

Electronic Circuit Breakers (ECBs)

4-channel; Input voltage: 24 VDC; adjustable 1 ... 10 A; Signal contact

787-3664



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Every conceivable measure has been taken to ensure the accuracy and completeness of this documentation. However, as errors can never be fully excluded, we always appreciate any information or suggestions for improving the documentation.

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We wish to point out that the software and hardware terms as well as the trademarks of companies used and/or mentioned in the present manual are generally protected by trademark or patent.

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Table of Contents

| | |
|---|-----------|
| 1 Provisions | 5 |
| 1.1 Intended Use | 5 |
| 1.2 Typographical Conventions | 6 |
| 1.3 Definitions | 7 |
| 1.4 Legal Information | 8 |
| 2 Safety | 9 |
| 2.1 General Safety Regulations | 9 |
| 2.2 Electrical Safety | 9 |
| 2.3 Mechanical Safety | 9 |
| 2.4 Thermal Safety | 10 |
| 2.5 Indirect Safety | 10 |
| 3 Properties | 11 |
| 3.1 View | 11 |
| 3.2 Product Identification | 12 |
| 3.2.1 Type Plate | 12 |
| 3.2.2 Product-specific information | 12 |
| 3.3 Signal Input and Signal Output | 13 |
| 3.3.1.1 Signal Input DI | 13 |
| 3.3.1.2 Signal Output DO | 13 |
| 3.4 Indicators | 14 |
| 3.5 Control Elements | 14 |
| 3.5.1 Current Selector Switch | 14 |
| 3.5.2 Button | 14 |
| 3.6 Technical Data, Approvals, Guidelines and Standards | 15 |
| 4 Functions | 16 |
| 4.1 Parallel Mode | 16 |
| 4.2 Capacitive Load | 17 |
| 4.3 Button lock | 17 |
| 4.4 Tripping in the Event of Overload | 17 |
| 5 Planning | 19 |
| 5.1 Derating | 19 |
| 5.2 Capacitive Switching | 19 |
| 6 Transport and Storage | 21 |
| 7 Installation and Removal | 22 |
| 8 Commissioning | 24 |
| 8.1 Operation in Parallel Mode | 24 |
| 9 Configuration | 25 |
| 9.1 Configuration routine | 25 |
| 10 Diagnostics | 26 |
| 10.1 Diagnostics via Indicators | 26 |

11 Decommissioning **27**

 11.1 Disposal and Recycling 27

12 Appendix **28**

 12.1 Protected Rights 28

1 Provisions

This document applies to the following product:

787-3664 (Electronic Circuit Breaker)

Produktdetailseite

www.wago.com/787-3664

The product must only be installed and operated in accordance with the operating instructions. Knowledge of the operating instructions is required for proper use. You can find all documents and information on the detailed product page.

1.1 Intended Use

Series products provide DC voltage to electrical or electronic devices, such as industrial control systems or display, communication and measuring devices.

- The product is approved for use as a built-in installation device in household installations.
- Operation of the product is permitted in the industrial sector and in residential and commercial domains, including small businesses.

The product is an open type device and is designed for installation in an additional enclosure.

Improper Use

Improper use of the product is not permitted. Improper use occurs especially in the following cases:

- Non-observance of the intended use
- Use without protective measures in an environment in which moisture, salt water, salt spray mist, dust, corrosive fumes, gases, direct sunlight or ionizing radiation can occur
- Use of the product in areas with special risk that require continuous fault-free operation and in which failure of or operation of the product can result in an imminent risk to life, limb or health or cause serious damage to property or the environment (such as the operation of nuclear power plants, weapons systems, aircraft and motor vehicles)

Warranty and Liability

The provisions of the latest WAGO General Terms and Conditions of Deliveries and Services (GTC) apply as well as the Software License Terms for Standard Software (SW-License) applicable to software products and software embedded in WAGO hardware products, both available at: www.wago.com.

In particular, the warranty is void if:

- The product is improperly used.
- The deficiency (hardware and software configurations) is due to special instructions.
- Modifications to the hardware or software have been made by the user or third parties that are not described in this documentation and that has contributed to the fault.

Individual agreements always have priority.

Obligations of Installers/Operators

The installers and operators bear responsibility for the safety of an installation or a system assembled with the product. The installer/operator is responsible for the proper installation and safety of the system. All laws, standards, guidelines, local regulations and accepted technology standards and practices applicable at the time of installation, and the instructions in the the products' Instructions for Use, must be complied with. In addition, the installment requirements for licensing must be observed. In the event of non-compliance, the product may not be operated within the scope of the approval.

1.2 Typographical Conventions





Number Notation

| | |
|-------------|-----------------------------------|
| 100 | Decimals: Normal notation |
| 0x64 | Hexadecimals: C-notation |
| '100' | Binary: In single quotation marks |
| '0110.0100' | Nibbles separated by a period |

Text Formatting

| | |
|---------------|---|
| <i>italic</i> | Names of paths or files |
| bold | Menu items, entry or selection fields, emphasis |
| Code | Sections of program code |
| > | Selection of a menu point from a menu |
| "Value" | Value entries |
| [F5] | Identification of buttons or keys |

Cross References / Links

| | |
|---|---|
|  | Cross references/links to a topic in a document |
|  | Cross references / links to a separate document |
|  | Cross references / links to a website |
|  | Cross references / links to an email address |

Sequence of Action

- ✓ This symbol identifies a precondition.
- 1. Action step
- 2. Action step
 - ⇒ This symbol identifies an intermediate result.
 - ⇒ This symbol identifies the result of an action.
 - Individual action step

Lists

- Lists, first level
 - Lists, second level

Figures

Figures in this documentation are for better understanding and may differ from the actual product design.

