Rittal – The System.

Faster – better – everywhere.

CMC III CAN-Bus DRC

DK 7030.550

Assembly and operating instructions

EN

Preface

Dear Customer!

Thank you for choosing our CMC III CAN bus DRC (referred to hereafter as "CAN bus DRC")!

We wish you every success.

Yours
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We are always happy to answer any technical questions regarding our entire range of products.

EN

Contents

EN

1 Notes on documentation

1.1 CE labelling

Rittal GmbH & Co. KG hereby confirms that the CAN bus DRC is compliant with the EU EMC Directive 2014/30/EU. An appropriate declaration of conformity has been prepared. It can be provided on request.

CE

1.2 Storing the documents

The assembly and operating instructions as well as all other applicable documents are an integral part of the product. They must be passed to those persons who are engaged with the unit and must always be available and on hand for the operating and maintenance personnel.

1.3 Symbols used in these operating instructions

The following symbols are used in this documentation:

Danger!
A hazardous situation in which failure to comply with the instructions causes death or severe injury.

Warning!
A hazardous situation which may lead directly to death or serious injury if the instructions are not followed.

Caution!
A hazardous situation which may lead to (minor) injuries if the instructions are not followed.

Note:
Identification of situations that can lead to material damage.

■ This symbol indicates an "action point" and shows that you should perform an operation or procedure.

1.4 Other applicable documents

– Installation Guide and Short User's Guide
– CMC III Processing Unit/CMC III Processing Unit Compact assembly and operating instructions
– Installation Guide and Short User's Guide of the CMC-TC unit "RFID controller" (DK 7890.500)

1.5 Area of validity

This guide applies to software version V3.15.20.
This documentation shows the English screenshots. The descriptions of individual parameters on the CMC III PU website likewise use English terminology. Depending on the set language, the displays on the CMC III PU website may be different (see assembly and operating instructions for the CMC III Processing Unit).

EN

2 Safety instructions

2.1 General safety instructions

Please observe the following general safety instructions for the installation and operation of the system:

– Assembly and installation of the CAN bus DRC, especially wiring with mains power, may only be performed by a trained electrician.
– Please observe the valid regulations for electrical installation in the country in which the CAN bus DRC is installed and operated, and the national regulations for accident prevention. Please also observe any internal company regulations, such as work, operating and safety regulations.
– Use only original Rittal products or products recommended by Rittal in conjunction with the CAN bus DRC.
– Please do not make any changes to the CAN bus DRC that are not described in this manual or in the associated manuals.
– The operational safety of the CAN bus DRC is only warranted if used properly for the intended purpose. The technical specifications and limit values stated must not be exceeded under any circumstances. In particular, this applies to the specified ambient temperature range and IP protection category.
– The CAN bus DRC must not be opened. It does not contain any parts that need servicing.
– Operating the system in direct contact with water, aggressive materials or inflammable gases and vapours is prohibited.
– Other than these general safety instructions, ensure you also observe the specific safety instructions when carrying out the tasks described in the following chapters.

2.2 Operating and technical staff

– The mounting, installation, commissioning, maintenance and repair of this unit must only be performed by qualified, trained personnel.
– Only properly instructed personnel may work on the unit while in operation.

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3 Product description

3.1 Functional description and components

3.1.1 Function

The CAN bus DRC is compatible with the CMC-TC "RFID controller" unit, which as with the CMC-TC system can be connected to the CMC III system. A cable duct is available for users who wish to connect this unit. The CAN bus DRC initialises itself automatically after connection to the CAN bus system.

Note:
In the following text, the designation "CMC III Processing Unit" refers to both the "CMC III Processing Unit" and also the "CMC III Processing Unit Compact". All text passages which only apply to one of these two variants are labelled accordingly.

3.1.2 Components

The device consists of a compact plastic housing in RAL 7035 with a ventilated front in RAL 9005.

3.2 Proper use, foreseeable misuse

The CAN bus DRC must only be used for connecting CMC-TC "RFID controller" units to the CMC III system. Any other use is not permitted.

The unit is state of the art and built according to recognised safety regulations. Nevertheless, improper use can pose a threat to the life and limb of the user or third parties, or result in possible damage to the system and other property.

Consequently, the unit must only be used properly and in a technically sound condition! Any malfunctions which impair safety should be rectified immediately. Follow the operating instructions!

Proper use also includes the observance of the documentation provided and compliance with the inspection and maintenance conditions.

Rittal GmbH & Co. KG is not liable for any damage which may result from failure to comply with the documentation provided. The same applies to failure to comply with the valid documentation for any accessories used.

Inappropriate use may be dangerous. Inappropriate use includes:
– Use of impermissible tools.
– Improper operation.
– Improper rectification of malfunctions.
– Use of accessories not approved by Rittal GmbH & Co. KG.

