



*your reliable partner*



## DC voltage modules

## mayr<sup>®</sup> – DC Voltage Modules

versatile – reliable – intelligent

### Wide product range for diverse tasks

#### **Supplying**

Half-wave rectifiers, bridge rectifiers and ROBA<sup>®</sup>-switch fast acting rectifiers supply mayr<sup>®</sup>safety brakes with DC coil nominal voltage or overexcitation voltage for high tightening forces and short switching times or with reduced holding voltage for lowest energy consumption.

#### **Monitoring**

ROBA<sup>®</sup>-brake-checker modules allow permanent brake monitoring through the sensorless monitoring of the brake condition.

#### **Controlling / Regulating**

ROBA<sup>®</sup>-torqcontrol controls the spring force - and therefore also the braking torque of safety brakes - via coil voltage and coil current.

#### **Safe controlling**

The safe brake control unit ROBA<sup>®</sup>-SBCplus can control and monitor two brakes and fulfills the highest requirements for personal protection.

#### **Protecting**

The spark quenching unit reduces the switch-off voltage and the wear on contacts.

### The optimum control unit for different consumers

mayr DC voltage modules harmonize perfectly with electromagnetic ROBATIC<sup>®</sup>clutches and ROBA<sup>®</sup>-quick brakes, with ROBA<sup>®</sup>-takt clutch-brake combinations and ROBA-stop<sup>®</sup>safety brakes. In addition, they can also be used with solenoids, valves or DC magnetic coils.

#### Your Advantages:

- 40 years of experience in development and application in-house
- Highest torques and short switching times through overexcitation
- Minimum energy consumption through voltage reduction
- Low-self-heating, long service lifetime
- Voltage is maintained constantly in spite of variations in input voltage
- UL / CSA - certified
- EMC-conform – resistant to interference
- partly with integrated protection circuit

### Intelligent safety

#### ROBA<sup>®</sup>-brake-checker

Sensorless monitoring of

- Switching condition
- Wear
- Critical coil temperatures and
- Malfunctions

Cost-effective alternative to microswitches and proximity switches

Low downtimes and costs through highest system availability

- No sporadic failures as is the case with mechanical switches
- No risks due to freezing or dirt
- No risk of incorrect signals
- No risk of cable breakage



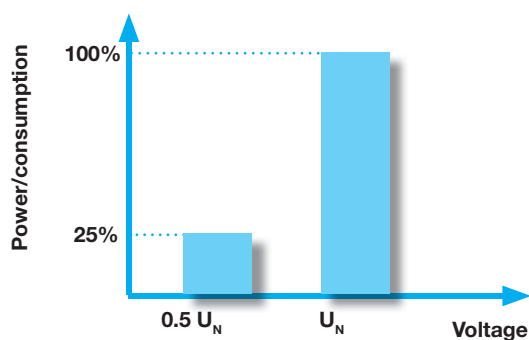
## mayr<sup>®</sup> – DC Voltage Modules

Optimum system solutions for DC consumers

### Minimum energy consumption

#### Power reduction

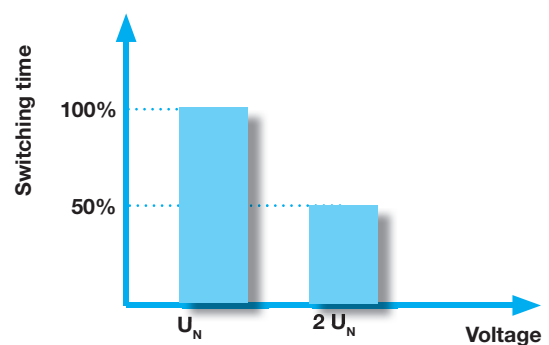
- Safety brakes are released with nominal voltage
- Brakes are held open with 1/2 the nominal voltage
- Power consumption 25 % of nominal power
- Energy savings of 75 %



### Maximum performance density

#### Overexcitation

- Release of safety brakes with double the nominal voltage
- Maximum attraction forces
- Minimum switching times



