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CMC III Power Unit



7030.050

Montage-, Installations- und Bedienungsanleitung
Assembly and operating instructions

ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

IT INFRASTRUCTURE

SOFTWARE & SERVICES

FRIEDHELM LOH GROUP



Foreword

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Foreword

Dear Customer,

Thank you for choosing our CMC III Power Unit
(referred to hereafter as "Power Unit")!

We wish you every success.

Yours,
Rittal GmbH & Co. KG

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

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1 Notes on documentation

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1 Notes on documentation

1.1 CE labelling

Rittal GmbH & Co. KG hereby confirms that the CMC III Power Unit is compliant with the EC EMC Directive 2004/108/EC. An appropriate declaration of conformity has been prepared. It can be provided on request.



1.2 Storing the documents

The assembly and operating instructions as well as all 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!
Hazardous situation leading directly to death or serious injury if the instructions are not followed.



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



Caution!
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 Associated documents

- Installation Guide and Short User's Guide
- CMC III Processing Unit/CMC III Processing Unit Compact assembly and operating instructions

2 Safety instructions

2.1 General safety instructions

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

- Assembly and installation of the Power Unit, in particular for 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 Power Unit 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 Power Unit.
- Please do not make any changes to the Power Unit that are not described in this manual or in the associated manuals.
- The operating reliability of the Power Unit is only warranted in case of use as intended and according to the rules. 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 degree of protection.
- The Power Unit 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 the tasks described in the following chapters are performed.

2.2 Service and technical staff

- The mounting, installation, commissioning, maintenance and repair of this unit may only be performed by qualified mechanical and electro-technical trained personnel.
- Only properly instructed personnel may work on a unit while in operation.

2.3 Safety Instructions for the Power Unit

**Warning!**

For open enclosures, the Power Unit 7030.050 must be installed in the mounting unit (1 U) 7030.070 (see section 5.3.3 "Installation with the CMC III mounting unit").

3 Product description

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3 Product description

3.1 Functional description and components

3.1.1 Function

The Power Unit can be used to connect devices to a 230 V mains power supply and measure electrical values such as voltage, current, power and consumption (kWh). The Power Unit has an identification that allows it to be detected automatically by the CMC III Processing Unit.



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 of the text passages which only apply for one of the 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 Power Unit is exclusively designed to supply energy to connected electrical consumers and measure various electrical values. It may only be used together with the CMC III Processing Unit. 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!

The intended use also includes the observance of the documentation provided and fulfilling 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 the accessories used.

Inappropriate use may result in danger. 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

- CMC III Power Unit
- Accessories provided (fig. 1)
- Installation Guide and Short User's Guide

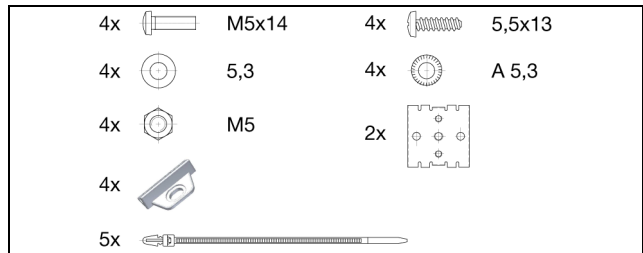


Fig. 1: Accessories provided

4 Transport and handling

4.1 Transport

The unit is delivered in a carton.

4.2 Unpacking

- Remove the unit's packaging materials.



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 device.

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 Power Unit 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 degree of protection.
- If a higher IP protection category is required for a special application, the Power Unit must be installed in an appropriate housing or enclosure with the required IP protection category.

5.2 Siting location requirements

To ensure the unit functions correctly, 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 three ways of installing the Power Unit in an IT enclosure:

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

5.3.1 Installation notes

- Never fasten the Power Unit with the mounting clips provided on only one side of the device! This would cause undesirable vibrations in the device during operation.