Warning Messages

DANGER

Type and source of hazard

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

- Action step to reduce risk

WARNING

Type and source of hazard

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

- Action step to reduce risk

CAUTION

Type and source of hazard

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

- Action step to reduce risk

NOTICE

Type and source of malfunction (property damage only)

Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

- Action step to reduce risk

Information Notices

Note

Information

Indicates information, clarifications, recommendations, referrals, etc.

1.3 Definitions

This Product Manual uses the terms “switched on,” “switched off” and “triggered.” To clearly distinguish these terms, they are explained below:

Table 1: Definitions


| Item | Definition |
|--------------|---|
| Switched on | The user has manually activated the product via the button or a corresponding signal at the control input. The load circuit is closed; current is flowing. |
| Switched off | The user has manually deactivated the product via the button or a corresponding signal at the control input. The load circuit is open; the current flow is interrupted. |
| Tripped | The product's electronics have been triggered by overcurrent, undervoltage or overvoltage. The load circuit is open; the current flow is interrupted. |

1.4 Legal Information

Intellectual property

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Third-party trademarks are referred to in the product documentation. The “®” and “TM” symbols are omitted hereinafter. The trademarks are listed in the Appendix:  **Protected Rights [► 28]**.

Subject to Change

The instructions, guidelines, standards, etc., in this manual correspond to state of the art at the time the documentation was created and are not subject to updating service. The installer and operator bear sole responsibility to ensure they are complied with in their currently applicable form. WAGO GmbH & Co. KG retains the right to carry out technical changes and improvements of the products and the data, specifications and illustrations of this manual. All claims for change or improvement of products that have already been delivered – excepting change or improvement performed under guarantee agreement – are excluded.

2 Safety

2.1 General Safety Regulations

- This documentation is part of the product. Therefore, retain the documentation during the entire service life of the product. Pass on the documentation to any subsequent user of the product. In addition, ensure that any supplement to this documentation is included, if necessary.
- The product must only be installed and put into operation by qualified electrical specialists per EN 50110-1/-2 and IEC 60364.
- Comply with the laws, standards, guidelines, local regulations and accepted technology standards and practices applicable at the time of installation.

2.2 Electrical Safety

- High voltage can cause electric shock or burns! Disconnect all power sources from the product before performing any installation, repair or maintenance.
- Make sure the product does not carry any voltage before starting work.

Power Supply

- For non-hazardous active voltage per EN/UL/IEC 61010-1, SELV/PELV power supplies shall be used.
- Connecting impermissible current or frequency values may destroy the product.
- Provide suitable disconnect and overcurrent protection on the system side. The protection device must be located near the product where it can be operated. The **OFF** position must be clearly marked on the protection device.

Cables

- Always use connecting cables designed for the maximum current load.
- High currents and the inherent heat generated by the product can cause additional heat generation at the clamping point. Plan for a correspondingly higher temperature range for the connecting cables, or reduce inherent heat by selecting larger conductor cross-sections.
- Only one conductor may be connected to each connection point (e.g., CAGE CLAMP® connection).

Grounding/Protection/Fuses

- When handling the product, please ensure that environmental factors (personnel, work space and packaging) are properly equalized. Do not touch any conducting parts.

2.3 Mechanical Safety

- Before startup, please check the product for any damage that may have occurred during shipping. Do not put the product into operation in the event of mechanical damage.
- Do not open the product housing.
- Avoid conductive contamination.

2.4 Thermal Safety

- The surface of the housing heats up during operation. Under special conditions (e.g., in the event of a fault or increased surrounding air temperature), touching the product may cause burns. Allow the product to cool down before touching it.
- The temperature inside the additional enclosure must not exceed the ambient temperature permitted for the mounted product.
- Cooling of the product must not be impaired. Ensure that the air circulation is unobstructed.

2.5 Indirect Safety

- Only use a dry or cloth or a clothed dampened with water to clean the product. Do not use cleaning agents, e.g., abrasive cleaners, alcohols or acetone.
- Do not allow the product to come into contact with ketones (e.g., acetone) or chlorinated hydrocarbons (e.g., dichloromethane) under any circumstances.
- Do not use hard objects that could cause scratches for cleaning.
- Clean tools and materials are imperative for handling the product.
- The products are not resistant to materials having seeping and insulating properties such as aerosols, silicones and triglycerides (found in some hand creams). If these substances occur in the environment of the products, install the products in an additional housing that is also resistant to these substances.
- Replace any defective or damaged devices.
- Observe possible different technical specifications for mounting that does not correspond to the nominal mounting position.
- Only use accessories authorized by WAGO.

3 Properties

The product has 4 Kanäle.

The product reliably protects load circuits against short circuits and overloads. The 24 VDC input voltage can be variably protected by current values from 4 x 1 A / 2 A / 4 A / 6 A / 8 A / 10 A (adjustable).

The tripping current can be read off and adjusted via the current dial. Various settings can be made for each channel via the three-color illuminated button: ON/OFF switching, re-setting or for easy diagnostics on the product.

Other features include time-delayed channel connections, the trigger message for the common signal and the remote input for resetting all tripped channels or for switching any channels ON and OFF.