## Control units for all mains network voltages worldwide

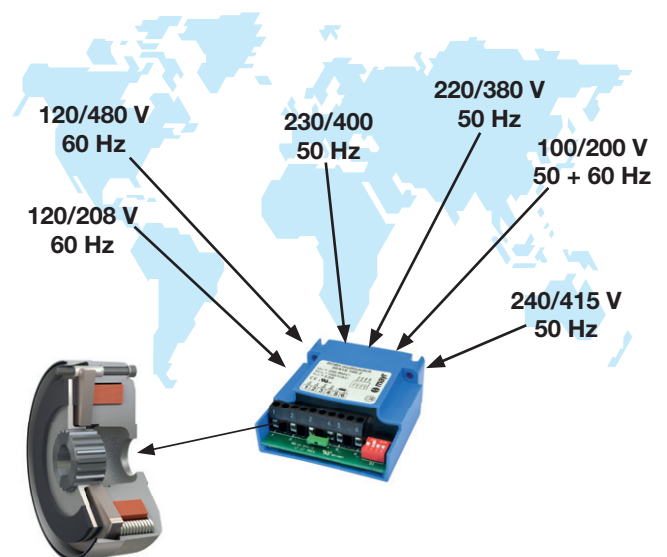
Variable input voltage – Constant output voltage

### ROBA<sup>®</sup>-multiswitch

A fixed coil voltage independent of the mains network voltage.

For you, this means:

- Worldwide application of mayr<sup>®</sup>-brakes or other DC voltage consumers with uniform coil voltages.
- Mains voltage fluctuations have no influence on the system behaviour.
- No risk of coil failures due to incorrect connection voltages.



# Supplying – Protecting – Monitoring – Checking

## Electronic mayr® – DC Voltage Modules for Safety brakes

| Function                                  | Supplying                                                           |                                                                                 |                                                                     |                                                                     |                                                                        |                                                                                             | Protecting                                      |
|-------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------|
| Module                                    | Type 024.000.6<br>Half-wave rectifier                               | Type 025.000.6<br>Bridge rectifier                                              | Type 017_00.2<br>ROBA®-switch                                       | Type 017.110.2<br>ROBA®-switch                                      | Type 018.100.2<br>ROBA®-switch 24V                                     | Type 019_00.2<br>ROBA®-multiswitch                                                          | Type 070.000.6<br>Spark quenching unit          |
| Catalogue page                            | Page 6                                                              | Page 6                                                                          | Page 7                                                              | Page 8                                                              | Page 9                                                                 | Page 10                                                                                     | Page 11                                         |
| Overexcitation / Power reduction          |                                                                     |                                                                                 | X                                                                   | X                                                                   | X                                                                      | X                                                                                           |                                                 |
| DC-side disconnection                     |                                                                     |                                                                                 |                                                                     | X                                                                   | X                                                                      |                                                                                             |                                                 |
| Mains/input voltage                       | up to 600 VAC                                                       | up to 230 VAC                                                                   | 100 to 500 VAC                                                      | 100 to 500 VAC                                                      | 24 VDC                                                                 | 100 to 275 VAC<br>200 to 500 VAC                                                            | Max. 300 VDC                                    |
| Output voltage/<br>Overexcitation voltage | up to 270 VDC<br>dependent on the mains voltage<br>VDC = 0.45 x VAC | up to 207 VDC<br>dependent on the mains voltage<br>VDC = 0.9 x VAC              | 90 to 450 VDC<br>dependent on the mains voltage<br>VDC = 0.9 x VAC  | 90 to 450 VDC<br>dependent on the mains voltage<br>VDC = 0.9 x VAC  | 24 VDC                                                                 | 90 VDC (Size 10)<br>180 VDC (Size 20)<br>constant / independent of the mains voltage        |                                                 |
| Nominal voltages                          |                                                                     |                                                                                 | 45 to 225 VDC<br>dependent on the mains voltage<br>VDC = 0.45 x VAC | 45 to 225 VDC<br>dependent on the mains voltage<br>VDC = 0.45 x VAC | 6 VDC<br>8 VDC<br>12 VDC<br>16 VDC                                     | 52 VDC (Size 10)<br>104 VDC (Size 20)<br>constant / independent of the mains voltage        |                                                 |
| Switching times                           |                                                                     |                                                                                 | 0.05 to 2 s                                                         | 0.05 to 2 s                                                         | 0.15 s / 0.45 s / 1 s, 1.5 s / 2.15 s                                  | 0.15 s / 0.45 s / 1 s, 1.5 s / 2 s                                                          |                                                 |
| Output current                            | 4.0 A                                                               | 2.5 A                                                                           | 3.0 A (at 250 VAC)                                                  | 1.5 A                                                               | 5.0 A                                                                  | 2.0 A (Size 10)<br>4.5 A (Size 20)                                                          |                                                 |
| Characteristics / Application             | Standard application<br>Compact construction                        | Standard application, preferred for noise-damped brakes<br>Compact construction | Short separation time                                               | Short separation time and short connection time                     | Short separation time and short connection time<br>no wear on contacts | Short separation time<br>Consistently controlled output voltage with variable input voltage | Reduces switch-off voltage and wear on contacts |