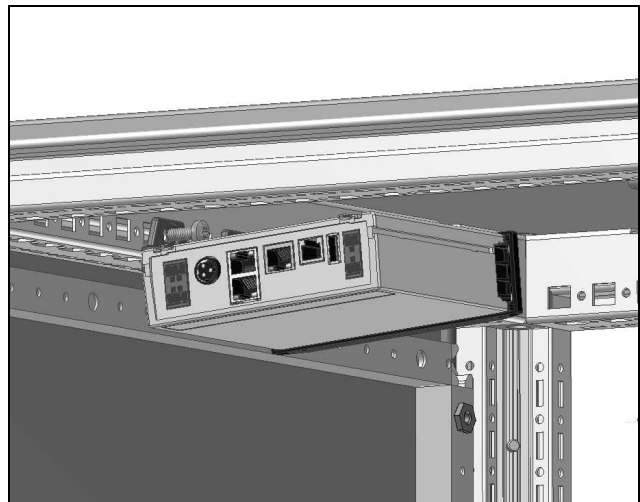


Fig. 2: Faulty installation in the enclosure

- The Power Unit 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 with the mounting clips provided

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

- Push two mounting clips on each of the side guide rails of the Power Unit.

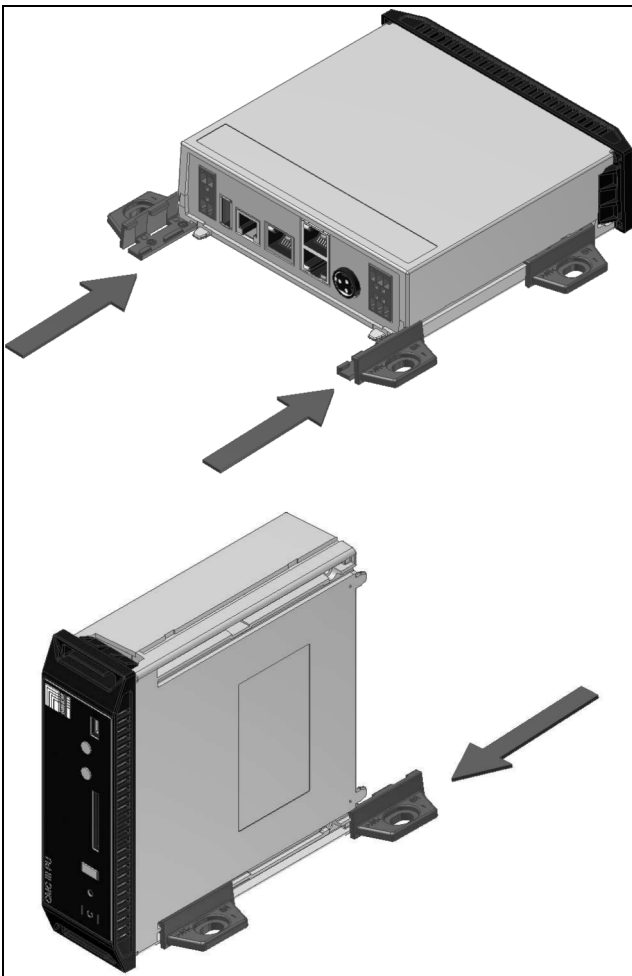


Fig. 3: Sliding on the mounting clips

- Fasten the Power Unit with the screws provided in the scope of supply, e.g. to 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 Power Unit to the enclosure frame or a mounting plate (7030.071).
- As a 482.6 mm (19") variant (1 U) for mounting the Power Unit and two additional devices (7030.070).

The procedure for installing the Power Unit in the two mounting units is identical:

- Push the Power Unit as far as possible into the mounting unit until it latches into place.