3.1 View

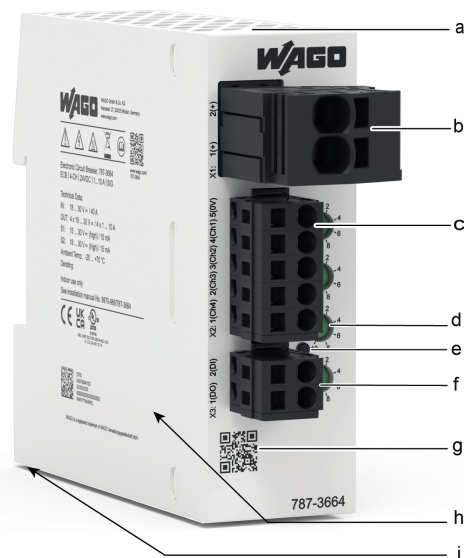


Figure 1: View

| | |
|---|--|
| a | Ventilation openings |
| b | Input X1 (Pin 1 ... 2: IN) 1 (+); 2 (+) |
| c | Output X2 (Pin 1 ... 4: OUT) 1 (Ch4); 2 (Ch3); 3 (Ch2); 4 (Ch1); Input X2 (Pin 5: 0 VDC) |
| d | Current Selector Switch |
| e | Button; Status LED |
| f | Signal X3 Pin: 1 (DO); 2 (DI) |
| g | QR code (product detail page) |
| h | Type label |
| i | Mount/removal latch on a DIN-rail |

3.2 Product Identification

3.2.1 Type Plate

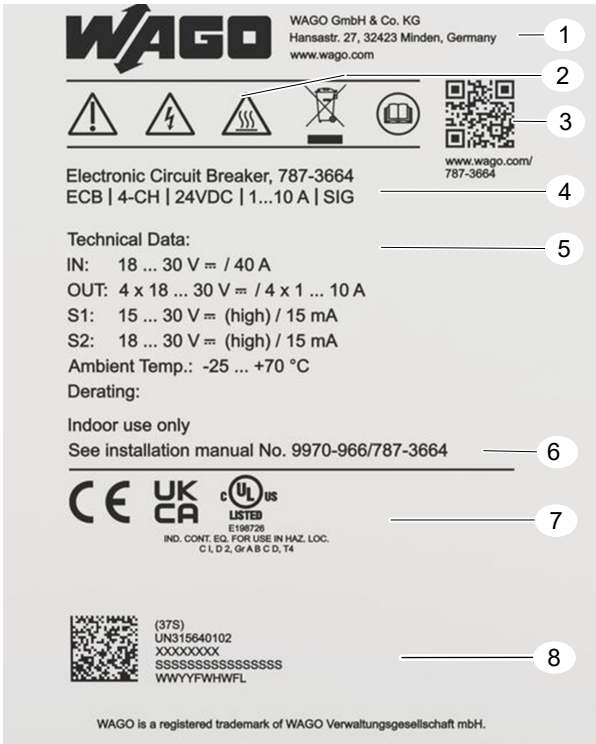


Figure 2: Type Plate

| | | |
|---|---|---|
| 1 | Company logo and address | |
| 2 | Symbols for warning signs | Safety [▶ 9] |
| 3 | QR code (product detail page) | |
| 4 | Product name and article number | |
| 5 | Technical Data | Technical Data, Approvals, Guidelines and Standards [▶ 15] |
| 6 | Information on the instruction leaflet | |
| 7 | Field for guidelines, approvals and standards | Technical Data, Approvals, Guidelines and Standards [▶ 15] |
| 8 | Label with product-specific information | Product-specific information [▶ 12] |

3.2.2 Product-specific information

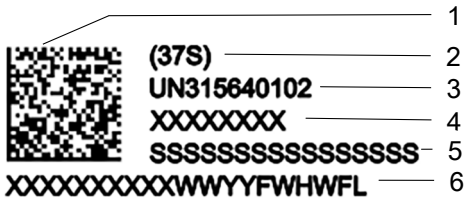


Figure 3: Product-specific information

| | |
|---|---|
| 1 | 2D Matrix Code; Contains the information of the positions 2 ... 5 |
|---|---|

| | |
|----------|---|
| 2 | Key number; Fixed information (37S) |
| 3 | Identification number according to D-U-N-S; Fixed information (WAGO Minden) |
| 4 | WAGO Art. No. or internal SAP number; Product-specific |
| 5 | Consecutive number; Product-specific |
| 6 | Production order, Production date and revision index (FW HW FL) |

Table 2: Revision index structure

| | | |
|----------------|----------------|-------------------|
| Software index | Hardware index | Boot loader index |
| FW | HW | FL |

3.3 Signal Input and Signal Output

3.3.1.1 Signal Input DI

Table 3: Signal Input DI

| Configuration | Tripped 0 V; switched off 0 V; 90 % monitoring 0 V | | | Tripped 24 V; switched off 24 V; 90 % monitoring 24 V | | |
|---------------|--|-----------------------------|------------------------------|---|-----------------------------|------------------------------|
| | Signal 1: Reset channel | Signal 2: Switch on channel | Signal 3: Switch off channel | Signal 1: Reset channel | Signal 2: Switch on channel | Signal 3: Switch off channel |
| Duration | 500 ... 1500 ms | 2000 ... 4000 ms | 5000 ... 7000 ms | 500 ... 1500 ms | 2000 ... 4000 ms | 5000 ... 7000 ms |
| Signal form | Positive | | | Negative | | |
| Output status | Channel tripped | Channel off | Channel on | Channel tripped | Channel off | Channel on |
| Target state | Channel on | | Channel off | Channel on | | Channel off |

3.3.1.2 Signal Output DO

Table 4: Signal Output DO

| Configuration | One or more channels switched off | One or more channels switched on; load current > 90 % nominal current | One or more channels tripped due to overcurrent |
|----------------------|--------------------------------------|--|--|
| Tripped 0 V | 24 V | 24 V | 0 V |
| Switched OFF 0 V | 0 V | 24 V | 24 V |
| 90 % monitoring 0 V | 24 V | 0 V | 24 V |
| Tripped 24 V | 0 V | 0 V | 24 V |
| Switched OFF 24 V | 24 V | 0 V | 0 V |
| 90 % monitoring 24 V | 0 V | 24 V | 0 V |

3.4 Indicators



Figure 4: LED placement

| | |
|---|------------|
| 1 | Status LED |
|---|------------|

For more information, see [🔗 Diagnostics via Indicators \[▶ 26\]](#).

