

# Rittal – The System.

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## CMC III I/O Unit



7030.040

## 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 I/O unit (referred to hereafter as "I/O 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 I/O unit is compliant with the EU EMC Directive 2014/30/EU. 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:

- The I/O unit may only be assembled and installed by a trained electrician.
- Please observe the valid regulations for electrical installation in the country in which the I/O 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 I/O unit.
- Please do not make any changes to the I/O unit that are not described in this manual or in the associated manuals.
- The operating reliability of the I/O 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 I/O unit must not be opened. The unit 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.
- The I/O unit must be disconnected from the power supply when external devices are connected to the relay outputs or digital inputs.
- 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.

# 3 Product description

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## 3 Product description

### 3.1 Functional description and components

#### 3.1.1 Function

With the I/O unit, signals can be received from external systems and processed in the CMC III system. Furthermore, control commands can be executed and messages passed to external systems. The I/O unit has 8 digital inputs and 4 relay outputs for this. The I/O 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 I/O unit serves exclusively to integrate external systems into the CMC III system via the digital inputs and relay outputs. 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 I/O unit
- Accessories provided (fig. 1)
- Installation Guide and Short User's Guide

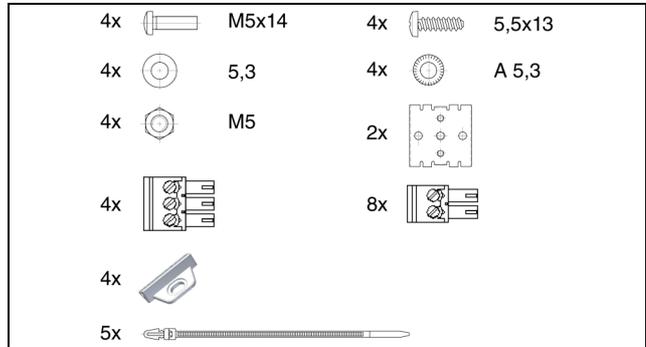


Fig. 1: Accessories provided

## 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.**

- Please observe the valid regulations for electrical installation in the country in which the I/O 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 class is required for a special application, the I/O unit must be installed in an appropriate housing or in an appropriate enclosure with the required IP degree of protection.

### 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 several ways of installing the I/O 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 I/O unit with the mounting clips provided on only one side of the device! This would cause undesirable vibrations in the device during operation.

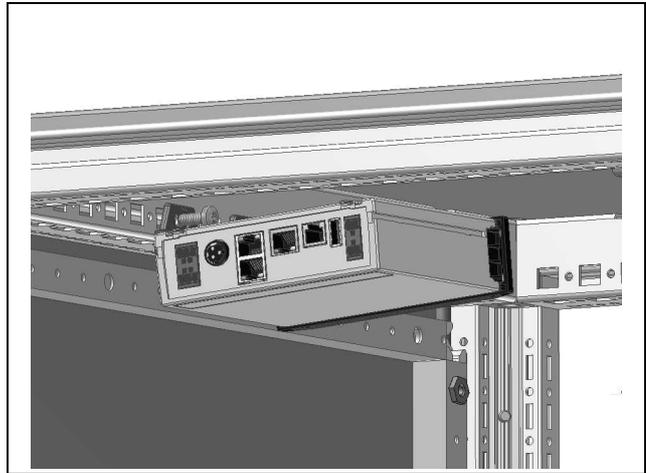


Fig. 2: Faulty installation in the enclosure

- The I/O 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 with the help of 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 I/O unit.

