

# Rittal – The System.

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## PSM MID measuring module for CMC III



DK 7859.312  
DK 7859.332

**Montage-, Installations- und Bedienungsanleitung**  
**Assembly and operating instructions**

ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

IT INFRASTRUCTURE

SOFTWARE & SERVICES

FRIEDHELM LOH GROUP



# Preface

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## **Preface**

Dear Customer!

We thank you for choosing our PSM MID measuring module for CMC III (subsequently called "PSM MID measuring module")!

We wish you every success!

Your,  
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 confirms the conformity of the PSM MID measurement module with EU-EMC regulation 2004/108/EU and with EU directive 2004/22/EU for measuring units. An appropriate declaration of conformity has been prepared. It can be provided on request.



### 1.2 Storing the documents

The assembly, installation and operating instructions as well as all applicable documents are integral components 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 in these operating instructions

The following symbols are used in this documentation:



**Danger!**

**A dangerous situation for which the failure to comply with this note causes death or severe injury.**



**Warning!**

**A dangerous situation for which the failure to comply with this note can cause death or severe injury.**



**Caution!**

**A dangerous situation for which the failure to comply with this note can cause (minor) injuries.**



**Note:**

Identification of the situations that can lead to material damage.

- This symbol indicates an "Action Point" and shows that you should perform an operation/procedure.

### 1.4 Other applicable documents

- Installation and Short User's Guide
- CMC III Processing Unit 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 PSM MID measuring module, in particular for wiring with mains power, may be performed only by a trained electrician.
- Please observe the valid regulations for the electrical installation of the country in which the PSM MID measuring module is installed and operated, and the national regulations for accident prevention. Please also observe any company-internal regulations, such as work, operating and safety regulations.
- Use only original Rittal products or products recommended by Rittal in conjunction with the PSM MID measuring module.
- Please do not make any changes to the PSM MID measuring module that are not described in this manual or in the associated manuals.
- The operational safety of the PSM MID measuring module is guaranteed only for its approved use. The technical data and limit values stated in the technical specifications may not be exceeded under any circumstances. In particular, this applies to the specified ambient temperature range and IP degree of protection.
- The PSM MID measuring module must not be opened. The unit does not contain any parts that need servicing.
- The operation of the system in direct contact with water, aggressive materials or in-flammable 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 Operating and technical staff

- The mounting, installation, commissioning, maintenance and repair of this unit may be performed only 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

The PSM MID measuring module is an energy meter that can be deployed for the MID-conform measurement of individual 16/32 A consumers for energy billing purposes. For this task, the measuring module provides two mutually independent circuits with separate 3-phase energy measurement. It can be easily integrated in the 482.6 mm (19") level of an IT rack and connected using the appropriate connection cables. The PSM MID measuring module can be connected to a CMC III Processing Unit using a CAN bus interface.

#### 3.1.2 Components

The unit consists of a compact sheet-steel housing finished to RAL 9005.

### 3.2 Proper use, foreseeable misuse

The PSM MID measuring module is deployed, in particular, for the MID-conform measurement of individual 16/32 A consumers for energy billing purposes. It is designed for operation in computer centres (IT environment). Billing of the reactive energy and a general billing after expiration of the calibration end date printed on the measuring module is not permitted.

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

The unit should thus only be used properly and in 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 responsible for any damage which may result from failure to comply with the documentation provided. This also applies to failure to comply with the valid documentation for the used accessories.

Inappropriate use may result in danger. Inappropriate use may include:

- Use of impermissible tools
- Improper operation
- Improper rectification of malfunctions
- Use of accessories not approved by Rittal GmbH & Co. KG

### 3.3 Dimensions and clearances

- 1 U for 19" installation
- Approx. 200 mm deep

### 3.4 Scope of supply

- PSM MID measuring module
- Provided accessories (fig. 1)
- Installation and Short User's Guide

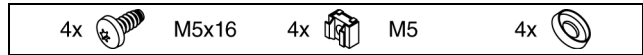


Fig. 1: Provided accessories

## 4 Transportation 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 can consist of the following materials:

Polyethylene film (PE film), cardboard.

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



Note:

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

- Remove the unit from the packaging.

# 5 Assembly and siting

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## 5 Assembly and siting

### 5.1 Installation site requirements

To ensure the correct function of the unit, the conditions for the installation site of the unit specified in section 11 "Technical specifications" must be observed.

#### Electromagnetic interference

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

### 5.2 Assembly procedure

#### 5.2.1 Notes on assembly

- The PSM MID measuring module must **not** be installed in vertical position and also **not** upside down in the enclosure.
- Ensure good access to the front of the unit so that the display is easy to read.