3.5 Control Elements

3.5.1 Current Selector Switch

The current value can be set via the current selector switch:

| | |
|------------------|-------------------------------|
| Normal operation | 1 A, 2 A, 4 A, 6 A, 8 A, 10 A |
| Parallel mode | 11 A, 12 A, 14 A, 16 A |

The current value can be read on the scale of the current selector switch (see [🔗 View \[▶ 11\] \(d\)](#)).

3.5.2 Button

A button is assigned to each output channel. Depending on the operating mode, each button has the following functions:

Table 5: Basic functions of the buttons

| Button | Description |
|--------|--|
| Press | During operation: Switches channel on and off |
| | In the event of error: Resets channel |

The special functions can be set on each button by pressing the button > 3 seconds. The following buttons have another special function:

Table 6: Special functions of the buttons

| | |
|----------|---|
| Button 1 | Switch channel 1 and channel 2 to parallel mode (see 🔗 Parallel Mode [▶ 16]) |
| Button 2 | Configuration (see 🔗 Configuration routine [▶ 25]) |
| Button 3 | Switch channel 3 and channel 4 to parallel mode (see 🔗 Parallel Mode [▶ 16]) |
| Button 4 | Button lock (see 🔗 Button lock [▶ 17]) |


See also

 Configuration routine [► 25]

3.6 Technical Data, Approvals, Guidelines and Standards

Note


Subject to changes!

Please also observe the further product documentation! You can generate the current datasheet at any time at:  www.wago.com/787-3664.

Supplementary Technical Data for the Data Sheet

Table 7: Supplementary Technical Data

| | |
|---------------------------|-----------------------------|
| Relative humidity | 5 ... 95 % (non-condensing) |
| UL 61010 use | Indoor |
| UL 61010 pollution degree | 2 |

The applicable guidelines, approvals and standards for the product can be found on the product detail page at:  www.wago.com/787-3664.

4 Functions

4.1 Parallel Mode

Channel pairs of the product can be operated in parallel mode. The following channel pairs can be connected in parallel:

- Channel 1 and Channel 2
- Channel 3 and Channel 4


To set the parallel mode, see  [Operation in Parallel Mode \[► 24\]](#).

Switch Setting in Parallel Mode

If parallel mode is selected, the desired nominal current can be set via the smaller channel of the pair. The switch setting of the larger channel is not taken into account. 10 A are added to the selected setting of the first channel. Switch positions beyond the maximum nominal current of 16 A have no effect.

Table 8: Switch Setting in Parallel Mode


| Current Selector Switch Setting | In Parallel Mode |
|---------------------------------|------------------|
| 1 A | 11 A |
| 2 A | 12 A |
| 4 A | 14 A |
| 6 A | 16 A |
| 8 A | 16 A |
| 10 A | 16 A |

The following must be observed when operating parallel mode (see  [Operation in Parallel Mode \[► 24\]](#)):

- The minimum adjustable nominal current in parallel mode is 11 A.
- The maximum adjustable nominal current in parallel mode is 16 A.
- If two channels are in parallel mode, both connection points must be used. Both channels must be routed and commoned externally via cables on rail-mount terminal blocks. These cables must have the same cable length and cross-section. The rail-mount terminal blocks connect to the load.

Asymmetric Load


If the delta I of two channels in parallel mode is > 2 A, these two channels are loaded asymmetrically.

- If there is an asymmetrical load and the total current flowing for the channel pair is < 10 A, this is indicated via the LED signaling; see  [Diagnostics via Indicators \[► 26\]](#).
- If there is an asymmetrical load and the total current flowing for the channel pair is > 10 A, the channel triggers immediately.

4.2 Capacitive Load

The product can be used to switch on high capacitive loads. The resulting high inrush currents put a strain on the power supply. The power supply must be able to deliver the maximum required power without the voltage falling below Load regulation.

The capacity value to be reached depends on fundamental factors, such as the power supply already mentioned, the cable length and the conductor cross-section, as well as the properties of the load that is to be powered.

For some WAGO power supply units, possible load capacities have been determined empirically (see  **Capacitive Switching** [**▶ 19**]).

Note

Measures for capacitive loads without protection against reverse discharge


Faulty tripping of channels that are connected in parallel may occur on the supply side with capacitive loads that are not protected against reverse discharge.

- In this case, WAGO recommends taking suitable measures (e.g., a diode or MOS-FET) to decouple the capacitive load.

4.3 Button lock

The operating elements can be locked against manipulation with a button lock.

To activate/deactivate the button lock, press button 4 for > 3 seconds. After activation, the product retains its preset states.

The button lock is indicated by a cyclic yellow moving light between the channels. When the button lock is active, the product can only be controlled via the  **Signal Input DI** [**▶ 13**].

Note

The nominal current cannot be adjusted by means of a current selector switch during the button lock.

If the current selector switch has been adjusted, the signal output is switched off and the respective channel LED lights up red after the button lock is disabled.

4.4 Tripping in the Event of Overload

Note

Wait for temperature to return to normal!

If a channel has tripped due to a short circuit or overload, it is necessary to wait until the temperature returns to its normal range before switching the channel back on.