3.3 Scope of supply

– CAN bus DRC
– Accessories supplied loose (fig. 1)
– Installation Guide and Short User's Guide

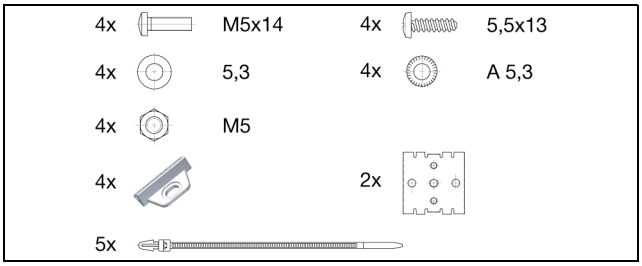

Fig. 1: Accessories supplied loose

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4 Transport and handling

4.1 Transport

The unit is delivered in a cardboard box.

4.2 Unpacking

- Remove the packaging materials from the unit.

Note:
After unpacking, the packaging materials must be disposed of in an environmentally friendly way. They consist of the following materials:
Polyethylene film (PE film), cardboard.

- Check the unit for any damage that may have occurred during transport.

Note:
Damage and other faults, e.g. incomplete delivery, should be reported immediately, in writing, to the shipping company and to Rittal GmbH & Co. KG.

- Remove the unit from the PE film.
- Remove the protective film from the front cover of the unit.

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5 Installation

5.1 Safety instructions

Warning!
Work on electrical systems or equipment may only be carried out by an electrician or by trained personnel guided and supervised by an electrician. All work must be carried out in accordance with electrical engineering regulations.

The unit may only be connected after the aforementioned personnel have read this information!

Use only insulated tools.

The connection regulations of the appropriate electricity supply company must be followed.

The device is not de-energised until all of the voltage sources have been disconnected!

- Please observe the valid regulations for electrical installation in the country in which the CAN bus DRC is installed and operated, and the national regulations for accident prevention. Please also observe any internal company regulations, such as work, operating and safety regulations.
- The technical specifications and limit values stated must not be exceeded under any circumstances. In particular, this applies to the specified ambient temperature range and IP protection category.
- If a higher IP protection category is required for a special application, the CAN bus DRC must be installed in an appropriate housing or in an appropriate enclosure with the required IP protection category.

5.2 Siting location requirements

To ensure correct functioning of the unit, the conditions for the installation site of the unit specified in section 8 "Technical specifications" must be observed.

Electromagnetic interference

– Interfering electrical installations (high frequency) should be avoided.

5.3 Installation procedure

In general, there are several ways of installing the CAN bus DRC in an IT enclosure:

1. Installation using the mounting clips provided, possibly also with spring clips for top-hat rail installation.
2. Installation with the CMC III mounting unit (DK 7030.071).
3. Installation with the CMC III mounting unit, 1 U (DK 7030.070).

5.3.1 Notes on assembly

- Never secure the CAN bus DRC using the mounting clips provided on only one side of the device! This would cause undesirable vibrations in the device during operation.

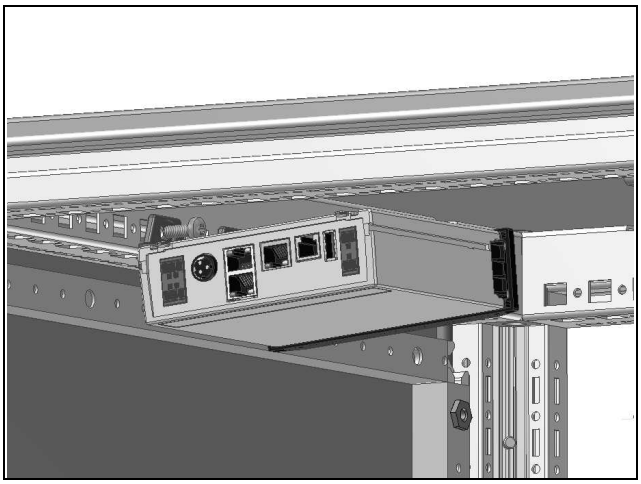

Fig. 2: Incorrect installation in the enclosure

- The CAN bus DRC must be positioned so that it is ventilated with an adequate amount of air and the ventilation slots are not covered.

5.3.2 Installation using the mounting clips provided

Installation using the mounting clips provided in the scope of supply is best done on a mounting plate or on a top-hat rail with the help of the spring clips provided (see section 5.3.4 "Installation on a top-hat rail").

- Slide two mounting clips onto each of the side guide rails of the CAN bus DRC.