#### 5.2.2 Assembly of the PSM MID measuring module

- Fasten the PSM MID measuring module as shown in fig. 2 with the screws provided in a free slot (1 U) of the server enclosure.

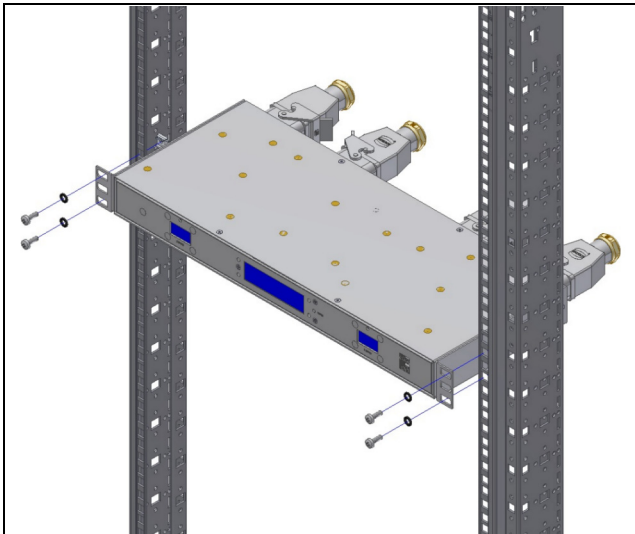


Fig. 2: Mounting on the enclosure frame



## 6 Installation

### 6.1 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 above-mentioned personnel have read this information!**

**Use insulated tools.**

**The connection regulations of the appropriate power company are to be followed.**

- Please observe the valid national regulations for the electrical installation and operation of the PSM MID measuring module, and the national regulations for accident prevention. Please also observe any company-internal regulations, such as work, operating and safety regulations.
- The technical data and limit values stated in the technical specifications may 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 degree of protection is required for a special application, the PSM MID measuring module must be installed in an appropriate housing or in an appropriate enclosure with the required IP degree of protection.

### 6.2 Requirements for the connection

- The electrical connection may be made only on a TN-S network in accordance with the specifications prescribed in the technical specifications (see section 11 "Technical specifications").
- Depending on the PSM MID measuring module variant, a back-up fuse of 3 x 16 A (for model number DK 7859.312) or 3 x 32 A (for model number DK 7859.332) should be provided.
- For connection of the PSM MID measuring module, use one of the following connection cable sets from the Rittal accessories (see section 12 "Accessories"):
  - DK 7859.315 Connection cable set CEE – 16 A
  - DK 7859.316 Connection cable set PSM – 16 A (for PSM busbars with Wago-X-Com connector)
  - DK 7859.335 Connection cable set CEE – 32 A



#### Note:

Each connection cable set contains both cables for a circuit (input and output). Two connection cable sets are required when both infeeds are used.

- Observe the pin assignment of the connections (identical for the inputs and the outputs):

Pin	Signal
Pin 1	L1
Pin 2	L2
Pin 3	L3
Pin 4	N
Earthing	PE



#### Note:

Phase 1 (L1) of the associated infeed must be used for a single-phase measurement. The separation into three independent single-phase measurements for each infeed is not permitted.

After making the connection, the status screen and the MID displays of infeeds 1 and 2 show briefly the software version of the PSM MID measuring module on the main display of the measuring module (fig. 4, item 6) The unit is operational after a short delay.

### 6.3 Installation procedure

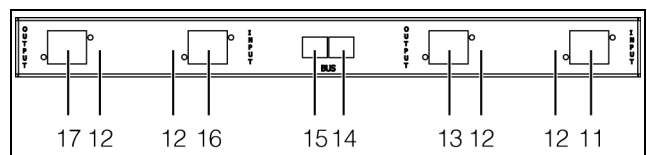


Fig. 3: Connections on the rear

#### Key

- 11 "Infeed 1" connection
- 12 Connection plug clamping lever
- 13 "Consumer 1" connection
- 14 CAN bus connection
- 15 CAN bus connection
- 16 "Infeed 2" connection
- 17 "Consumer 2" connection

#### 6.3.1 Connection of only one consumer

- Connect a cable from the above-mentioned connection cable set to the "Consumer 1" connection (fig. 3, item 13) and at the input of the consumer itself.
- Lock the connection plug to the PSM MID measuring module using the appropriate clamping lever (fig. 3, item 12).

# 6 Installation

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- Also establish the voltage supply using a cable from the above-mentioned connection cable sets to the "Infeed 1" connection (fig. 3, item 11).
- Also lock the connection plug to the PSM MID measuring module using the appropriate clamping lever.
- Finally, provide an appropriate cable clamp for all connection cables.



Note:

You must use the "Infeed 1" and "Consumer 1" connections when you use only one infeed and one consumer.