The product checks whether the output current is greater than the nominal current setting. As soon as the output current exceeds this nominal current, the channel is switched off. The tripping time depends on the magnitude of the overcurrent. The figure below shows the corresponding tripping times:

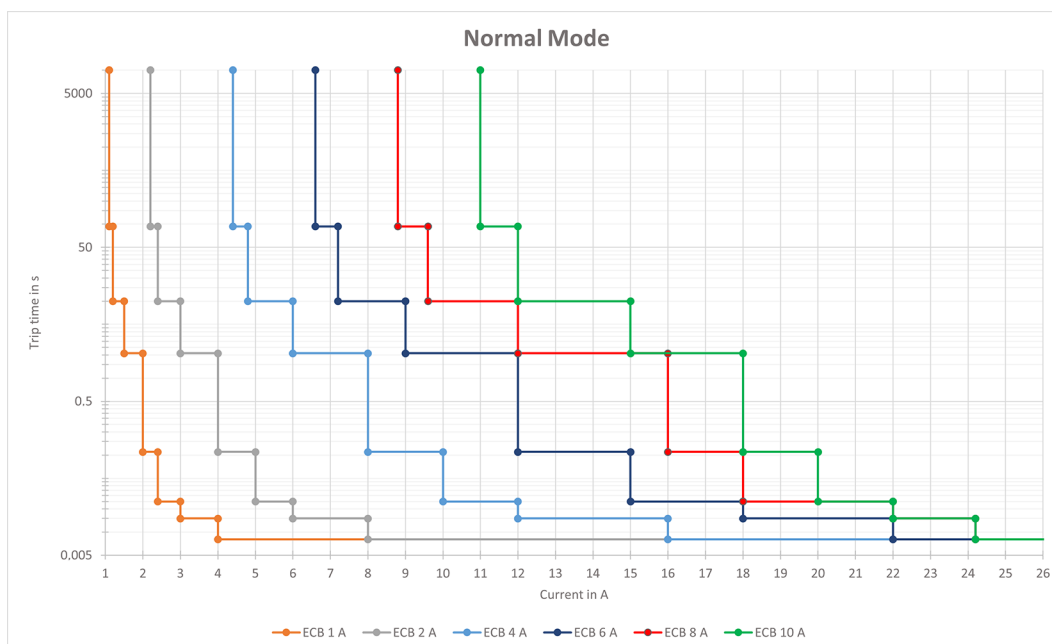


Figure 5: Tripping curve "Normal Mode"

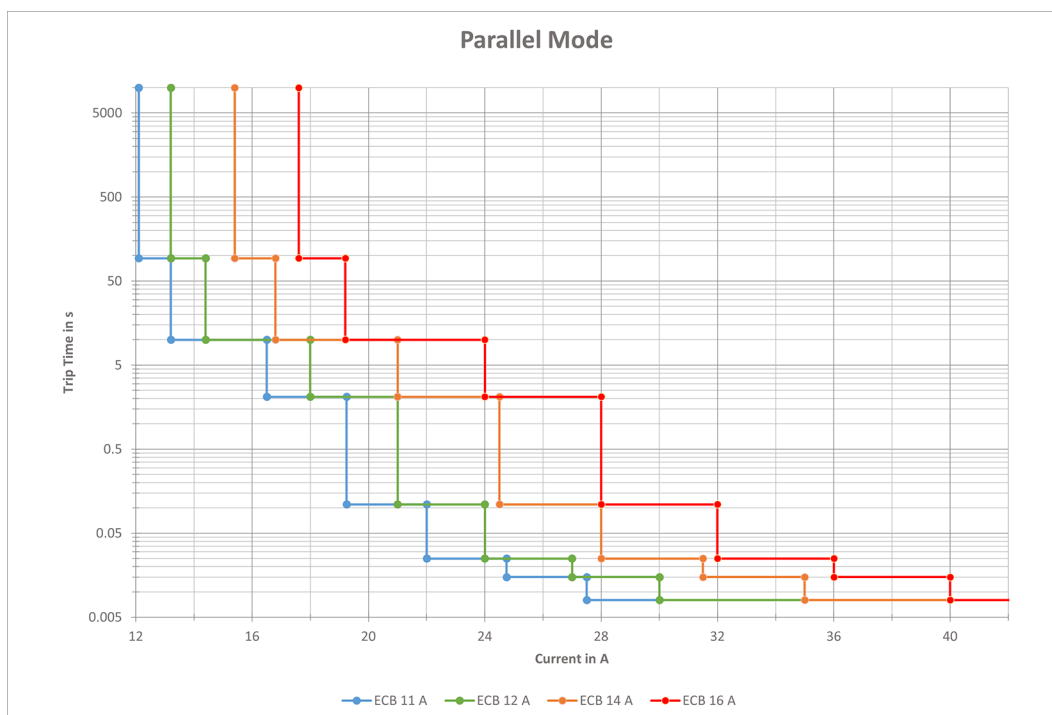


Figure 6: Tripping curve "Parallel Mode"