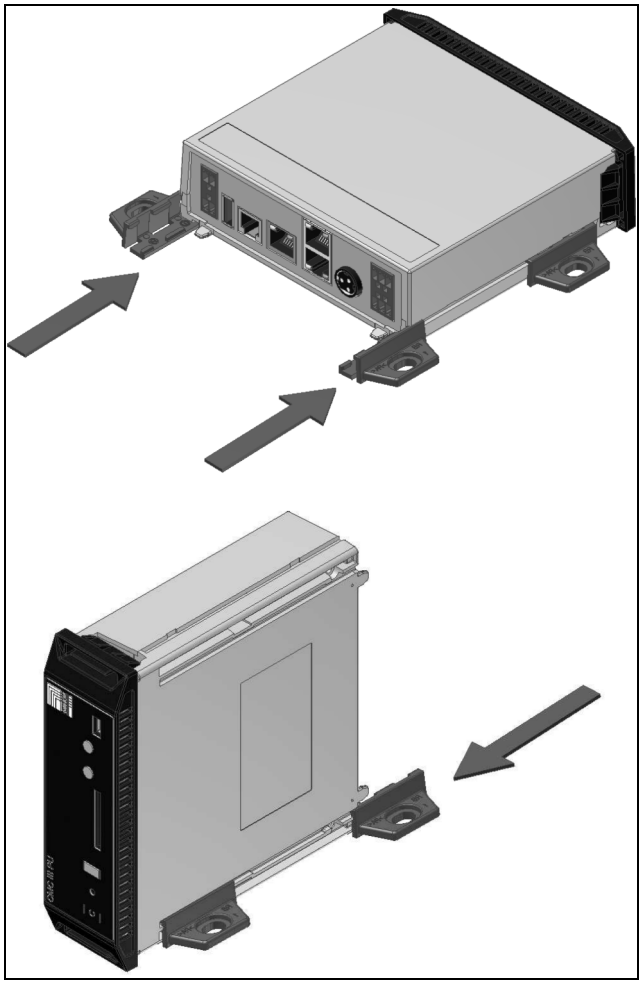

Fig. 3: Sliding on the mounting clips

- Secure the CAN bus DRC using the screws provided in the scope of supply, e.g. on a mounting plate in the IT enclosure.

5.3.3 Installation with the CMC III mounting unit

The CMC III mounting unit is available in two variants:

– For installing the CAN bus DRC on the enclosure frame or on a mounting plate (DK 7030.071).
– As a 482.6 mm (19") variant (1 U) to accommodate the CAN bus DRC and two additional devices (DK 7030.070).

The procedure for installing the CAN bus DRC in both mounting units is identical:

- Slide the CAN bus DRC as far as possible into the mounting unit until it latches into place.

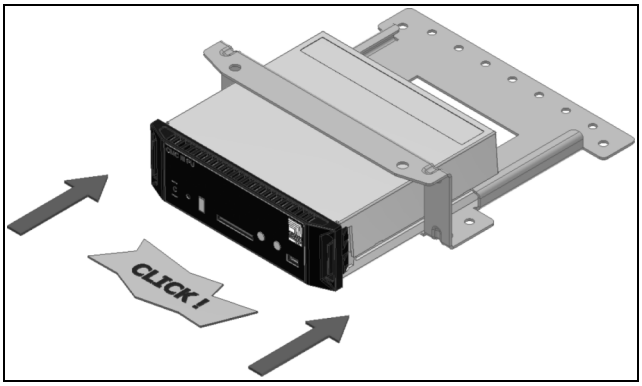

Fig. 4: Slide the CAN bus DRC into the mounting unit

- Fasten the mounting unit (DK 7030.071) to the enclosure frame or to a mounting plate using the screws provided.