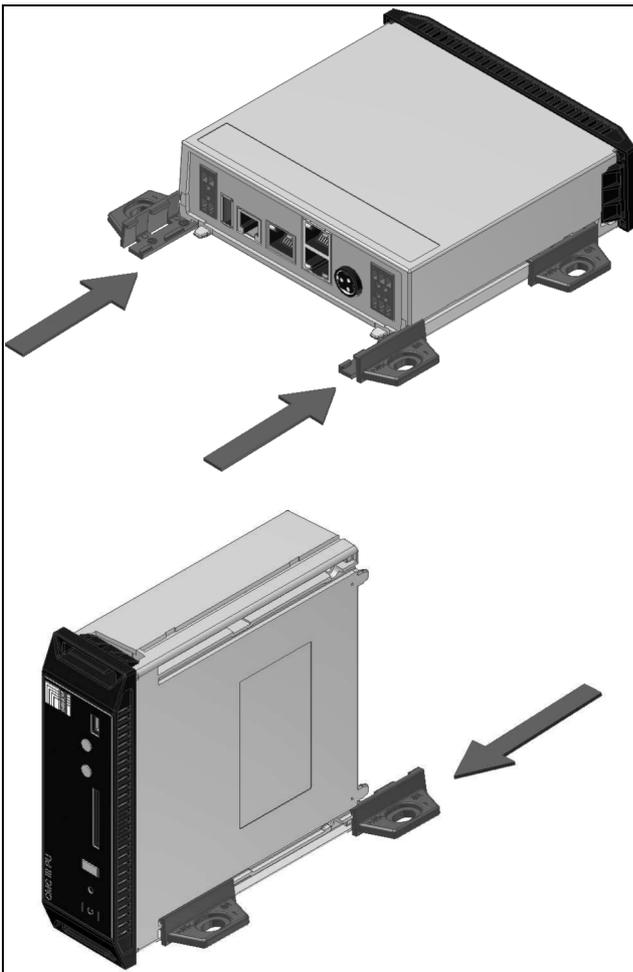


Fig. 3: Sliding on the mounting clips

- Fasten the I/O unit with 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 I/O unit on the enclosure frame or on a mounting plate (7030.071).
- As a 482.6 mm (19") variant (1 U) for mounting the I/O unit and two additional devices (7030.070).

The procedure for installing the I/O unit in the two mounting units is identical:

- Push the I/O unit as far as possible into the mounting unit until it latches into place.