5 Planning

5.1 Derating

Table 9: Single Device – Total Current

| | |
|---------|------|
| < 40 °C | 40 A |
| < 50 °C | 37 A |
| < 60 °C | 30 A |
| < 70 °C | 20 A |

Table 10: 5-device interconnection – Total Current

| | |
|---------|------|
| < 40 °C | 38 A |
| < 50 °C | 32 A |
| < 60 °C | 24 A |
| < 70 °C | 14 A |

5.2 Capacitive Switching

Table 11: Capacitive Switching; Nominal Current Setting 1 A

| Art. No. Power Supply | 10 mF | 20 mF | 30 mF | 40 mF | 50 mF | Tested Base Load |
|--------------------------|-------|-------|-------|-------|-------|------------------|
| 787-734 | √ | √ | X | X | X | 2.8 A |
| 787-736 | X | X | X | X | X | 2.8 A |
| 2787-2146 | √ | √ | √ | √ | √ | 2.8 A |
| 2787-2147 | √ | √ | √ | √ | √ | 2.8 A |
| 2787-2448 | √ | √ | √ | √ | √ | 2.8 A |
| 787-832 | √ | √ | √ | √ | √ | 2.8 A |
| 787-834 | √ | √ | √ | √ | √ | 2.8 A |
| 787-732 | √ | √ | √ | √ | √ | 2.8 A |
| 787-1732 | √ | √ | √ | √ | √ | 2.8 A |
| 787-632 | √ | √ | √ | √ | √ | 2.8 A |
| √: works | | | | | | |
| X: does not work | | | | | | |

Table 12: Capacitive Switching during operation; Nominal Current Setting 1 A

| Art. No. Power Supply | 10 mF | 20 mF | 30 mF | 40 mF | 50 mF | Tested Base Load |
|--------------------------|-------|-------|-------|-------|-------|------------------|
| 787-734 | √ | √ | X | X | X | 2.8 A |
| 787-736 | X | X | X | X | X | 2.8 A |
| 2787-2146 | √ | √ | O | O | X | 2.8 A |
| 2787-2147 | √ | √ | √ | √ | √ | 2.8 A |
| 2787-2448 | √ | √ | √ | √ | √ | 2.8 A |
| 787-832 | √ | √ | √ | √ | √ | 2.8 A |
| 787-834 | √ | √ | √ | √ | √ | 2.8 A |
| 787-732 | √ | √ | √ | √ | √ | 2.8 A |
| 787-1732 | √ | √ | √ | √ | √ | 2.8 A |
| 787-632 | √ | √ | √ | √ | √ | 2.8 A |

| Art. No. Power Supply | 10 mF | 20 mF | 30 mF | 40 mF | 50 mF | Tested Base Load |
|---|-------|-------|-------|-------|-------|---------------------|
| <div>√: works</div> <div>O: works partially</div> <div>X: does not work</div> | | | | | | |

6 Transport and Storage

The original packaging offers optimal protection during transport and storage.

- Store the product in suitable packaging, preferably the original packaging.
- Only transport the product in suitable containers/packaging.
- Make sure the product contacts are not contaminated or damaged during packing or unpacking.
- Observe the specified ambient climatic conditions for transport and storage.

7 Installation and Removal

The product can be mounted on a DIN-35 rail.

! NOTICE

Avoid electrostatic discharge!

The products are equipped with electronic components that you may destroy by electrostatic discharge when you touch. Please observe the safety precautions against electrostatic discharge in accordance with EN 61340-5-1/-3. Pay attention while handling the products to good grounding of the environment (persons, job and packing).

The DIN rail is located in the center of the vertical axis (see [📄 Technical Data, Approvals, Guidelines and Standards \[► 15\]](#)).

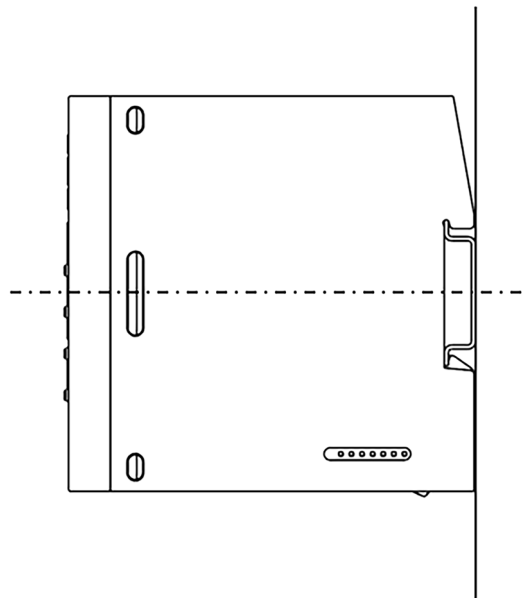


Figure 7: Position of the DIN rail

The distances from the central axis of the DIN rail to the top and bottom are 48 mm.

Mounting on the DIN rail

Mount the product per EN 60715 by snapping it onto the DIN rail without any tools:

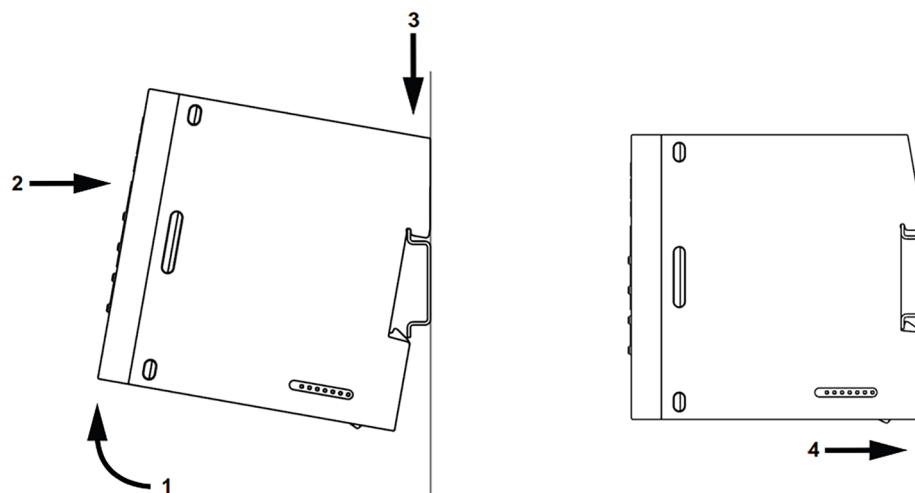


Figure 8: Mounting the product on the DIN rail

1. Tilt the product slightly.
2. Place the product, with its DIN rail guide, on the top edge of the DIN rail.
3. Press the product onto the DIN rail.
4. Press the product against the bottom fastener until you hear it lock into place.
 - ⇒ If the product does not lock into place automatically, pull down the DIN rail mounting/removal latch with a screwdriver or operating tool while pressing the product onto the bottom fastener.
5. Gently shake the product to ensure that it is correctly locked into place.
6. To ensure secure fastening on the DIN rail, fit end clips on either side of the product (with a block arrangement: on either side of the product).