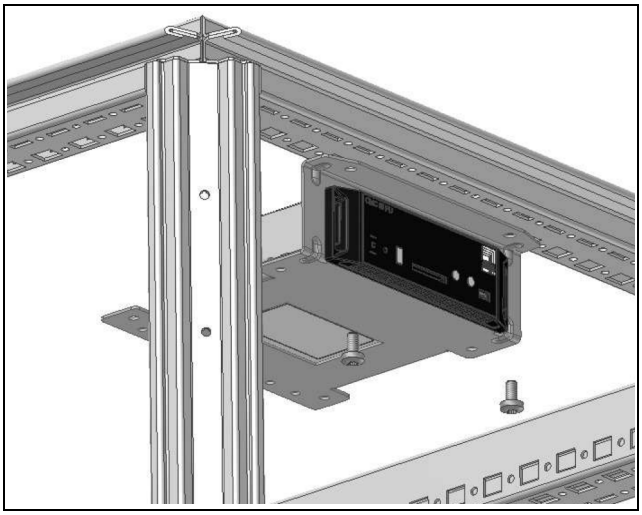

Fig. 5: Fastening the mounting unit to the enclosure frame

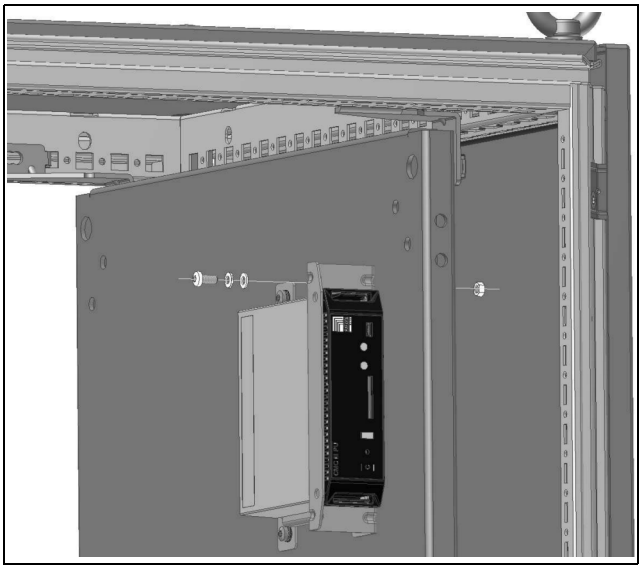

Fig. 6: Fastening the mounting unit to a mounting plate

- Fasten the mounting unit (DK 7030.070) in a free rack-mounting point (1 U) in the IT enclosure using the screws provided.

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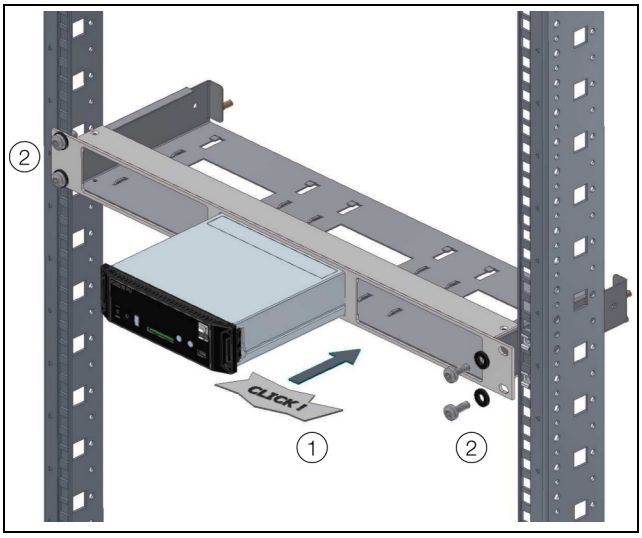

Fig. 7: Fastening the mounting unit in a rack-mounting point

5.3.4 Installation on a top-hat rail

The unit is mounted on a top-hat rail using the mounting clips and spring clips provided.

- Slide a mounting clip onto each of the side guide rails of the CAN bus DRC (left and right).
- Screw a spring clip for top-hat rail installation onto each of the mounting clips.
- Place the CAN bus DRC with the spring clips on the top-hat rail.

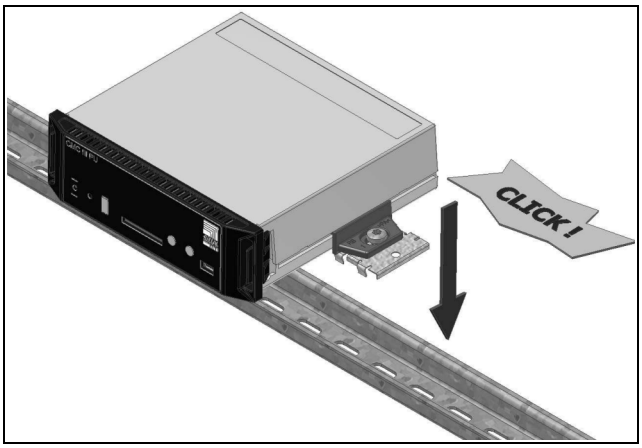

Fig. 8: Installing the CAN bus DRC on a top-hat rail

5.4 Electrical connection

The device is not de-energised until all of the voltage sources have been disconnected!

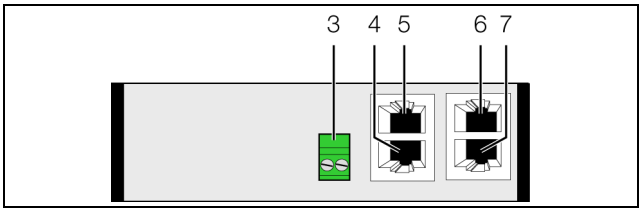

Fig. 9: Rear of the CAN bus DRC

Key

3 24 V power supply ⎓ (direct connection)
4 Connection for CMC-TC unit "RFID controller" RJ 45
5 Not assigned
6 CAN bus connection, 24 V ⎓
7 CAN bus connection, 24 V ⎓

The CAN bus DRC must be connected directly to a CMC III power supply unit (DK 7030.060) using the clamp connectors.