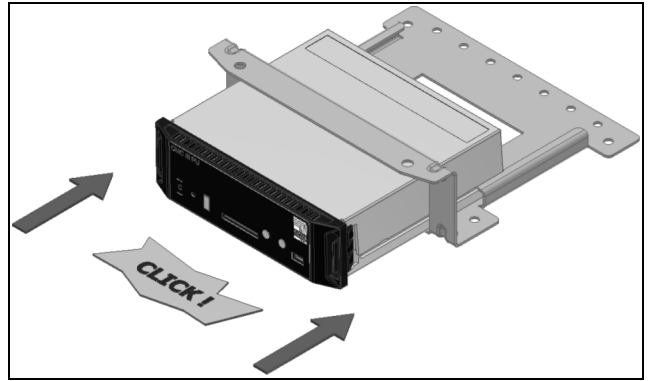


Fig. 4: Push the Power Unit into the mounting unit

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

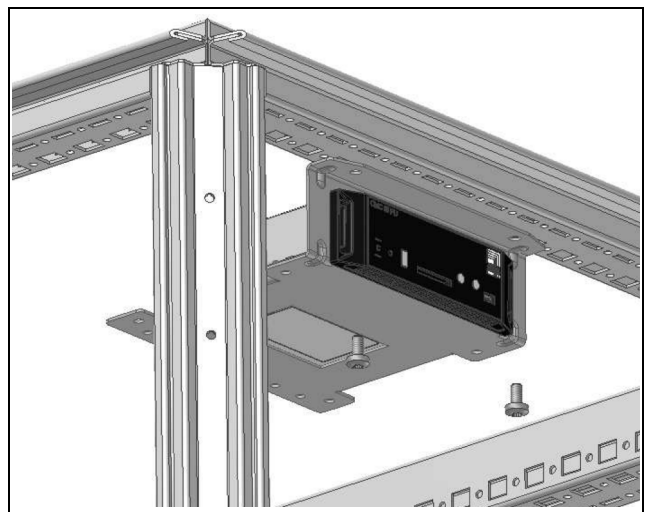


Fig. 5: Fastening the mounting unit to the enclosure frame

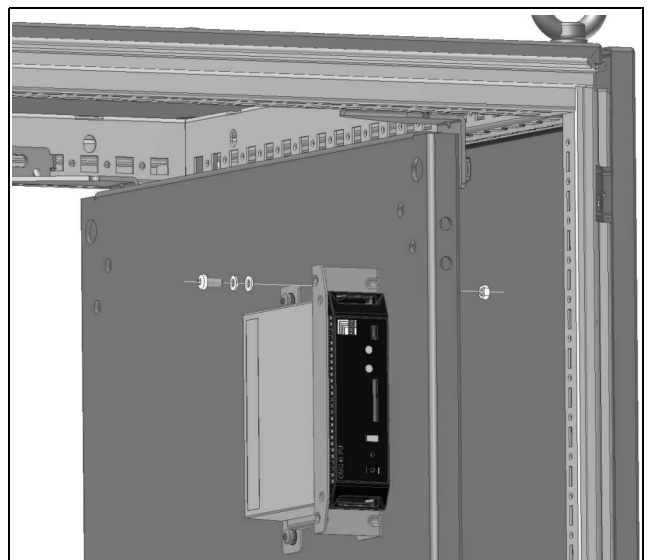


Fig. 6: Fastening the mounting unit to a mounting plate

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

5 Installation

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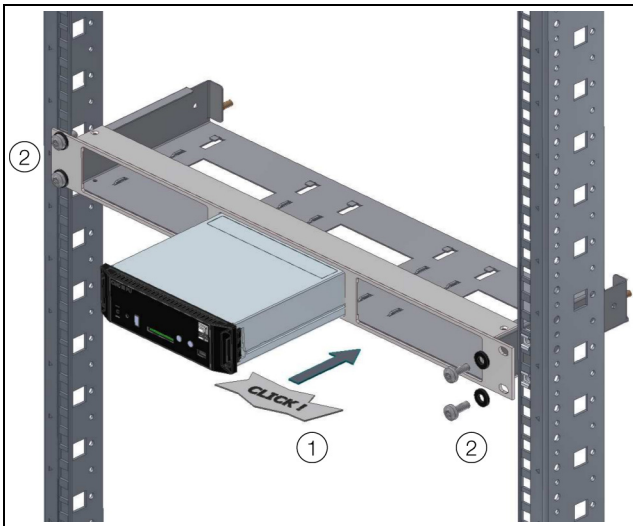


Fig. 7: Fastening the mounting unit in a rack-mounting point

5.3.4 Installation on a top-hat rail

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

- Push a mounting clip left and right on each of the side guide rails of the Power Unit.
- Screw a spring clip for the top-hat rail installation onto the mounting clips.
- Place the Power Unit with the spring clips on the top-hat rail.

