5 – 95 %
Storage temperature	-20 to +60 °C -4 to +140 °F
Rated voltage	1 x 24 V DC 2.5 A SELV
Network	1 x RJ-45 socket (Ethernet, 10/100 BaseT), shielded

Designation	RTT I/O
Maximum cable length	
PU to the I/O Unit	10 m, after consultation with Rittal maximum 50 m, UL approval
PU to the Access Unit	10 m, after consultation with Rittal maximum 50 m, UL approval
PU to the Climate Unit	10 m, after consultation with Rittal maximum 50 m, UL approval
PU to the Wireless I/O Unit	10 m, after consultation with Rittal maximum 50 m
Protocols	
Available protocols	- TCP/IP - SNMP V1.0 (incl. MIB II) - SNMPv3 - TELNET, SSH - FTP, SFTP - http, https, SSL 3.0 - NTP - DHCP

Technical specifications

[1] Not required because safety extra-low voltage 24 V DC

14   Configuration Parameters

Configuration parameters table							
Group	No.	Name	Description	Setting range	Factory setting	Type	Saved in Eeprom
General	1	state	Status of the serial interface	0-255	-	R	.
	2	state ctrl	Status of the RS-232/EXP control line	0-255	-	R	.
	3	state input	Status of the DIP switches and keys	0-255	-	R	.
	4	output ctrl	Output of the control line during function test	0-255	0	R/W	.
	5	output plc	Output of the PLC line during function test	0-255	0	R/W	.
	6	output leds	Output of the LED during function test	0-255	0	R/W	.
	7	password	Password for changing (read/write) the parameter (199 test mode for 1 min.)	0-255	0	R/W	.
	8	fw version	Firmware version of the serial interface	0-255	-	R	.
PLC X2	9	protocol plc	Selects the required PLC X2 protocol	0 = standard negative / 1 = parallel negative / 2 = standard positive / 3 = parallel positive	0	R/W	Yes
	10	temperature	When the standard PLC X2 protocol is selected, it indicates the device on which the internal temperature is shown.	0=master / 1-9 = slave	0	R/W	Yes
	11	plc output 1	System message for output 1	1-19	2	R/W	Yes
	12	plc output 2	System message for output 2	1-19	3	R/W	Yes
	13	plc output 3	System message for output 3	1-19	5	R/W	Yes
	14	plc output 4	System message for output 4	1-19	6	R/W	Yes
	15	plc output 5	System message for output 5	1-19	7	R/W	Yes
	16	plc output 6	System message for output 6	1-19	9	R/W	Yes
	17	plc output 7	System message for output 7	1-19	10	R/W	Yes
	18	plc output 8	System message for output 8	1-19	11	R/W	Yes
RS-232/ RS-485/ RS-422/ Exp.	19	Name	Name detection of the interface card	10 chars	NONAME	R/W	Yes
	20	serial number	Detection of the serial number of the interface card	0 -65534	(Note 1)	R	Yes
	21	confi-guration	Configuration of the serial interface	0=RS-232 / 1=RS-422 / 2=RS-485 / 3=Expans.	1	R/W	Yes
	22	protocol	Selects the required protocol	0=monitor / 1=CMC-TC / 2=Carel	1	R/W	Yes
	23	data frame	Selects the baud rate, the number of data bits, the parity and the stop bits (not for CMC-TC)	0-255	51	R/W	Yes
	24	base address	Selects the base address used by the Carel protocol. The address of the master becomes base address +1; the address of slave 1 becomes base address +2, etc.	0-207	0	R/W	Yes

R = read-only (parameter)
R/W = read and write (parameter)
The EEPROM memory indicates whether the parameter(s) are stored in the EEPROM (permanent memory)

Note 1: The serial number is set in the factory and unique for each device

RTT I/O Unit