- Connect the 24 V output (direct connection) of the power supply unit to the corresponding connection on the CAN bus unit (fig. 9, item 3).
- Note the pin allocation of the connection on the CAN bus unit (see also the device labelling).

Pin	Signal
Pin 1 (left)	+24 V ⎓
Pin 2 (right)	GND

Tab. 1: Pin allocation on the CAN bus unit

Note:
The above designations "left" and "right" apply when the device is viewed from the rear (fig. 9).

- Also observe the pin allocation of the power supply unit (DK 7030.060). This can be found in the relevant documentation.

5.5 Connecting the CAN bus DRC

- Connect the CMC-TC unit "RFID controller" (DK 7890.500) to the appropriate connection (fig. 9, item 4).
- Use a CAN bus connection cable to connect the CAN bus DRC to a CAN bus interface on the CMC III Processing Unit or the neighbouring component on the CAN bus (fig. 9, item 6).
  A maximum of two CAN bus DRCs may be connected to one CAN bus.

The following CAN bus connection cables from the CMC III accessories range may be used:

– DK 7030.090 (length 0.5 m)
– DK 7030.091 (length 1 m)
– DK 7030.092 (length 1.5 m)
– DK 7030.093 (length 2 m)

– DK 7030.480 (length 3 m)
– DK 7030.490 (length 4 m)
– DK 7030.094 (length 5 m)
– DK 7030.095 (length 10 m)

Note:
If the RFID controller is connected to the CAN bus DRC retrospectively, disconnect the CAN bus DRC from the CAN bus first and then reconnect it.

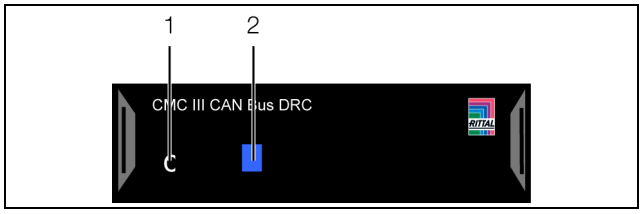

Fig. 10: Front of the CAN bus DRC

Key
1 "C" button for acknowledging messages
2 Multi-LED for status display

The unit software is updated, if necessary, following connection. The status LED of the CAN bus DRC shows a continuous blue light and also flashes purple during the entire update process.
In addition, the status LED of the CMC III Processing Unit flashes white and a corresponding message appears on the website.

Note:
No settings can be made as long as the update process is running.

The update of the unit is complete when the following conditions have been fulfilled:
1. The LEDs on the CAN bus connection of the unit are green.
2. The multi-LED of the unit behind the front panel flashes blue and also green or red, depending on the status of the unit.

Further components are connected as a daisy chain.
■ If necessary, connect another component (e.g. another sensor type) to the second, free CAN bus interface of the CAN bus DRC.

Status change display
– The two green and the two red CAN bus LEDs on the CAN bus connection flash.
– The multi-LED of the Processing Unit flashes continually in the sequence green – yellow – red.
– The multi-LED of the CAN bus unit flashes blue continuously.

■ Press the "C" button on the CMC III Processing Unit (an initial audio signal will sound) and keep it pressed for approx. 3 seconds until a second audio signal is heard.

Note:
For a list of all multi-LED displays, see section 6.3.1 "Multi-LED displays".

Status change display on the CAN bus LEDs
– Continuous green LEDs: CAN bus status "OK".
– Continuous red LEDs: CAN bus status defective.

Status change display on the multi-LED of the Processing Unit
– Continuous green light: All devices connected to the CAN bus have the status "OK".
– Continuous orange light: At least one device connected to the CAN bus has the status "Warning".
– Continuous red light: At least one device connected to the CAN bus has the status "Alarm".

Status change display on the multi-LED of the CAN bus DRC
– Continuous blue flashing: Communication via the CAN bus.
– Green flashing: When the measured value changes, or at least every 5 seconds.

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6 Operation

6.1 Activating the CAN bus DRC

Once the electrical connection has been established, the CAN bus DRC starts automatically (see section 5.4 "Electrical connection"). Separate activation is not required.