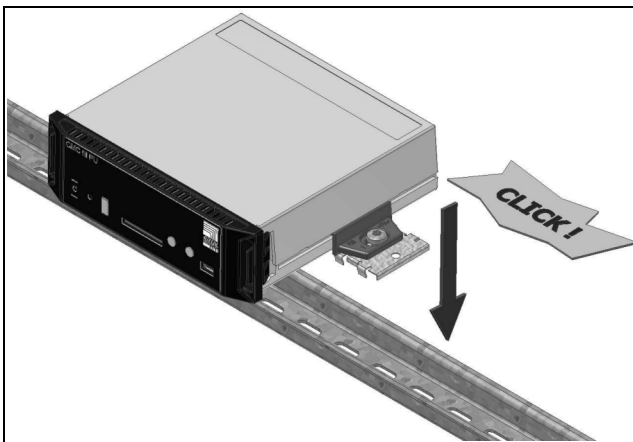


Fig. 8: Power Unit mounted on a top-hat rail

5.4 Connecting the Power Unit



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

The CAN bus connection supplies the Power Unit with the necessary operating voltage. The Power Unit input must also be connected to the mains power to supply power to the external consumers (fig. 9, item 3).

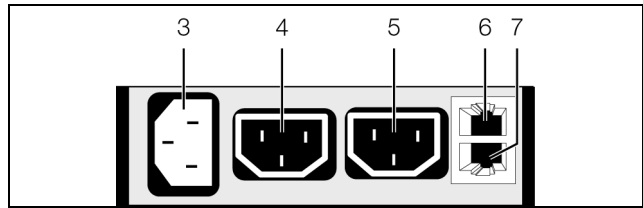


Fig. 9: Rear of the Power Unit

Key

- 3 AC input C14, 100–230 V, 10 A, 50/60 Hz
- 4 AC output 1 C13, 100–230 V, 50/60 Hz, max. 10 A in total with item 5
- 5 AC output 2 C13, 100–230 V, 50/60 Hz, max. 10 A in total with item 4
- 6 CAN bus connection, 24 V \equiv
- 7 CAN bus connection, 24 V \equiv

- Connect an external consumer, e.g. a fan, to AC output 1 or AC output 2 using a suitable cable (fig. 9, items 4, 5).



Note:

If devices with high inductive loads during switch-on (e.g. fans) are connected to the Power Unit, an additional interference suppression capacitor (7030.051) must be connected to the power supply directly on the consumer.

- Select the appropriate country-specific connection cable for the Power Unit.
 - Earthing-pin plug and IEC connector connection cable (7200.210)
 - CMC IEC extension cable (7200.215)
- Insert the cable into the Power Unit AC input and the mains supply (fig. 9, item 3).
As supplied, both AC outputs are deactivated, i.e. the connected devices are not energised.
- Use a CAN bus connection cable to connect the Power Unit to the CMC III Processing Unit or the neighbouring component on the CAN bus (fig. 9, item 6).

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

- 7030.090 (length 0.5 m)
- 7030.091 (length 1 m)
- 7030.092 (length 1.5 m)
- 7030.093 (length 2 m)
- 7030.480 (length 3 m)
- 7030.490 (length 4 m)
- 7030.094 (length 5 m)
- 7030.095 (length 10 m)

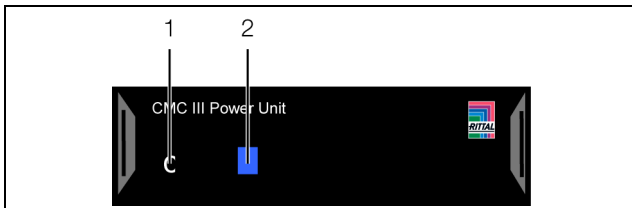


Fig. 10: Front of the Power Unit

Key

- 1 "C" key
- 2 Multi-LED for status display

The unit software is updated, if necessary, after being connected. The status LED of the Power Unit glows blue throughout the entire update process and also flashes purple while the unit itself is being updated.

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 modified 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 light green.
2. The multi-LED of the unit behind the front panel flashes blue and also green, yellow or red, depending on the condition 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 Power Unit (fig. 9, item 7).

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 Power Unit flashes blue continually.
- Press the "C" key 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:

See section 6.3.1 "Multi-LED displays" for a list of all of the multi-LED displays.

6 Operation

6.1 Activating the Power Unit

After connecting the Power Unit to a neighbouring component using a CAN bus connecting cable, the Power Unit starts automatically (see section 5.4 "Connecting the Power Unit"). Separate activation is not required.