- In this case, change the **Disp. Circuit** setting in the configuration menu to "Source 1" (see section 7.4.1 "Settings using the configuration menu") to suppress error messages of infeed 2.

## 6.3.2 Connection of two consumers

If you want to measure the energy consumption for a second consumer:

- Disconnect the PSM MID measuring module from the voltage supply if a consumer has already been connected.
- Connect a cable from the above-mentioned connection cable set to the "Consumer 2" connection (fig. 3, item 17) and at the input of the consumer itself.
- Lock the connection plug to the PSM MID measuring module using the appropriate clamping lever (fig. 3, item 12).
- Also establish the voltage supply using a cable from the above-mentioned connection cable sets to the "Infeed 2" connection (fig. 3, item 16).
- Also lock the connection plug to the PSM MID measuring module using the appropriate clamping lever.
- Connect consumer 1 and infeed 1 similarly as for the connection of just one consumer (see section 6.3.1 "Connection of only one consumer").
- Finally, provide an appropriate cable clamp for all connection cables.



Note:

If you have used only one infeed and one consumer previously, after connection of the second consumer, if necessary, you must change the **Disp. Circuit** setting in the configuration menu to "Source 1 + 2" (see section 7.4.1 "Settings using the configuration menu").

## 6.4 Connection to a CMC III Processing Unit

A further configuration of the PSM MID measuring module is possible from a web site when the unit is connected to a CMC III Processing Unit.

- Connect the PSM MID measuring module using a CAN bus connection cable with a CAN bus interface of the CMC III Processing Unit or of the neighbouring component in the CAN bus (fig. 3, item 14).

The following CAN bus connection cables from the CMC III accessories can 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 7030.094 (length 5 m)
- DK 7030.095 (length 10 m)

Further components are connected as daisy chain.

- If necessary, connect another component to the second free CAN bus interface of the PSM MID measuring module (fig. 3, item 15), such as a sensor from the range of CMC III accessories.

## 7 Operation

### 7.1 Operating and display elements

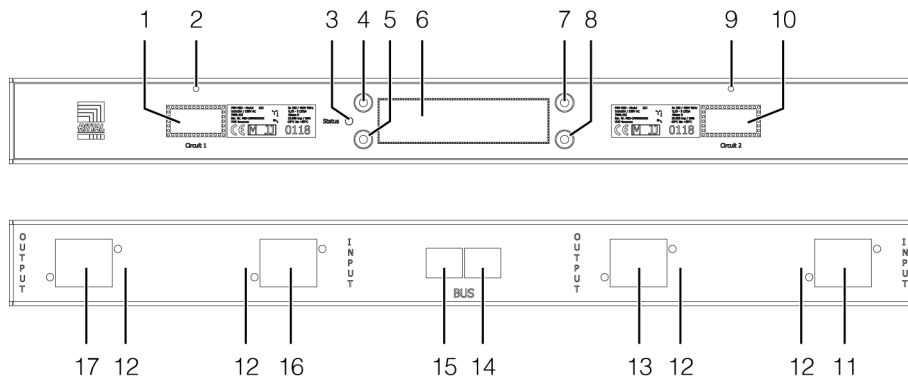


Fig. 4: Operating and display elements

#### Key

- 1 "Infeed 1" MID display
- 2 "Infeed 1" LED
- 3 Multi-LED for the status display
- 4 "Esc" key
- 5 "Return" key
- 6 Main display, centre
- 7 "Up" key
- 8 "Down" key
- 9 "Infeed 2" LED
- 10 "Infeed 2" MID display
- 11 "Infeed 1" connection
- 12 Connection plug clamping lever
- 13 "Consumer 1" connection
- 14 CAN bus connection
- 15 CAN bus connection
- 16 "Infeed 2" connection
- 17 "Consumer 2" connection

### 7.2 LED displays

A multi-LED for the status display (fig. 4, item 3) is located on the front of the PSM MID measuring module to the left of the centre main display. Another LED for each consumer display is located in the front above the MID displays (fig. 4, item 2 and item 9). Further LEDs are located at the rear on the CAN bus connection (fig. 4, item 14 and item 15). After connection of the PSM MID measuring module, all LEDs flash briefly once.

#### 7.2.1 Multi-LED displays

The status of the PSM MID measuring module can be read on the multi-LED.

#### Continuous illumination

Colour	Status
Red	The PSM MID measuring module is initialised or an incorrect connection cable is used (see section 10 "Testing and rectification").