| Monitoring                                                                                              |                                                                                                                                                                                                                 | Monitoring and Supplying                                                                                                                                                          |                                                                                                                                                                                   |                                                                                                                                                            | Checking / Controlling and Monitoring                                                                                                                                                       | Safe control and monitoring                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type 058.600.2<br>ROBA®-brake-checker DC<br>Page 12                                                     | Type 059.500.2<br>ROBA®-brake-checker AC<br>Page 13                                                                                                                                                             | Type 028.100.2<br>ROBA®-brake-checker plus DC<br>Page 14                                                                                                                          | Type 028.600.2<br>ROBA®-brake-checker plus DC<br>Page 15                                                                                                                          | Type 029.700.2<br>ROBA®-brake-checker plus AC<br>Page 16                                                                                                   | Type 068.200.2<br>ROBA®-torqcontrol DC<br>Page 17                                                                                                                                           | Type 021.100.2<br>ROBA®-SBCplus<br>Page 18                                                                                                                                                                                   |
|                                                                                                         |                                                                                                                                                                                                                 | X                                                                                                                                                                                 | X                                                                                                                                                                                 | X                                                                                                                                                          | X                                                                                                                                                                                           | X                                                                                                                                                                                                                            |
|                                                                                                         |                                                                                                                                                                                                                 | X                                                                                                                                                                                 | X                                                                                                                                                                                 |                                                                                                                                                            | X                                                                                                                                                                                           | X                                                                                                                                                                                                                            |
| Max. 50 VDC                                                                                             | Max. 207 VDC <sup>1)</sup><br>Max. 432 VDC <sup>1)</sup>                                                                                                                                                        | 24 VDC (Size 2)<br>48 VDC (Size 4)                                                                                                                                                | 24 VDC                                                                                                                                                                            | 200 to 480 VAC                                                                                                                                             | 24 VDC or 48 VDC                                                                                                                                                                            | 24 VDC or 48 VDC                                                                                                                                                                                                             |
| dependent on the supply                                                                                 | dependet on supply <sup>1)</sup>                                                                                                                                                                                | 24 VDC (Size 2)<br>48 VDC (Size 4)                                                                                                                                                | 24 VDC                                                                                                                                                                            | 104 / 52 VDC<br>207 / 104 VDC<br>185 / 104 VDC<br>360 / 185 VDC                                                                                            | 24 VDC or 48 VDC                                                                                                                                                                            | 24 VDC or 48 VDC                                                                                                                                                                                                             |
| dependent on the supply                                                                                 | dependet on supply <sup>1)</sup>                                                                                                                                                                                | 4 / 6 / 8 / 12 / 16 VDC (Size 2)<br>8 / 12 / 16 / 24 / 32 VDC (Size 4)<br>constant / independent of the supply voltage                                                            | 4 / 12 / 16 VDC<br>further voltages available on request                                                                                                                          | 52 VDC<br>104 VDC<br>185 VDC                                                                                                                               | 4/6/8/12/16 VDC (24 VDC)<br>8/12/16/24/32 VDC (48 VDC)<br>constant / independent of the supply voltage                                                                                      | 6 VDC<br>8 VDC<br>12 VDC<br>16 VDC<br>24 VDC<br>32 VDC                                                                                                                                                                       |
|                                                                                                         |                                                                                                                                                                                                                 | adapted to brake specifications                                                                                                                                                   | adapted to brake specifications                                                                                                                                                   | adapted to brake specifications                                                                                                                            | adapted to brake specifications                                                                                                                                                             | 0.1 s to 2.5 s                                                                                                                                                                                                               |
| 10 A                                                                                                    | 3.5 A                                                                                                                                                                                                           | 10.0 A (Size 2)<br>5.0 A (Size 4)                                                                                                                                                 | 5.0 A                                                                                                                                                                             | 2.0 A                                                                                                                                                      | 10.0 A (24 VDC)<br>5.0 A (48 VDC)                                                                                                                                                           | 24 VDC/2x5.5 A<br>48 VDC/2x2.75 A                                                                                                                                                                                            |
| integrated release and drop-out recognition<br>Brake status display<br>preventative function monitoring | integrated release and drop-out recognition<br>Brake status display<br>preventative function monitoring<br><br>1) Supply with half-wave rectifier, bridge rectifier oqqr ROBA®-switch not via ROBA®-multiswitch | integrated release and drop-out recognition<br>Brake status display<br>short separation time and short connection time<br>no wear on contacts<br>preventative function monitoring | integrated release and drop-out recognition<br>Brake status display<br>short separation time and short connection time<br>no wear on contacts<br>preventative function monitoring | integrated release and drop-out recognition<br>Brake status display<br>short separation time and short connection time<br>preventative function monitoring | Setting of spring force and braking torque<br>Integrated release and drop-out recognition<br>Brake status display<br>Short separation time and short connection time<br>No wear on contacts | Controlling and monitoring up to two ROBA-stop® safety brakes, particularly in applications with requirements on personal protection according to standards on Functional Safety such as for example ISO 13849 and IEC 62061 |