6.2 Operating and display elements

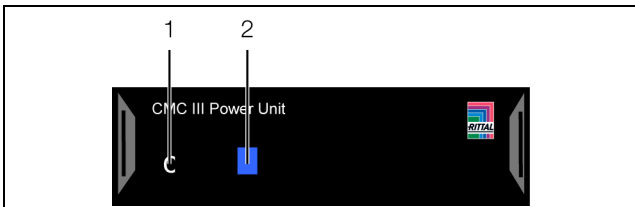


Fig. 11: Front of the Power Unit

Key

- 1 "C" key
- 2 Multi-LED for status display

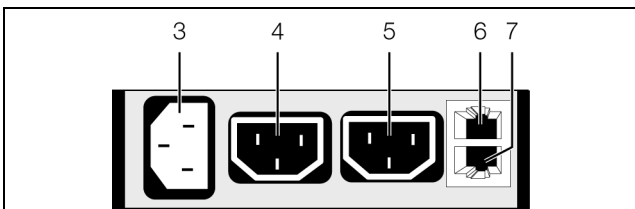


Fig. 12: Rear of the Power Unit

Key

- 3 AC input C14, 100–230 V, 10 A, 50/60 Hz
- 4 AC output 1 C13, 100–230 V, 50/60 Hz, max. 10 A in total with item 5
- 5 AC output 2 C13, 100–230 V, 50/60 Hz, max. 10 A in total with item 4
- 6 CAN bus connection, 24 V $\overline{\text{---}}$
- 7 CAN bus connection, 24 V ---

6.3 LED displays

A multi-LED for the status display is integrated into the front of the Power Unit (fig. 11, item 2). Further LEDs are located at the rear on the CAN bus connection (fig. 12, items 6 and 7).

6.3.1 Multi-LED displays

The status of the Power Unit can be read on the multi-LED.

Colour	Status
Green	When the measured value changes or, at the latest, every 5 seconds.
Yellow	The Power Unit has "warning" status. Fast flashing: upper limit value overshoot. Slow flashing: lower limit value undershoot.

Tab. 1: Multi-LED flashing codes

Colour	Status
Red	The Power Unit has "alarm" status. Fast flashing: upper limit value overshoot. Slow flashing: lower limit value undershoot.
Purple	A Power Unit software update is being carried out.
Blue	Communication via the CAN bus.

Tab. 1: 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 (continuously lit)	Communication via the CAN bus possible.
Red (flashing)	Transmission error.

Tab. 2: LEDs for the CAN bus connection

6.4 Operating the CMC III Processing Unit from the website

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

- First select the "CMCIII-POW" 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 Power Unit (**Access Rights** button) and the alarm messages (**Alarm Configuration** button).

The **Observation** tab is used to configure all of the settings for the Power Unit, such as the limit values for warning and alarm messages. You can choose between two display options:

- Tree view: This allows targeted and fast access to individual parameters.
- Graphical display: This provides a quick overview of both AC outputs on the Power Unit.

If, after selecting the "CMCIII-POW" level, the lower-level "Device", "General", etc. entries are displayed (fig. 13, item 1), switch to the graphical display as follows:

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

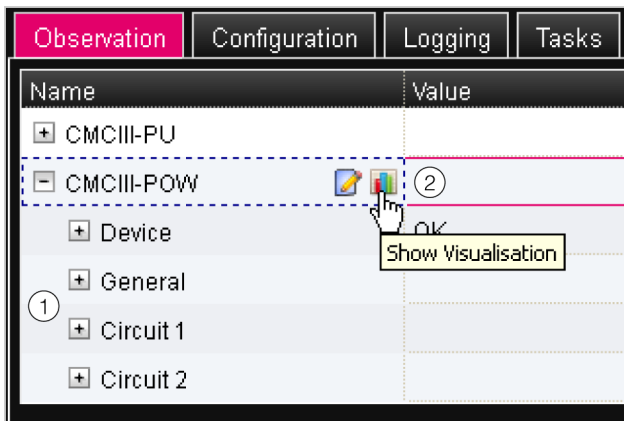


Fig. 13: Tree view

The display switches to the graphical display (fig. 14). All current limit values for the power supply input and both AC outputs can be changed here and the current status seen at a glance (fig. 14, item 2).