Tab. 1: Multi-LED continuous illumination

#### Flashing codes

Colour	Status
Green	Brief flashing: data has been sent.
Orange	The PSM MID measuring module has "warning" status. Fast flashing: upper limit value overshoot. Slow flashing: lower limit value under-shot.
Red	The PSM MID measuring module has "alarm" status. Fast flashing: upper limit value overshoot. Slow flashing: lower limit value under-shot. Brief flashing: data could not be sent.
Blue	Asymmetric flashing: The PSM MID measuring module is searching for the master. Fast flashing: The PSM MID measuring module has lost the master. Brief flashing: The PSM MID measuring module has received a synchronisation message from the master.

Tab. 2: Multi-LED flashing codes

#### 7.2.2 Display of the LEDs above the MID displays

The two LEDs above the MID displays flash cyclically during the measurement and are used for the consumption display.

#### 7.2.3 Displays of the LEDs 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 over the CAN bus possible.
Red flashing	Transmission error.

Tab. 3: CAN bus connection LEDs

## 7.3 Description of operation

### 7.3.1 General notes

The unit can be configured using the operating elements on the front of the unit (see section 7.4 "Operation from the operating elements on the front"). A further configuration is possible from a web site when the unit is connected to a CMC III Processing Unit (see section 7.5 "Operation of the CMC III Processing Unit from the web site").



Note:

Further notes for the general operation of the web site can be found in the documentation for the CMC III Processing Unit.

### 7.3.2 Values for energy billing

The energy is billed using the value  $\Sigma$ kWh displayed on the MID display of the associated infeed (fig. 4, item 1 and item 10).



Note:

The displays on the centre main display of the PSM MID measuring module (fig. 4, item 6) and on the web site of a connected CMC III Processing Unit may be used only for informative purposes but not for billing purposes.

## 7.4 Operation from the operating elements on the front

### 7.4.1 Settings using the configuration menu

You can make the basic settings for the PSM MID measuring module in the configuration menu.

- For switched-off main display, press the "Return" key (fig. 4, item 5).  
The start screen appears.
- Use the "Down" key on the main screen to select the **Circuit 1** or **Circuit 2** menu (fig. 4, item 8).
- Press the "Return" key for approx. 3 seconds.  
The configuration menu appears: You can change the following parameters

Parameter	Explanation
Disp. Circuit	Source 1: Display of the messages, measured values and setting values for infeed 1 Source 2: Display of the messages, measured values and setting values for infeed 2 Source 1 + 2: Display of the messages, measured values and setting values for infeed 1 and infeed 2
Brightness Display	Brightness of the main display (5 = dark, 15 = bright).
Inverse View	On: bright font on dark background Off: dark font on bright background
Init Screen Timeout	Time duration after which the display switches to the standby mode in the event of inactivity (10 s – 300 s).
Menu Time-out	Time duration after which the display switches to the start screen in the event of inactivity (10 s – 60 s).

Tab. 4: Settings in the configuration menu



Note:

If the second infeed is activated subsequently, the settings must be checked and possibly changed.

### 7.4.2 Resetting the values to the factory defaults

If necessary, the following settings of the PSM MID measuring mode can be reset to the factory default.

- All setpoints and hysteresis values (hysteresis values can be set only via the CMC III Processing Unit)
- All designations that can be changed (Device-Name, DeviceLocation, etc.)
- All settings for the configuration of the unit that can be set from the configuration menu (see section 7.4.1 "Settings using the configuration menu")
- All categories (can be set only via the CMC III Processing Unit)
- All energy values that the customer can reset

- Keep the "Esc" key pressed (fig. 4, item 4).
- Also press the "Down" key for approx. 3 seconds (fig. 4, item 8).  
The "Reset to Factory Default" prompt appears in the main display.
- Use the "Down" key to select the "Yes" row and press the "Return" key to confirm the selection (fig. 4, item 5).  
All setting values of the PSM MID measuring module are then reset to the factory default and the start screen appears.

- Alternatively, use the "Down" key to select the "No" row and press the "Return" key to confirm your selection.

In this case, no changes are performed and the start screen also appears.



**Note:**

After the setting values have been reset to the factory default, the most recently installed firmware and the display values of the two MID displays are retained. These values are then available again on the web site after approx. one minute.

### 7.4.3 Settings for the two infeeds

The basic settings for the two infeeds can be made from the following menu structure:

Start screen
Circuit 1
Actual Energy Custom
Circuit 1 Menu
Circuit Information
Neutral Current
Active Energy
Active Energy Custom
Active Power
Phase 1 Information
Current
Voltage
Frequency
Power Factor
Active Power
Reactive Power
Apparent Power
Active Energy
Active Energy Custom
App. Energy
Phase 2 Information
Phase 3 Information
Circuit 2

The following parameters can be set or viewed in detail.