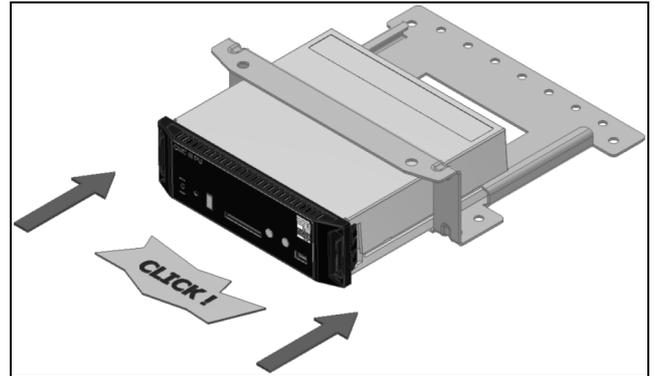


Fig. 4: Push the I/O unit into the mounting unit

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

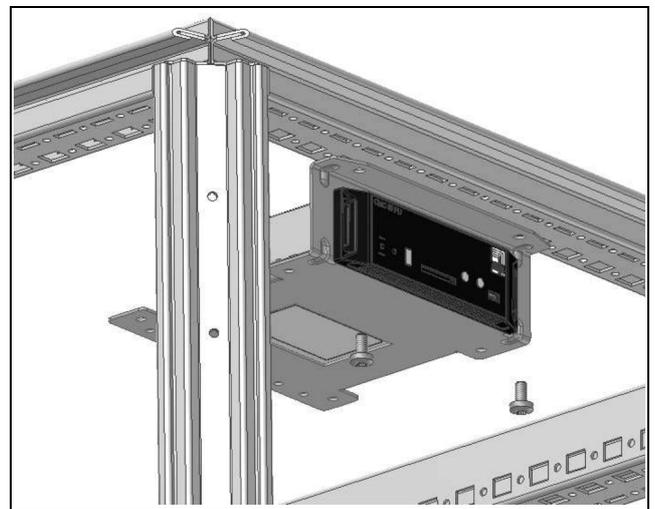


Fig. 5: Fastening the mounting unit to the enclosure frame

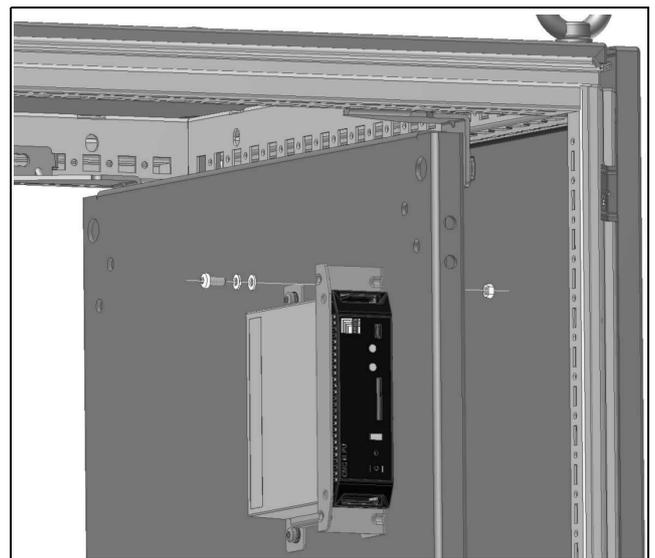


Fig. 6: Fastening the mounting unit to a mounting plate

- 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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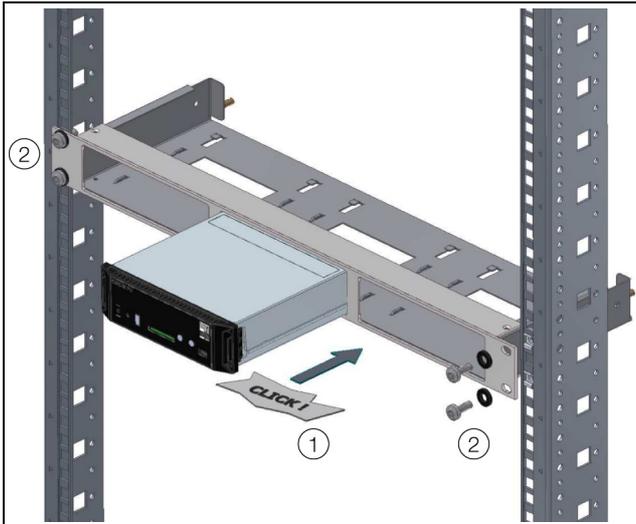


Fig. 7: Fastening the mounting unit in a rack-mounting point

### 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 on each of the side guide rails of the I/O unit.
- Screw a spring clip for the top-hat rail installation onto the mounting clips.
- Place the I/O unit with the spring clips on the top-hat rail.

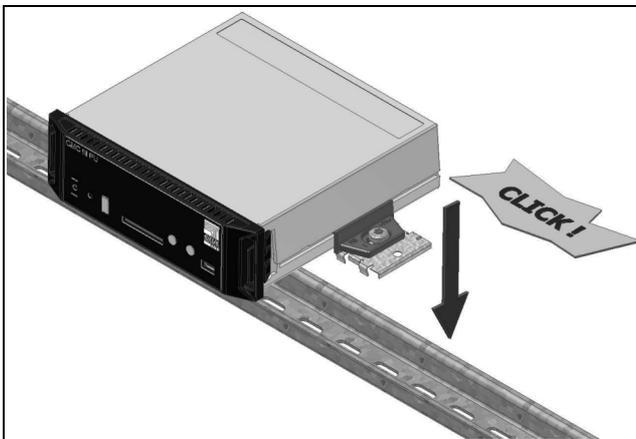


Fig. 8: Installing the I/O unit on a top-hat rail

### 5.4 Connecting the I/O unit

The CAN bus connection supplies the I/O unit with the necessary operating voltage. A separate power supply unit does not need to be connected.