If, after selecting the "CMCIII-POW" level, the graphical display is shown, you can switch to the tree view as follows:

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

	Unit	Circuit 1	Circuit 2	Σ
Frequency	Hz	---	---	Frequency 0.0 Status: OK
Voltage	V	---	---	Voltage 0.0 Status: OK
Current	A	C1 Current 0.00 Status: OK	C2 Current 0.00 Status: OK	0.00
Power	W	0	0	0
Energy	kWh	0.000	0.000	0.000
Relay		C1 Relay 1 Status: On	C2 Relay 0 Status: Off	

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 using the graphical display:

- Hover the cursor over the Circuit 1 or Circuit 2 column heading or the sigma sign "Σ" (fig. 14, item 2). An "Edit" symbol appears and the cursor changes to a "hand" symbol.
- Click the "Edit" symbol. The "Write Values" dialogue with the parameters of the selected AC output or AC input appears.

The following descriptions assume that you have selected the tree view.

In the following sections 6.4.1 "Device" to 6.4.4 "Circuit 2", only those parameters which you can modify are described. There are also display values that provide information.

6.4.1 Device

General settings for the Power Unit are configured at the "Device" level.

Parameter	Explanation
Description	The specific description of the Power Unit.
Location	Installation location of the Power Unit.

Tab. 3: Settings at "Device" level

In addition, parameters that provide detailed information about the Power Unit, such as its software and hardware versions, are also displayed. You should have such information available, in particular to permit fast troubleshooting of queries with Rittal.

6.4.2 General

The settings for the AC input are configured at the "General" settings. Here you will find "Frequency" and "Voltage" settings.



Note:

When delivered, all limit values for the frequency, electrical power and current are set to "0". The alarms are disabled as a result. If an individual limit value is changed, the Power Unit status changes to "alarm" or "warning" until the related 2nd limit value has also been amended.

"Frequency" level

The settings for the AC input frequency are configured at the "Frequency" level.

Parameter	Explanation
DescName	Specific description of the frequency measured.
SetPtHigh-Alarm	Upper frequency limit; an alarm message is emitted if this is exceeded.
SetPtHigh-Warning	Upper frequency limit; a warning message is emitted if this is exceeded.
SetPtLow-Warning	Lower frequency limit; a warning message is emitted if this is fallen below.
SetPtLow-Alarm	Lower frequency limit; an alarm message is emitted if this is fallen below.

Tab. 4: Settings at "Frequency" level

6 Operation

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Parameter	Explanation
Hysteresis	The necessary percentage deviation for falling below or exceeding the limit frequency to trigger a status change (see the assembly, installation and operating instructions for the CMC III Processing Unit).

Tab. 4: Settings at "Frequency" level

The following parameters are also displayed:

Parameter	Explanation
Value	Current frequency measured at the input.
Status	Current status of the Power Unit with respect to the frequency.

Tab. 5: Displays at "Frequency" level



Note:
If the value "0" is entered for all limit values at the "Frequency" level, the status of the frequency is always "OK". Therefore, the setpoints have to be changed accordingly to activate the alarms.

"Voltage" level

The settings for the AC input voltage are configured at the "Voltage" level.

Parameter	Explanation
DescName	Specific description of the voltage measured.
SetPtHigh-Alarm	Upper voltage limit; an alarm message is emitted if this is exceeded.
SetPtHigh-Warning	Upper voltage limit; a warning message is emitted if this is exceeded.
SetPtLow-Warning	Lower voltage limit; a warning message is emitted if this is fallen below.
SetPtLow-Alarm	Lower voltage limit; an alarm message is emitted if this is fallen below.
Hysteresis	The necessary percentage deviation for falling below or exceeding the limit voltage to trigger a status change (see the assembly, installation and operating instructions for the CMC III Processing Unit).

Tab. 6: Settings at "Voltage" level

The following parameters are also displayed:

Parameter	Explanation
Value	Current voltage measured at the input.

Tab. 7: Displays at "Voltage" level

Parameter	Explanation
Status	Current status of the Power Unit with respect to the voltage.

Tab. 7: Displays at "Voltage" level



Note:
If the value "0" is entered for all limit values at the "Voltage" level, the status of the voltage is always "OK". Therefore, the setpoints have to be changed accordingly to activate the alarms.

6.4.3 Circuit 1

Settings for AC output 1 are configured at the "Circuit 1" level. Here you will find "Current", "Power", "Relay" and "Energy" settings.

"Current" level

Settings for the current are configured at the "Current" level.