6.2 Operating and display elements

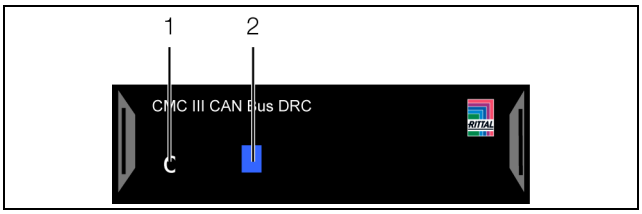

Fig. 11: Front of the CAN bus DRC

Key

1 "C" button for acknowledging messages
2 Multi-LED for status display

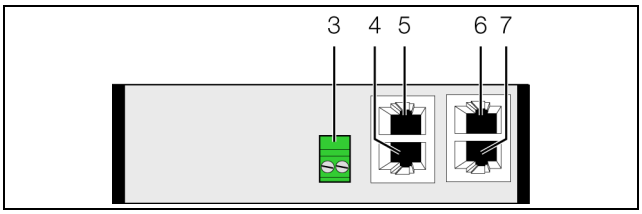

Fig. 12: Rear of the CAN bus DRC

Key

3 24 V power supply ⎓ (direct connection)
4 Connection for CMC-TC unit "RFID controller" RJ 45
5 Not assigned
6 CAN bus connection, 24 V ⎓
7 CAN bus connection, 24 V ⎓

6.3 LED displays

A multi-LED for status display is integrated into the front of the CAN bus DRC (fig. 11, item 2). Additional LEDs are also located on the rear of the CAN bus connection (fig. 12, items 6 and 7) and on the connection for the components (fig. 12, items 4 and 5).

6.3.1 Multi-LED displays

The multi-LED indicates the status of the CAN bus DRC and the connected RFID controller.

Colour	Status
Green	When the measured value changes, or cyclically every 5 seconds.
Purple	A CAN bus DRC software update is being carried out.
Blue	Communication via the CAN bus.

Tab. 2: Multi-LED flashing codes

Colour	Status
Red	At least one component has been removed or can no longer be accessed (status "Lost").

Tab. 2: Multi-LED flashing codes

6.3.2 LED displays on the CAN bus connection

A red and a green LED are located on the CAN bus connection. They display the status of the CAN bus.

Colour	Status
Green (steady light)	Communication via the CAN bus possible.
Red (flashing)	Transmission error.

Tab. 3: LEDs on the CAN bus connection

6.3.3 LED displays on the RJ 45 connection for the RFID controller

There is a green and an orange LED on the RJ 45 connection. These display the status of communication with the connected RFID controller.

Colour	Status
Green (flashing)	Communication via the interface possible.
Orange (flashing)	Transmission error.

Tab. 4: LEDs on the connection for the RFID controller

6.4 Acknowledging messages

Messages from the CAN bus DRC or the connected RFID controller can only be acknowledged on the website of the CMC III Processing Unit.

1. By selecting a message with the right mouse button in the message display and clicking on the "Acknowledge alarm" entry in the context menu with the left mouse button.
   If an alarm message has been selected, "Acknowledge Alarm" confirms only the currently selected message.
2. By clicking with the right mouse button on the "CMCIII-DRC" entry in the configuration area and clicking on the "Acknowledge Alarms" entry in the context menu with the left mouse button.
   This will acknowledge all pending alarm messages for that particular component.

Note:
It is **not** possible to acknowledge messages directly on the CMC III PU, the CAN bus DRC or the RFID controller. This prevents RFID tags or entire components from being removed from the IT rack unnoticed.

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6.5 Operating via the CMC III Processing Unit website

After logging on to the CMC III Processing Unit, the web interface for operating the device is displayed.

- First select the "CMCIII-DRC" entry in the navigation area.

Similar to the CMC III Processing Unit, the **Configuration** tab can be used to individually configure the access rights for the CAN bus DRC (**Device Rights** button) and the alarm messages (**Alarm Configuration** button).

The **Observation** tab is used to configure all of the settings for the CAN bus DRC, the connected RFID controller and the individual RFID tags. You have a choice between two display options:

– Tree view: This allows targeted and fast access to individual parameters.
– Graphical display: This provides a rapid overview of all of the parameters of the components installed in the IT rack in four sections.

After selecting the "CMCIII-DRC" level, if the lower-level "Device", "RFD-Ctrl" and "Tags" entries are displayed (fig. 13, item 1), switch to the graphical display as follows:

- Click the coloured "graph" symbol after the "CMCIII-DRC" entry, which resembles a stylised bar graph (fig. 13, item 2).

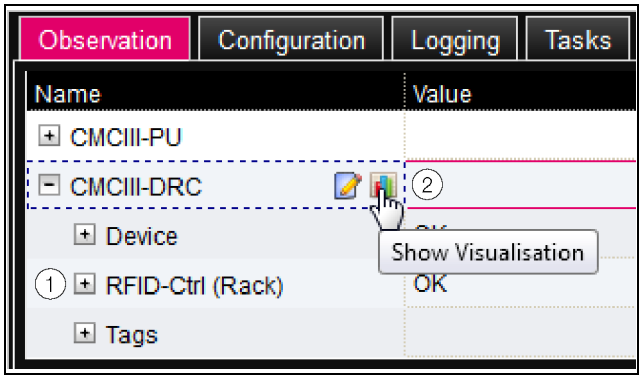

Fig. 13: Tree view

The display switches to the graphical display (fig. 14). All information for the IT rack and the individual RFID tags can be seen at a glance and edited here (fig. 14, item 2).