## Half-wave and bridge rectifiers / Type 02\_.000.6

### Application

Rectifiers are used to connect DC consumers to alternating voltage supplies, for example electromagnetic brakes and clutches (ROBA-stop®, ROBA-quick®, ROBATIC®), electromagnets, electrovalves, contactors, switch-on safe DC motors, etc.

### Function

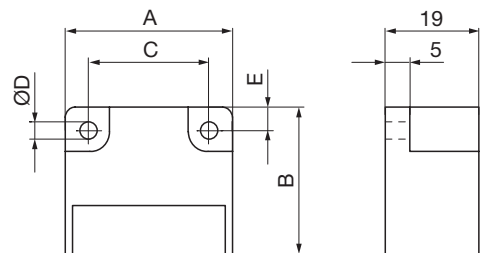
The AC input voltage (VAC) is rectified (VDC) in order to operate DC voltage units. Also, voltage peaks, which occur when switching off inductive loads and which may cause damage to insulation and contacts, are limited and the contact load reduced.



### Electrical Connection (Terminals)

- 1 + 2 Input voltage
- 3 + 4 Connection for an external switch for DC-side switching
- 5 + 6 Coil
- 7 - 10 Free nc terminals (only for Size 2)

### Dimensions (mm)



| Size | A  | B  | C  | ØD  | E   |
|------|----|----|----|-----|-----|
| 1    | 34 | 30 | 25 | 3.5 | 4.5 |
| 2    | 54 | 30 | 44 | 4.5 | 5.0 |
| 3/4  | 64 | 30 | 54 | 4.5 | 5.0 |