- SetPtHighAlarm: upper alarm limit value [A] or [V]
- SetPtHighWarning: upper warning limit value [A] or [V]
- SetPtLowWarning: lower warning limit value [A] or [V]
- SetPtLowAlarm: lower alarm limit value [A] or [V]

The limit values are set for infeed 1 and infeed 2 separately for the three phases and for the current and voltage values. In addition, limit values can be set separately for the neutral conductor current for the two infeeds as well as additional measured values, such as apparent power and reactive power.

In the main menu, the ">\*" and "\*<" symbols are prefixed or suffixed, respectively, to all parameters whose values can be changed or after selection lead to lower-level menus.

To change limit values and to select lower-level menus, the "Up" (fig. 4, item 7) and "Down" (fig. 4, item 8) keys can be used to select the desired value or menu. After pressing the "Return" key (fig. 4, item 5), you can change this value or switch to the appropriate menu. Once a parameter to change the value has been selected, the "->" or "<-" symbols are prefixed or suffixed, respectively, in the main display. The "Up" and "Down" keys can be used to change the value iteratively.

Example:

- Use the "Down" key on the main screen to select the **Circuit 1**.
- Press the "Return" key.  
The **Circuit 1 Menu** menu appears.
- Use the "Down" key to select the **Phase 1 Information** entry.
- Press the "Return" key.  
The **Circuit 1 Phase 1** menu appears.
- Use the "Down" key to select the **Voltage** entry.
- Press the "Return" key.  
The **Configuration Circuit 1 Phase 1 Voltage** menu appears.
- Use the "Down" key to select the **SetPt. Low Warn.** entry.
- Press the "Return" key.  
The ">\*" and "\*<" symbols prefixed or suffixed to the entry, respectively, change to the "->" or "<-" symbols. The value can now be changed.
- Press the "Up" and "Down" keys to increase or decrease, respectively, the lower limit value for the voltage messages.  
The value is changed in 1 V steps.
- Press the "Return" key to confirm your input.  
The symbols change again to ">\*" before or "\*<" after the entry.



**Note:**  
When the "Esc" key is pressed, the change is not **not** accepted.

### 7.4.4 Messages on the main display

Not only the fault messages (see section 4 "Testing and rectification") but for over- or undershooting the set limit values, also the associated messages are output in the main display (fig. 10, item 6)



**Note:**  
The designation "P'X'" in the following listing is replaced with "P1", "P2" or "P3", depending on which infeed phase the message is displayed.

- Voltage(P'X') High Alarm: upper alarm limit value for voltage is overshoot
- Voltage(P'X') High Warning: upper warning limit value for voltage is overshoot
- Voltage(P'X') Low Warning: lower warning limit value for voltage is undershoot
- Voltage(P'X') Low Alarm: lower alarm limit value for voltage is undershoot
- Current(P'X') High Alarm: upper alarm limit value for current is overshoot
- Current(P'X') High Warning: upper warning limit value for current is overshoot
- Current(P'X') Low Warning: lower warning limit value for current is undershoot
- Current(P'X') Low Alarm: lower alarm limit value for current is undershoot
- Neutral Current High Alarm: upper alarm limit value for neutral-conductor current is overshoot
- Neutral Current High Warning: upper warning limit value for neutral-conductor current is overshoot
- Neutral Current Low Warning: lower warning limit value for neutral-conductor current is undershoot
- Neutral Current Low Alarm: lower alarm limit value for neutral-conductor current is undershoot

## 7.5 Operation of the CMC III Processing Unit from the web site

The **Observation** tab is used to make all settings for the individual components of the PSM MID measuring module, such as limit values for warning and alarm messages.

- To do so, first select the **PSM-MID-M32** entry in the left-hand tree structure.

In the following sections 7.5.1 "Device" to 7.5.3 "Circuit 2", only those parameters for which you can make changes are described in detail. There are also display values used only for information purposes.

### 7.5.1 Device

General settings for the PSM MID measuring module are made at the "Device" level.

Parameter	Explanation
Description	Individual description of the PSM MID measuring module.
Location	Installation location of the PSM MID measuring module.

Tab. 5: Settings in the "Device" level

Parameters that provide detailed information about the PSM MID measuring module, such as the version of the deployed software and hardware, are also displayed. You should have such information available, in particular to permit fast troubleshooting for queries with Rittal.

### 7.5.2 Circuit 1

Settings for infeed 1 are performed at the "Circuit 1" level. You can choose between two display possibilities:

- Tree representation: This allows targeted and fast access to individual parameters.
- Tabular representation: This provides a fast overview of all actual measured values of the selected infeed.

If after selection of the "Circuit 1" level, the lower-level "Unit", "Phase 1", etc. entries are displayed (fig. 5, item 1), switch to the tabular representation as follows:

- Click the coloured "graphic" symbol suffixed to the **Circuit 1** entry in the form of a stylised diagram (fig. 5, item 2).