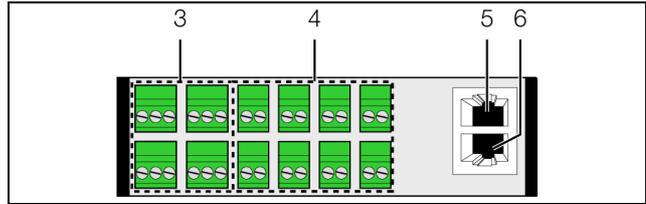


Fig. 9: Rear of the I/O unit

#### Legend

- 3 4 x floating relay contacts (max. 24 V  $\overline{=}$ , 1 A)
- 4 8 x digital inputs
- 5 CAN bus connection, 24 V  $\overline{=}$
- 6 CAN bus connection, 24 V  $\overline{=}$



#### Note:

The voltage sources at positions 3, 4, 5 and 6 (fig. 9) must satisfy the Limited Power Source (LPS) requirements in accordance with UL 60950 and observe the limit values mentioned above.

#### Relay outputs

An external device can be connected to each floating relay output.

- Please note the maximum switching load of the relay of 1 A.
- Observe the pin assignment of the connection:

Pin	Signal
Pin 1	NC
Pin 2	NO
Pin 3	C

Tab. 1: I/O unit pin assignment

#### Digital inputs

A floating switch contact can be connected to each of the digital inputs so that, for example, the fault output of an external device can be evaluated (fig. 9, item 4).

- Configure the digital inputs depending on whether a normally closed or normally open contact is connected to the associated connection (see section 6.4.2 "Input 1 to input 8").

#### Connecting the CMC III Processing Unit

- Use a CAN bus connection cable to connect the I/O unit to a CAN bus interface on the CMC III Processing Unit or the neighbouring component on the CAN bus (fig. 9, item 5).

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)

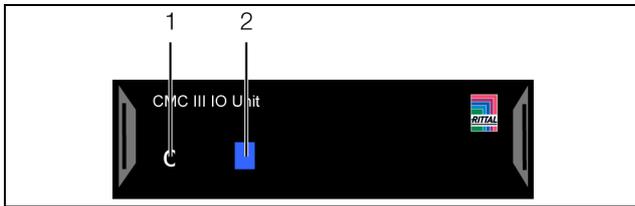


Fig. 10: Front of the I/O unit

#### Legend

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

The unit software is updated, if necessary, after being connected. The status LED of the I/O 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 I/O unit (fig. 9, item 6).

#### 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 I/O unit flashes blue continuously.
- 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 I/O unit

After connecting the I/O unit to a neighbouring component using a CAN bus connecting cable, the I/O unit starts automatically (see section 5.4 „Connecting the I/O unit“). Separate activation is not required.

### 6.2 Operating and display elements

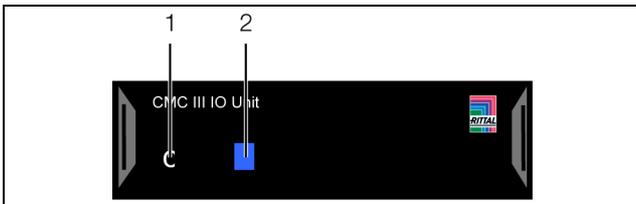


Fig. 11: Front of the I/O unit

#### Legend

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

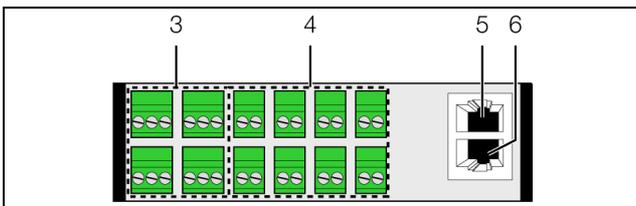


Fig. 12: Rear of the I/O unit

#### Legend

- 3 4 x floating relay contacts (max. 24 V  $\overline{\text{---}}$ , 1 A)
- 4 8 x digital inputs
- 5 CAN bus connection, 24 V  $\overline{\text{---}}$
- 6 CAN bus connection, 24 V  $\text{---}$

### 6.3 LED displays

A multi-LED for the status display is integrated into the front of the I/O unit (fig. 11, item 2). Further LEDs are located at the rear on the CAN bus connection (fig. 12, item 5 and item 6).