**Accessories:** Mounting bracket set for 35 mm mounting rail acc. EN 60715, Article No. 1803201.

### Order Number

\_\_\_ / 0 2 \_\_\_ . 0 0 0 . 6



Size  
1  
to  
4



4 Half-wave rectifier  
5 Bridge rectifier

### Technical Data

|                                                                                                                                                                                                                                                            | Bridge rectifier                                                                                                                                             |                      | Half-wave rectifier  |                      |                      |                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                                                                                                                                                                                                                                            | 1/025                                                                                                                                                        | 2/025                | 1/024                | 2/024                | 3/024                | 4/024                |
| Calculation output voltage                                                                                                                                                                                                                                 | VDC = VAC x 0.9                                                                                                                                              |                      | VDC = VAC x 0.45     |                      |                      |                      |
| Type                                                                                                                                                                                                                                                       | 1/025                                                                                                                                                        | 2/025                | 1/024                | 2/024                | 3/024                | 4/024                |
| Max. input voltage                                                                                                                                                                                                                                         | 230 VAC                                                                                                                                                      | 230 VAC              | 400 VAC              | 400 VAC              | 500 VAC              | 600 VAC              |
| Max. output voltage                                                                                                                                                                                                                                        | 207 VDC                                                                                                                                                      | 207 VDC              | 180 VDC              | 180 VDC              | 225 VDC              | 270 VDC              |
| Output current at ≤ 50 °C                                                                                                                                                                                                                                  | 2.5 A                                                                                                                                                        | 2.5 A                | 3.0 A                | 4.0 A                | 4.0 A                | 4.0 A                |
| Output current at max. 85 °C                                                                                                                                                                                                                               | 1.7 A                                                                                                                                                        | 1.7 A                | 1.8                  | 2.4 A                | 2.4 A                | 2.4 A                |
| Max. coil capacity at 115 VAC ≤ 50 °C                                                                                                                                                                                                                      | 260 W                                                                                                                                                        | 260 W                | -                    | -                    | -                    | -                    |
| Max. coil capacity at 115 VAC up to 85 °C                                                                                                                                                                                                                  | 177 W                                                                                                                                                        | 177 W                | -                    | -                    | -                    | -                    |
| Max. coil capacity at 230 VAC ≤ 50 °C                                                                                                                                                                                                                      | 517 W                                                                                                                                                        | 517 W                | 312 W                | 416 W                | 416 W                | 416 W                |
| Max. coil capacity at 230 VAC up to 85 °C                                                                                                                                                                                                                  | 352 W                                                                                                                                                        | 352 W                | 187 W                | 250 W                | 250 W                | 250 W                |
| Max. coil capacity at 400 VAC ≤ 50 °C                                                                                                                                                                                                                      | -                                                                                                                                                            | -                    | 540 W                | 720 W                | 720 W                | 720 W                |
| Max. coil capacity at 400 VAC up to 85 °C                                                                                                                                                                                                                  | -                                                                                                                                                            | -                    | 324 W                | 432 W                | 432 W                | 432 W                |
| Max. coil capacity at 500 VAC ≤ 50 °C                                                                                                                                                                                                                      | -                                                                                                                                                            | -                    | -                    | -                    | 900 W                | 900 W                |
| Max. coil capacity at 500 VAC up to 85 °C                                                                                                                                                                                                                  | -                                                                                                                                                            | -                    | -                    | -                    | 540 W                | 540 W                |
| Max. coil capacity at 600 VAC ≤ 50 °C                                                                                                                                                                                                                      | -                                                                                                                                                            | -                    | -                    | -                    | -                    | 1080 W               |
| max. coilistung bei 600 VAC up to 85 °C                                                                                                                                                                                                                    | -                                                                                                                                                            | -                    | -                    | -                    | -                    | 648 W                |
| Peak reverse voltage                                                                                                                                                                                                                                       | 1600 V                                                                                                                                                       | 1600 V               | 2000 V               | 1600 V               | 2000 V               | 2000 V               |
| Rated insulation voltage                                                                                                                                                                                                                                   | 320 VRMS                                                                                                                                                     | 320 V <sub>RMS</sub> | 500 V <sub>RMS</sub> | 500 V <sub>RMS</sub> | 630 V <sub>RMS</sub> | 630 V <sub>RMS</sub> |
| Pollution degree (insulation coordination)                                                                                                                                                                                                                 | 1                                                                                                                                                            | 1                    | 1                    | 1                    | 1                    | 1                    |
| Device fuses                                                                                                                                                                                                                                               | To be included in the input feed line.                                                                                                                       |                      |                      |                      |                      |                      |
| Recommended microfuse switching capacity H<br><small>The microfuse corresponds to the max. possible connection capacity. If fuses are used corresponding to the actual capacities, the permitted limit integral I²t must be observed on selection.</small> | FF 3.15A                                                                                                                                                     | FF 3.15A             | FF 4A                | FF 5A                | FF 5A                | FF 5A                |
| Permitted limit integral I²t                                                                                                                                                                                                                               | 40 A²s                                                                                                                                                       | 40 A²s               | 50 A²s               | 100 A²s              | 50 A²s               | 50 A²s               |
| Protection                                                                                                                                                                                                                                                 | IP65 components, encapsulated / IP20 terminals                                                                                                               |                      |                      |                      |                      |                      |
| Terminals                                                                                                                                                                                                                                                  | Cross-section 0.14 - 1.5 mm² (AWG 26-14)                                                                                                                     |                      |                      |                      |                      |                      |
| Ambient temperature                                                                                                                                                                                                                                        | - 25 °C up to +85 °C                                                                                                                                         |                      |                      |                      |                      |                      |
| Storage temperature                                                                                                                                                                                                                                        | - 25 °C up to +105 °C                                                                                                                                        |                      |                      |                      |                      |                      |
| Conformity markings                                                                                                                                                                                                                                        | UL, CE                                                                                                                                                       | UL, CE               | UL, CE               | UL, CE               | UL, CE               | CE                   |
| Installation conditions                                                                                                                                                                                                                                    | The installation position can be user-defined. Please ensure sufficient heat dissipation and air convection! Do not install near to sources of intense heat! |                      |                      |                      |                      |                      |