Removing from the DIN Rail

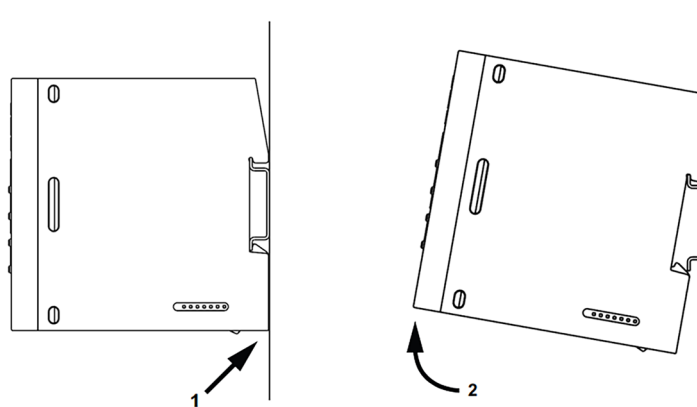


Figure 9: Removing the product from the DIN Rail

1. To remove the product, pull down the DIN rail mount/removal latch.
 - ⇒ Use a screwdriver or an operating tool.
 - ⇒ The product is now unlocked.
2. Tilt the product forward and unhook it from the DIN rail.

8 Commissioning

8.1 Operation in Parallel Mode

- ✓ Enable/disable parallel mode of a channel pair (example of channel pair consisting of channels 1 and 2):
 - Hold down the button for channel 1 for > 3 seconds.
 - ⇒ Parallel mode of channel 1 and 2 is enabled/disabled.
 - ⇒ The function for switching the channel of button 2 on and off is disabled/enabled.
 - ⇒ For all other channel pairs, the following also applies: Press and hold down buttons for the smaller channel for > 3 seconds
- ✓ The nominal current is set in parallel mode via the smaller channel.
- ✓ This means that for channel pairs 1 and 2, the settings are made via channel 1.
- Set the current selector switch from the smaller channel to the desired nominal current.
 - ⇒ For all other channel pairs, the current selector switch of the smaller channel also determines the nominal current of the channel pair.

9 Configuration

9.1 Configuration routine

The six possible configuration options for the signal output (DO) include three options with 24 V and 0 V signal logic (High/Low). The signal logic selected for the signal output also determines the signal input (DI). The following routine allows configuration with the channel buttons.