Parameter	Explanation
DescName	Specific description of the current measurement.
SetPtHigh-Alarm	Upper limit for the current; an alarm message is emitted if it is exceeded.
SetPtHigh-Warning	Upper limit for the current; a warning message is emitted if it is exceeded.
SetPtLow-Warning	Lower limit for the current; a warning message is emitted if it is fallen below.
SetPtLow-Alarm	Lower limit for the current; an alarm message is emitted if it is fallen below.
Hysteresis	The necessary percentage deviation for falling below or exceeding the limit current to trigger a status change (see the assembly, installation and operating instructions for the CMC III Processing Unit).

Tab. 8: Settings at "Current" level

The following parameters are also displayed:

Parameter	Explanation
Value	Currently measured current value.
Status	Current status of the Power Unit with respect to the current.

Tab. 9: Displays at "Current" level

**Note:**

If the value "0" is entered for all limit values at the "Current" level, the status of the current is always "OK". Therefore, the setpoints have to be changed accordingly to activate the alarms.

"Power" level

Settings for the electrical power are configured at the "Power" level.

Parameter	Explanation
DescName	Specific description of the power measured.
SetPtHigh-Alarm	Upper limit for the power; an alarm message is emitted if it is exceeded.
SetPtHigh-Warning	Upper limit for the power; a warning message is emitted if it is exceeded.
SetPtLow-Warning	Lower limit for the power; a warning message is emitted if it is fallen below.
SetPtLow-Alarm	Lower limit for the power; an alarm message is emitted if it is fallen below.
Hysteresis	The necessary percentage deviation for falling below or exceeding the limit power to trigger a status change (see the assembly, installation and operating instructions for the CMC III Processing Unit).

Tab. 10: Settings at "Power" level

The following parameters are also displayed:

Parameter	Explanation
Value	Currently measured power value.
Status	Current status of the Power Unit with respect to the power.

Tab. 11: Displays at "Power" level

**Note:**

If the value "0" is entered for all limit values at the "Power" level, the status of the electrical power is always "OK". Therefore, the setpoints have to be changed accordingly to activate the alarms.

"Relay" level

The settings for the AC output 1 relay contact are configured at the "Relay" level.

Parameter	Explanation
DescName	Specific description of the AC output 1 relay contact.
Grouping	Group number to which the AC output 1 relay contact is assigned.
Relay	Selection of a switching command for the AC output 1 relay contact. Off On Off 10 s Off 30 s Off 60 s
Logic	Selection of the status display logic. The following options are available: 0: Off / 1: On 0: OK / 1: Alarm 0: Alarm / 1: OK

Tab. 12: Settings at "Relay" level

Assigning an output to a group enables other outputs (including different components) to be switched in the same manner by switching one single output e.g. via the website or with one single task (see the assembly, installation and operating instructions for the CMC III Processing Unit). As a result, it is neither necessary to switch each of these outputs individually, nor must a separate task be created for every single one of these outputs.

The following parameters are also displayed for the AC output 1 relay contact at the "Relay" level:

Parameter	Explanation
Status	The current status of the AC output 1 relay contact taking account of the configured logic.

Tab. 13: Displays at "Relay" level

"Energy" level

Settings for consumption are configured at the "Energy" level.

Parameter	Explanation
DescName	Specific description of the consumption.

Tab. 14: Settings at "Energy" level

The following parameters are also displayed:

Parameter	Explanation
Value	Currently measured consumption value (kWh).

Tab. 15: Displays at "Energy" level

6 Operation

EN

6.4.4 Circuit 2

Settings for AC output 2 are configured at the "Circuit 2" level. The representations completely match those for the AC output 1 (see section 6.4.3 "Circuit 1").

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

8 Technical specifications

EN

8 Technical specifications

Technical specifications		CMC III Power Unit
Model no.		7030.050
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
Inputs	CAN bus (RJ 45)	2 x
	C14, 100V...230 V, 10 A, 50/60 Hz	1 x
Outputs	C13, 100V...230 V, in total up to 10 A, 50/60 Hz	2 x
Fuse		10 A
Rated voltage		24 V $\overline{---}$
Measurement range	Voltage	100 V...230 V
	Frequency	0 Hz...60 Hz
	Current	200 mA...10 A
	cos φ	0°...±90°
	Effective power	46 W...2.3 kW
	Energy consumption	0 kWh...100,000 kWh
Measuring accuracy for all measured values		± 3%
Operation/signals	LED display	OK/Warning/Alarm/CAN bus status

Tab. 16: Technical specifications

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

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