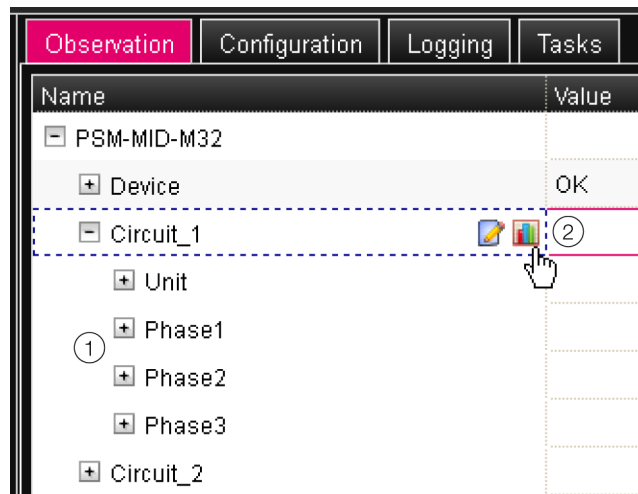


Fig. 5: Tree representation:

The display changes to the tabular representation (fig. 6) and all actual measured values for infeed 1 can be viewed at a glance.



**Note:**

The "Current" row and the "Σ" symbol of the neutral-conductor current are displayed in the tabular representation.

If after selection of the "Circuit 1" level, the tabular representation is preselected, switch to the tree representation as follows:

- Click the "graphic" symbol shown in various grey levels suffixed to the **Circuit 1** entry (fig. 6, item 1).

	Unit	L1	L2	L3	Σ
Frequency	Hz	---	---	---	0
Voltage	V	C1L1 Voltage 0 Status: Error	C1L2 Voltage 0 Status: Error	C1L3 Voltage 0 Status: Error	---
		C1L1 Current 0 Status: Error	C1L2 Current 0 Status: Error	C1L3 Current 0 Status: Error	0
Current	A	0	0	0	0
Power	W	0	0	0	0
Power Factor		0	0	0	---
Apparent Power	VA	0	0	0	---
Reactive Power	Var	0	0	0	---
Energy	kWh	0	0	0	0
Energy Custom	kWh	0	0	0	0
Apparent Energy	kVAh	0	0	0	---

Fig. 6: Tabular representation:

The display changes to the tree representation (fig. 5) and you can access the individual measured and setting values for infeed 1.

To change the setting values for the three phases L1, L2 and L3 in the selected tabular representation, proceed as follows:

- Set the mouse cursor in the table on the column header for which you want to change the setting values (fig. 6, item 2).  
An "edit" symbol appears and the mouse cursor changes to a "hand" symbol.
- Click the "edit" symbol.  
The "Write Values" dialogue with the parameters of the selected phase appears.

**Note:**

You cannot make any changes to the higher-level parameters for the "Infeed 1" unit in the tabular representation.

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

**"Unit" main level**

You can set the following parameters for infeed 1 in the "Unit" main level of infeed 1.

Parameter	Explanation
DescName	Individual description of infeed 1.

Tab. 6: Settings in the "Unit" main level

The following parameters are also displayed for infeed 1, although they do not have any significance for the PSM MID measuring module:

Parameter	Explanation
Mounting Position	Mounting position of the PSM MID measuring module (always "Horizontal").

Tab. 7: Displays in the "Unit" main level

The following parameters are also displayed in the associated sublevels for infeed 1:

Parameter	Explanation
Energy	Total energy value of infeed 1.
Energy Custom	Total energy value based on the user-defined counters for the three phases L1, L2 and L3.
Power	Total power of infeed 1.
Frequency	Frequency of infeed 1.

Tab. 8: Displays in the associated sublevels

**"Neutral Current" sublevel**

You can set the following parameters for the neutral-conductor current in the "Neutral Current" sublevel:

Parameter	Explanation
DescName	Individual description of the neutral-conductor current for infeed 1.
SetPtHigh-Alarm	Upper limit of the current value for which an alarm message is issued.
SetPtHigh-Warning	Upper limit of the current value for which a warning message is issued.
SetPtLow-Warning	Lower limit of the current value for which a warning message is issued.
SetPtLow-Alarm	Lower limit of the current value for which an alarm message is issued.

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Parameter	Explanation
Hysteresis	If one of the upper limit values is overshoot (SetPtHigh) or one of the lower limit values is undershot (SetPtLow), a warning or an alarm is issued immediately. For a hysteresis of x %, the warning or the alarm clears for undershooting an upper limit value or for overshooting a lower limit value only after a difference of the $x/100 \cdot \text{limit value}$ to the limit value.

Tab. 9: Settings in the "Neutral Current" sublevel

The following parameters are also displayed for the neutral-conductor current:

Parameter	Explanation
Value	Actual value of the neutral-conductor current.
Status	Actual status of the neutral-conductor current.