After selecting the "CMCIII-DRC" level, if the graphical display is shown, you can switch to the tree view as follows:

- Click the grey-scale "graph" symbol after the "CMCIII-DRC" entry (fig. 14, item 1).

Fig. 14: Graphical display

The display changes to the tree view (fig. 13) and you can access the specific individual settings.

Proceed as follows to modify the settings when the graphical display has been selected:

- Move the mouse pointer over the "Edit" symbol, and the mouse pointer will change into a "Hand" symbol (fig. 15, item 1).

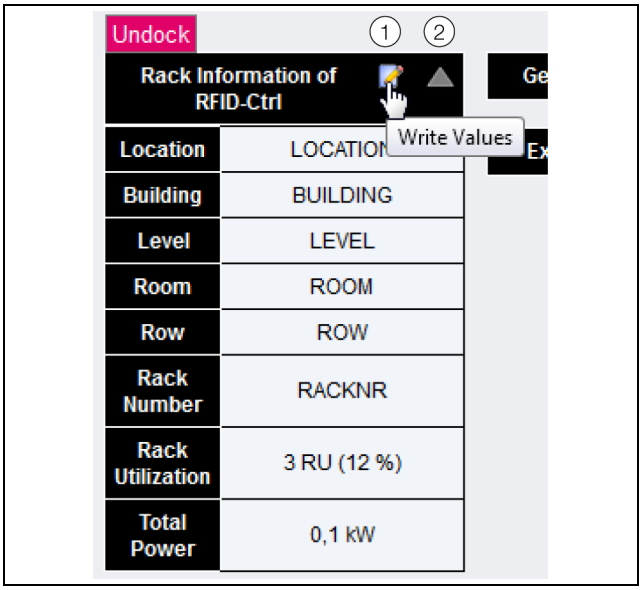

Fig. 15: Changing the settings in the graphical display

- Click the "Edit" symbol.
  The "Write Values" dialogue will appear with the parameters for the selected area.
- Click on the "Triangle" symbol to the right of the "Edit" symbol to open and close the respective area (fig. 15, item 2).

The graphical display is divided into the following areas:

– Rack Information of RFID-Ctrl: Information on the installation site of the RFID controller (see section 6.5.2 "RFID-Ctrl").

– Rack View/Tag List: Overview of components with RFID tags built into the rack. The components are displayed in different colours, depending on the device category stored at the "General Tag Information" level.
– Gen. Tag Info of RU XX: General device information stored on the RFID tag ("General Tag Information" area)
– Ext. Tag of RU XX: Extended device information stored on the RFID tag ("Extended Tag Information" area)

In the "Rack View/Tag List" area, the side markings of the individual RFID tags will be shown in the following colours depending on their status:
– Orange: Status "Detected". The RFID tag has been installed but not yet confirmed.
– Green: Status "OK". The RFID tag has been installed and confirmed.
– Red: Status "Lost". The RFID tag or the entire component has been removed from the IT rack.

Only editable parameters are described in the following sections 6.5.1 "Device" to 6.5.3 "Tags". There are also display values that provide information.

6.5.1 Device

General settings for the CAN bus DRC are configured at the "Device" level.

Parameter	Explanation
Description	Specific description of the CAN bus DRC.
Location	Installation location of the CAN bus DRC.

Tab. 5: Settings at "Device" level

In addition, parameters that provide detailed information about the CAN bus DRC, such as the CAN bus DRC software and hardware versions, are also displayed. It is advisable to have such information to hand, particularly in order to ensure fast troubleshooting of queries with Rittal.

6.5.2 RFID-Ctrl

General settings for the RFID controller are configured at the "RFID-Ctrl" level.

Parameter	Explanation
DescrName	Specific description of the RFID controller.
Location	Installation location of the RFID controller.
Building	Building where the RFID controller is located.
Level	Storey where the RFID controller is located.
Room	Room where the RFID controller is located.
Row	IT rack row where the RFID controller is located.
Rack Number	Number of the IT rack where the RFID controller is located.
Command	Control of the LED display on the RFID aerial. "LEDs auto": All LEDs with an RFID tag installed flash cyclically. "LEDs occupied": All LEDs whose height units are labelled as "occupied" in the RFID tags are permanently illuminated. "LEDs free": All LEDs whose height units are not yet labelled as "occupied" in any RFID tag are permanently illuminated.

Tab. 6: Settings at "RFID-Ctrl" level

Parameters that provide detailed information about the RFID controller and the connected RFID aerial, such as the software and hardware version, are also displayed. It is advisable to have such information to hand, particularly in order to ensure fast troubleshooting of queries with Rittal.