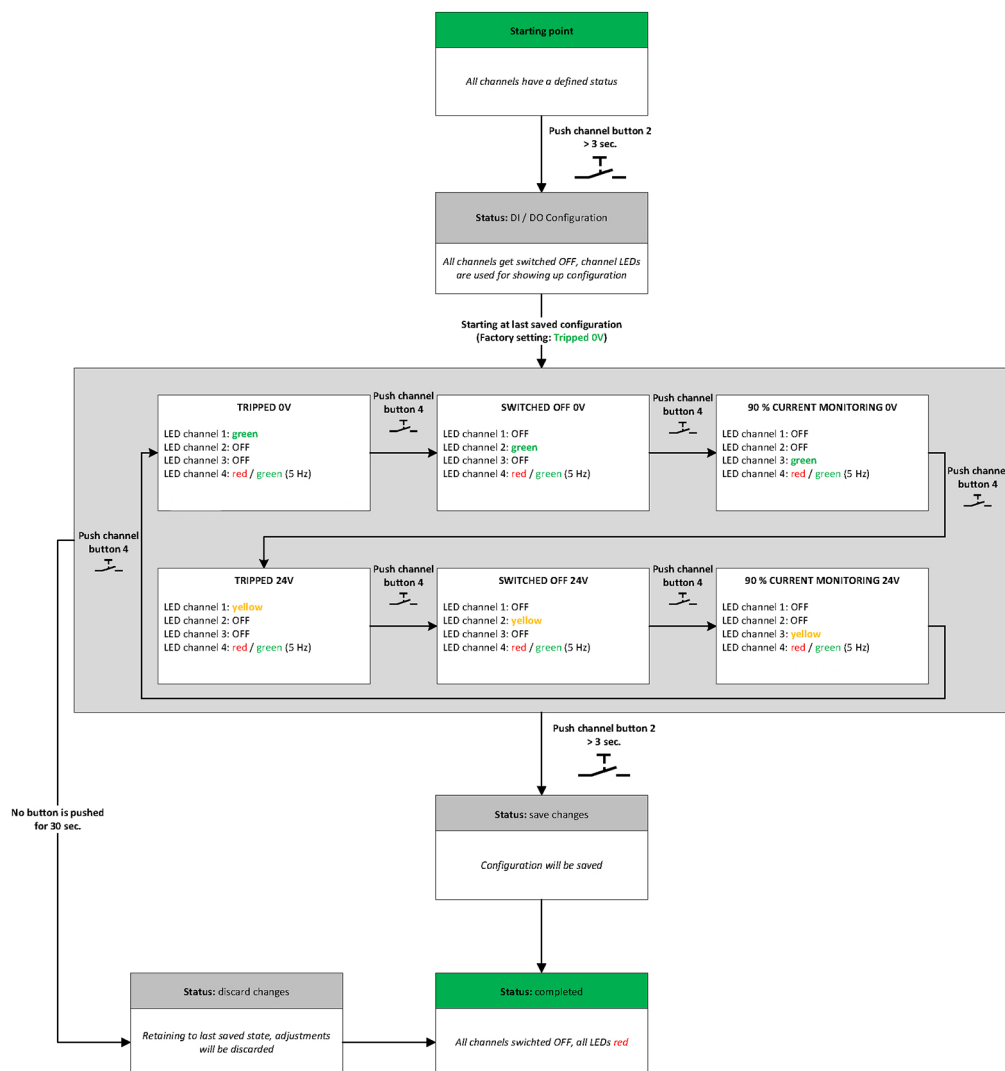















Figure 10: Configuration

10 Diagnostics

10.1 Diagnostics via Indicators

Table 13: Diagnostics via Indicators

| LED | LED Display | | Explanation |
|----------------|---|------------------------------------|--|
| Every |  | | Channel switched on |
| Every |  | 1 Hz flashing | Channel switched on; load current > 90 % nominal current |
| Every |  | 5 Hz flashing | Channel switched on; load current > 100 % nominal current |
| Every |  | 1 Hz flashing | Channel tripped; wait for thermal expansion |
| Every |  | 1 Hz flashing | Channel tripped; thermal expansion completed; channel can be switched back on |
| Every |  | | Channel switched off |
| Every |  | 1 Hz | Undervoltage |
| Every |  | 5 Hz | Overvoltage |
| Every |  | 1 Hz | Recovery |
| Every |  | 1 Hz flashing | Channel locked (see Sprungziel: Summenstrombegrenzung) |
| LED 1 LED 2 | On Off | | Parallel mode Channel 1 and channel 2 active (see Parallel Mode [► 16]) |
| LED 3 LED 4 | On Off | | Parallel mode Channel 3 and channel 4 active (see Parallel Mode [► 16]) |
| LED 1 LED 2 | On  | | Parallel mode Channel 1 and channel 2 active; asymmetrical load (see Sprungziel: Kurzschluss- und Überlastverhalten) |
| LED 3 LED 4 | On  | | Parallel mode Channel 3 and channel 4 active; asymmetrical load (see Sprungziel: Kurzschluss- und Überlastverhalten) |
| All |  | Cyclic sunlight of Channel 1 ... 4 | Key lock (see Button lock [► 17]) |

11 Decommissioning

11.1 Disposal and Recycling



WEEE Mark

Electrical and electronic equipment may not be disposed of with household waste. This also applies to products without this mark.

Electrical and electronic equipment contain materials and substances that can be harmful to the environment and health. Electrical and electronic equipment must be disposed of properly after use. Environmentally friendly disposal benefits health, protects the environment from harmful substances in electrical and electronic equipment and enables sustainable and efficient use of resources.

- Observe the national and local regulations for the disposal of electrical and electronic equipment, lithium-ion batteries, lead–acid batteries and packaging.
- Clear any data stored on electrical and electronic equipment.
- Remove lithium-ion batteries, lead–acid batteries or memory cards that are added to the electrical and electronic equipment.
- Wear appropriate personal protective equipment when removing the lithium-ion batteries/lead–acid batteries.
- Dispose of the removed lithium-ion batteries/lead–acid batteries according to your local waste regulations (e. g. collection boxes at the retail or local collection points).
- Have electrical and electronic equipment sent to a local collection point.
- Dispose of all types of packaging to ensure a high level of recovery, reuse and recycling.
- Transport packages from the B2B area can be taken back free of charge via a return system in accordance with the Packaging Act. Please contact our service provider Interseroh directly. The corresponding certificate can be found at: [🌐 corporate-certificates](#)
- Throughout Europe, Directives 2006/66/EC, 94/62/EC and 2012/19/EU (WEEE) apply. National directives and laws may differ.

12 Appendix

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List of Tables

| | | |
|----------|---|----|
| Table 1 | Definitions | 8 |
| Table 2 | Revision index structure..... | 13 |
| Table 3 | Signal Input DI | 13 |
| Table 4 | Signal Output DO..... | 13 |
| Table 5 | Basic functions of the buttons | 14 |
| Table 6 | Special functions of the buttons | 14 |
| Table 7 | Supplementary Technical Data | 15 |
| Table 8 | Switch Setting in Parallel Mode | 16 |
| Table 9 | Single Device – Total Current | 19 |
| Table 10 | 5-device interconnection – Total Current | 19 |
| Table 11 | Capacitive Switching; Nominal Current Setting 1 A | 19 |
| Table 12 | Capacitive Switching during operation; Nominal Current Setting 1 A..... | 19 |
| Table 13 | Diagnostics via Indicators | 26 |

List of Figures

| | | |
|-----------|--|----|
| Figure 1 | View | 11 |
| Figure 2 | Type Plate..... | 12 |
| Figure 3 | Product-specific information | 12 |
| Figure 4 | LED placement | 14 |
| Figure 5 | Tripping curve "Normal Mode" | 18 |
| Figure 6 | Tripping curve "Parallel Mode"..... | 18 |
| Figure 7 | Position of the DIN rail | 22 |
| Figure 8 | Mounting the product on the DIN rail | 23 |
| Figure 9 | Removing the product from the DIN Rail | 23 |
| Figure 10 | Configuration | 25 |

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