Tab. 10: Displays in the "Neutral Current" sublevel

## "Phase 1" main level

You can make changes for the voltage, the current and a user-defined energy counter ("Active Custom Energy") of the phase L1 in the "Phase 1" main level of infeed 1.

## "Voltage" sublevel

Parameter	Explanation
DescName	Individual description of the voltage value for infeed 1.
SetPtHigh-Alarm	Upper limit of the voltage value of phase L1 for which an alarm message is issued.
SetPtHigh-Warning	Upper limit of the voltage value of phase L1 for which a warning message is issued.
SetPtLow-Warning	Lower limit of the voltage value of phase L1 for which a warning message is issued.
SetPtLow-Alarm	Lower limit of the voltage value of phase L1 for which an alarm message is issued.
Hysteresis	If one of the upper limit values is overshoot (SetPtHigh) or one of the lower limit values is undershot (SetPtLow), a warning or an alarm is issued immediately. For a hysteresis of x%, the warning or the alarm clears for undershooting an upper limit value or for overshooting a lower limit value only after a difference of $x/100 \cdot \text{limit value}$ to the limit value.

Tab. 11: Settings in the "Voltage" level

The following parameters are also displayed for the voltage value of phase L1:

Parameter	Explanation
Value	Actual voltage value of phase L1.
Status	Actual status of the voltage value.

Tab. 12: Displays in the "Voltage" level

## "Current" sublevel

Parameter	Explanation
DescName	Individual description of the current value for infeed 1.
SetPtHigh-Alarm	Upper limit of the current value of phase L1 for which an alarm message is issued.
SetPtHigh-Warning	Upper limit of the current value of phase L1 for which a warning message is issued.
SetPtLow-Warning	Lower limit of the current value of phase L1 for which a warning message is issued.
SetPtLow-Alarm	Lower limit of the current value of phase L1 for which an alarm message is issued.
Hysteresis	If one of the upper limit values is overshoot (SetPtHigh) or one of the lower limit values is undershot (SetPtLow), a warning or an alarm is issued immediately. For a hysteresis of x%, the warning or the alarm clears for undershooting an upper limit value or for overshooting a lower limit value only after a difference of $x/100 \cdot \text{limit value}$ to the limit value.

Tab. 13: Settings in the "Current" level

The following parameters are also displayed for the current value of phase L1:

Parameter	Explanation
Value	Actual current value of phase L1.
Status	Actual status of the current value.

Tab. 14: Displays in the "Current" level

## "Active Custom Energy" sublevel

Parameter	Explanation
Value	User-defined energy counter. The operator can reset this counter to the value "0".

Tab. 15: Settings of the "Active Custom Energy" level

The following parameters are also displayed for phase L1 in the associated sublevels:



Parameter	Explanation
Power Factor	Actual power factor
Active Power	Actual active power
Apparent Power	Actual apparent power
Reactive Power	Actual reactive power
Active Energy	Actual active energy
Apparent Energy	Actual apparent energy

Tab. 16: Displays in the "Phase 1" level



**Note:**

You can make the same settings for phases L2 and L3 in the appropriate levels as for phase L1.

### 7.5.3 Circuit 2

Settings for infeed 2 are performed at the "Circuit 2" level. The representations match fully those for infeed 1 (see section 7.5.2 "Circuit 1").

## 8 Inspection and maintenance

### 8.1 Safety instructions

- Prior to performing any work on the PSM MID measuring module, the unit must be disconnected from the power supply and protected against being switched on again.
- The unit does not need to be opened and so prohibited.

### 8.2 Work to be performed

#### 8.2.1 Inspection

The system must be checked regularly for its complete correct functioning. Rittal recommends a regular function test when required. The intervals between the tests should be no longer than one year.

#### 8.2.2 Cleaning



**Note: Risk of damage!**

**Do not use aggressive substances such as cleaner's naphtha, acids, etc., for cleaning as they may cause damage to the plastic surface.**

- Clean the unit in regular intervals using a lightly moistened cloth.

#### 8.2.3 Maintenance

Because the unit is largely maintenance-free, the maintenance of the unit is largely limited to the "inspection" and "cleaning" tasks.

#### 8.2.4 Recalibration

After expiration of the calibration end date printed on the measuring module, the unit must be recalibrated if it is still to be deployed for billing purposes.

- If necessary, contact Rittal for a recalibration of the unit.

#### 8.2.5 Test procedure

To test the unit, an adaptor kit can be obtained from Rittal (see section 13 "Customer service addresses"). With this adaptor kit, under reference conditions on a suitable calibration rig (normally obtainable from a standards bureau), the flashing rhythm of the LEDs, and so the complete unit, can be tested using the MID displays (fig. 4, item 2 or item 9).