6.5.3 Tags

The settings for the individual RFID tags are configured at the "Tags" level. Apart from the "DescName" parameter, this is only possible in the graphical display. The entries for the tags are subdivided into the following two sections:
– General Tag Information
– Extended Tag Information

Note:
It is advisable to link an RFID tag "permanently" to a component. When the component is moved within an IT rack or to another IT rack, the corresponding RFID tag moves with it to the new location, since all information about that component is already stored on the tag.

All information stored on the RFID tags can also be polled via SNMP and is therefore available, for example, in RiZone. In order to be able to execute and display the following settings for an RFID tag, this must previously have been selected in the "Rack View/Tag List" area.

"General Tag Information" area

The following parameters may be set in the "General Tag Information" area:

Parameter	Explanation
Name	Name of component to which the RFID tag is assigned.

Tab. 7: Settings in the "General Tag Information" area

Parameter	Explanation
Form Factor	Number of height units (U) occupied by the component in the IT rack. This value is used to calculate the assignment of the IT rack in the rack information.
Offset	Distance of the RFID tag from the upper edge of the device. This can be used to correct the position of the component in the graphical representation if the RFID tag is not aligned with the upper edge of the component.
Manufacturer	Manufacturer of the component.
Type	Type of component.
Serial Number	Serial number of component.
MAC Address 1	Hardware address of the component's first network adaptor.
MAC Address 2	Hardware address of the component's second network adaptor.
Vendor	Supplier of the component.
Device Class	Selection of the component's device class from the predefined entries. The choice of device class influences the colour of the component's graphical display.
Device	Precise description of the device.

Tab. 7: Settings in the "General Tag Information" area

"Extended Tag Information" level

The following, more detailed parameters may be set in the "Extended Tag Information" level:

Parameter	Explanation
Power [W]	Maximum power consumption of component. This value is used to calculate the total power consumption of the IT rack.
Current [A]	Maximum current rating of component.
Voltage [V]	Maximum voltage consumption of component.
Maintenance Last	Date of last service.
Maintenance Next	Date of next service.
Update Last	Date of last update.
Update Next	Date of next update.
Initial Start	First installation of the component.

Tab. 8: Settings in the "Extended Tag Information" area

Parameter	Explanation
Inventory Code	Inventory number of the component.
Service Contact	Contact address in case of servicing.

Tab. 8: Settings in the "Extended Tag Information" area

6.5.4 Confirm new tags

If a new component with an RFID tag is installed in the rack, this is detected and displayed accordingly by the RFID controller or RFID aerial.

– The status of the RFID controller at "RFID-Ctrl" level changes to "Changed".
– The status of the tag on which the new component was installed changes to "Detect" at "Tags" level.

■ Confirm the "Detect" message as outlined in section 6.4 "Acknowledging messages".

6.5.5 Confirm removed tags

If a component with an RFID tag is removed from the rack, this is detected and displayed accordingly by the RFID controller or RFID aerial.

– The status of the RFID controller at "RFID-Ctrl" level changes to "Changed".
– The status of the tag from which the installed component was removed changes to "Lost" at "Tags" level.

■ Confirm the "Lost" message as outlined in section 6.4 "Acknowledging messages".

If a tag has been removed but not yet confirmed as removed, changes to the RFID tag information may still be made via the website. However, obviously these changes **cannot** be transferred to the tag. If the same tag is subsequently reused with an RFID system, it will still contain the old, unchanged data.

Note:
If changes are made to tags with the status "Lost", **no** error message will appear. Nevertheless, the data will not be transferred to the tag.

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7 Storage and disposal

7.1 Storage

If the device is not used for a long period, Rittal recommends that it be disconnected from the mains power supply and protected from damp and dust.

7.2 Disposal

Since the CAN bus DRC consists mainly of the "housing" and "circuit board" parts, the device must be passed on to the electronic waste recycling system for disposal.

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8 Technical specifications

Technical specifications		CAN bus DRC
Model No.		DK 7030.550
W x H x D (mm)		138 x 40 x 132
Operating temperature range		0°C…+55°C
Storage temperature		-45°C…+85°C
Operating humidity range		5%...95% relative humidity, non-condensing
Protection category		IP 30 to IEC 60 529
Number of CAN bus connections		2
Number of connections for components		1
Operation/signals	LED display	OK/Alarm/CAN bus status

Tab. 9: Technical specifications

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9 Customer service addresses

For technical queries, please contact:
Tel.: +49(0)2772 505-9052
E-mail: info@rittal.de
Homepage: www.rittal.com

For complaints or service requests, please contact:
Tel.: +49(0)2772 505-1855
E-mail: service@rittal.de

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