# ROBA®-switch / Type 017.\_00.2

## Application

ROBA®-switch fast acting rectifiers are used to connect DC consumers to alternating voltage supplies, for example electromagnetic brakes and clutches (ROBA-stop®, ROBA®-quick, ROBATIC®) as well as electromagnets, electrovalves, etc.

### Fast acting rectifier ROBA®-switch 017.\_00.2

- Consumer operation with overexcitation or power reduction
- Input voltage: 100 - 500 VAC
- Maximum output current: 3 A at 250 VAC
- UL-approved

## Function

The ROBA®-switch is used for operation at an input voltage of between 100 and 500 VAC, depending on the size. It can switch internally from bridge rectification output voltage to half-wave rectification output voltage. The bridge rectification time can be modified from 0.05 to 2 seconds by exchanging the external resistor ( $R_{ext}$ ).

## Electrical Connection (Terminals)

- 1 + 2 Input voltage (fitted protective varistor)
- 3 + 4 Connection for external contact for DC-side switch-off
- 5 + 6 Output voltage (fitted protective varistor)
- 7 + 8  $R_{ext}$  for bridge rectification time adjustment

## Technical Data

|                             |                                                 |
|-----------------------------|-------------------------------------------------|
| Input voltage               | see Table 1                                     |
| Output voltage              | see Table 1                                     |
| Protection                  | IP65 components, IP20 terminals, IP10 $R_{ext}$ |
| Terminal nom. cross-section | 1.5 mm <sup>2</sup> (AWG 22-14)                 |
| Ambient temperature         | -25 °C up to +70 °C                             |
| Storage temperature         | -40 °C up to +105 °C                            |

ROBA®-switch Sizes, Table 1

|                                             | Size           |           |                |           |
|---------------------------------------------|----------------|-----------|----------------|-----------|
|                                             | Type 017.000.2 |           | Type 017.100.2 |           |
|                                             | 10             | 20        | 10             | 20        |
| Input voltage VAC ± 10 %                    | 100 - 250      | 200 - 500 | 100 - 250      | 200 - 500 |
| Output voltage VDC, $U_{bridge}$            | 90 - 225       | 180 - 450 | 90 - 225       | 180 - 450 |
| Output voltage VDC, $U_{half-wave}$         | 45 - 113       | 90 - 225  | 45 - 113       | 90 - 225  |
| Output current $I_{RMS}$ at ≤ 45 °C, (A)    | 2.0            | 1.8       | 3.0            | 2.0       |
| Output current $I_{RMS}$ at max. 70 °C, (A) | 1.0            | 0.9       | 1.5            | 1.0       |
| Conformity markings                         |                |           |                |           |