#### 6.3.1 Multi-LED displays

The status of the I/O unit can be read on the multi-LED.

Colour	Status
Green	When the measured value changes or, at the latest, every 5 seconds.
Red	The I/O unit has "alarm" status.
Purple	An I/O unit software update is being carried out.
Blue	Communication via the CAN bus.

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

Tab. 3: 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-IO3" 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 I/O unit (**Access Rights** button) and the alarm messages (**Alarm Configuration** button).

All of the settings for the I/O unit are made in the **Observation** tab.

In the following sections 6.4.1 "Device" to 6.4.3 "Output 1 to output 4", 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 I/O unit are configured at the "Device" level.

Parameter	Explanation
Description	The specific description of the I/O unit.
Location	I/O unit installation site.

Tab. 4: Settings at "Device" level

In addition, parameters that provide detailed information, such as the I/O unit's software and hardware versions, are also displayed. You should have such information available, in particular to enable rapid troubleshooting when requesting assistance from Rittal.

#### 6.4.2 Input 1 to input 8

The separate settings for the integral digital inputs are configured at the "Input 1" to "Input 8" levels.

Parameter	Explanation
DescName	Specific description of the associated input.

Tab. 5: Settings at "Input 1" to "Input 8" levels

Parameter	Explanation
Logic	Selection of the input display logic. The following options are available: 0: Off / 1: On 0: On / 1: Off 0: OK / 1: Alarm 0: Alarm / 1: OK
Delay	Time delay after which the status message changes.

Tab. 5: Settings at "Input 1" to "Input 8" levels

The following parameters are also displayed for the integral digital inputs:

Parameter	Explanation
Value	The current value of the associated input (0 or 1).
Status	The current status of the associated input taking account of the delay value and configured logic.

Tab. 6: Displays at "Input 1" to "Input 8" levels

### 6.4.3 Output 1 to output 4

The separate settings for the floating relay contacts are configured at the "Output 1" to "Output 4" levels. Each relay contact can also be assigned to a group of outputs of other components.

Parameter	Explanation
DescName	Specific description of the relay output.
Relay	Assignment of the current value for the respective relay contact ("On" or "Off").
Grouping	Group number to which the relay contact is assigned.
Logic	Selection of the status display logic. The following options are available: 0: Off / 1: On 0: OK / 1: Alarm

Tab. 7: Settings at "Output 1" to "Output 4" levels

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 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 each relay output:

Parameter	Explanation
Status	The current status of the associated output taking account of the configured logic.

Tab. 8: Displays at "Output 1" to "Output 4" levels

# 7 Storage and disposal

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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 I/O 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

Technical specifications		CMC III I/O unit
Model no.		7030.040
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
Digital inputs (terminal)		8 x NC/NO
Relay outputs (terminal)		4 x changeover contact max. 24 V $\overline{---}$ , 1 A
CAN bus	RJ 45	2 x
Operation/signals	LED display	OK/Warning/Alarm/CAN bus status

Tab. 9: Technical specifications

## 9 Customer service addresses

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### **9 Customer service addresses**

For technical queries, please contact:

Tel.: +49(0)2772 505-9052

E-mail: [info@rittal.de](mailto:info@rittal.de)

Homepage: [www.rittal.com](http://www.rittal.com)

For complaints or service requests, please contact:

Tel.: +49(0)2772 505-1855

E-mail: [service@rittal.de](mailto:service@rittal.de)



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