## **9 Storage and disposal**

### **9.1 Storage**

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

### **9.2 Disposal**

Because the PSM MID measuring module consists primarily of the "housing" and "circuit board" components, the device must be sent to the electronic recycling for disposal.

## 10 Testing and rectification

### 10.1 Wrong cable combination

This error message is displayed when you use different types of connection cables for the inputs and outputs on a PSM MID measuring module (e.g. a 32 A variant at the input and a 16 A variant at the output).

- Ensure that you use only the appropriate connection cables on a PSM MID measuring module.

### 10.2 Wrong cable type

This error message is displayed when you use incorrect connection cables on a PSM MID measuring module (cables for the 32 A variant on a 16 A device or cables for the 16 A variant on a 32 A device).

- Ensure that you use only the appropriate connection cables on a PSM MID measuring module.

### 10.3 Other possible error sources

Under some circumstances, one of the two above-mentioned error messages is displayed although you have used the correct connection cable. This can be the case when the voltage supply to the device at the "Infeed 1" connection has already been established and you then want to connect further cables.

- In this case, disconnect the voltage supply to the PSM MID measuring module.
- Connect all required cables.
- Finally, establish the voltage supply at the "Infeed 1" connection.

Alternatively, you can also acknowledge the error message by briefly changing the circuits in the configuration menu.

- Change the "Disp. Circuit" setting in the configuration menu to "Source 1" (see section 7.4.1 "Settings using the configuration menu").
- Then change the "Disp. Circuit" setting to the appropriate entry for the actual connection configuration.

## 11 Technical specifications

Technical specifications	PSM MID measuring module for CMCIII	
Model No. DK	7859.312	7859.332
W x H x D mm	450 x 44 x 200	
Mounting position	Horizontal	
Operating voltage	180 V to 260 V single-phase on L1 or three-phase	
Frequency	50 Hz	
Input current for each phase and circuit	16 A	32 A
Number of phases per circuit	3	
Number of circuits	2	
Type of connection	Industry plug connector	
Connection plug	HARTING HAN Q4/2 or Ilme CQ 08V	
Measurement functions	Measurement of each phase and infeed	
Acquired values (per phase)	Voltage (V), current (A), frequency (Hz), active power (kW), active energy (kWh), apparent power (VA), apparent energy (VAh), reactive power (Var), power factor (cosPhi), neutral-conductor measurement / determination of load unbalance	
Voltage (V) measurement range	180 V to 260 V	
Voltage (V) resolution	0.1 V	
Voltage (V) accuracy	2%	
Current (A) measurement range	0 A to 18 A	0 A to 35 A
Current (A) resolution	0.1 A	
Current (A) accuracy	2%	
Frequency (Hz) accuracy	2%	
Active power (kW) accuracy	2%	
Apparent power (VA) accuracy	2%	
Active energy (kWh) accuracy	1%	
Apparent power (kW) accuracy	2%	
Power factor (cosPhi) accuracy	2%	
Freely settable limit values for warning/alarm	Yes	
Main display, centre	OLED monochrome (5 lines)	
Metrology LEDs	10,000 pulses = 1 kWh	
Interfaces	2 x RJ 45, CAN bus	
MTBF (at 40 °C)	200,000 hours	

# 11 Technical specifications

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<b>Technical specifications</b>	<b>PSM MID measuring module for CMCIII</b>
Protection class	Class 3
Level of contamination	2
Protection category	IP 51 according to IEC 60 529
Storage temperature	-25 °C to +55 °C
Ambient operating temperature	-25 °C to +55 °C
Operating humidity range	20% to 90% relative humidity, non-condensing

Tab. 17: Technical specifications

## 12 Accessories

The accessories program contains, among other things, various connection cable sets for connecting the PSM MID measuring module to the power supply as well as for connecting the consumers to the PSM MID measuring module.

A detailed listing of the complete accessories programme is available at the Internet address specified in section 13 "Customer service addresses".

Designation	Model No. DK
Connection cable set, 1 x input 3 m / 1 x output 1 m CEE (IEC 60 309) (2 x required when both infeeds are used)	7859.315
Connection cable set for PSM busbars (with Wago-X-Com connectors) (2 x required when both infeeds are used)	7859.316

Tab. 18: Accessories PSM-MID M16 (DK 7859.312)

Designation	Model No. DK
Connection cable set, 1 x input 3 m / 1 x output 1 m CEE (IEC 60 309) (2 x required when both infeeds are used)	7859.335

Tab. 19: Accessories PSM-MID M32 (DK 7859.332)

# 13 Customer service addresses

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## **13 Customer service addresses**

For technical questions, 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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