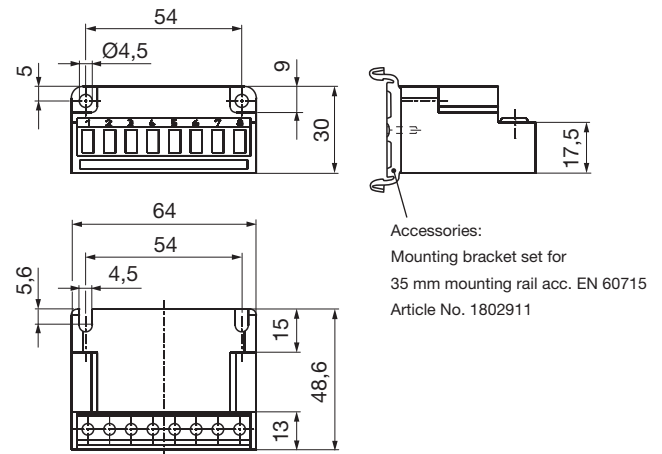
## Order Number

|                           |               |
|---------------------------|---------------|
| ___ / 0 1 7 . ___ 0 0 . 2 |               |
| ▲                         | ▲             |
| Size                      | UL-approved   |
| 10                        | 0 up to 300 V |
| 20                        | 1 up to 500 V |

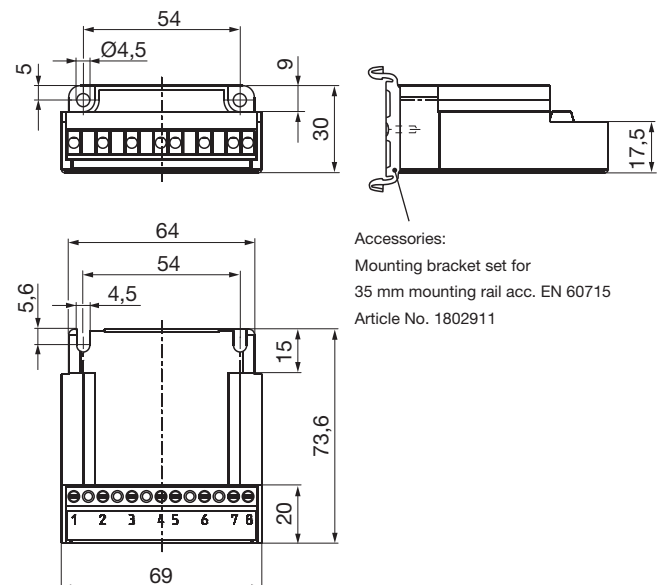


## Dimensions (mm)

Type 017.000.2



Type 017.100.2



## ROBA<sup>®</sup>-switch / Type 017.110.2

### Application

ROBA<sup>®</sup>-switch fast acting rectifiers are used to connect DC consumers to alternating voltage supplies, for example electromagnetic brakes and clutches (ROBA-stop<sup>®</sup>, ROBA<sup>®</sup>-quick, ROBATIC<sup>®</sup>) as well as electromagnets, electrovalves, etc.

#### Fast acting rectifier ROBA<sup>®</sup>-switch 017.110.2

- Integrated automatic DC-side disconnection (shorter connection time)
- Consumer operation with overexcitation or power reduction
- Input voltage: 100 - 500 VAC
- Maximum output current: 1.5 A
- UL-approved



The ROBA<sup>®</sup>-switch with integrated automatic DC-side disconnection is not suitable for being the only safety disconnection in applications!

### Function

The ROBA<sup>®</sup>-switch is used for operation at an input voltage of between 100 and 500 VAC, depending on the size. It can switch internally from bridge rectification output voltage to half-wave rectification output voltage. The bridge rectification time can be modified from 0.05 to 2 seconds by exchanging the external resistor.

In addition, the ROBA<sup>®</sup>-switch features integrated automatic DC-side disconnection. In contrast to the usual DC-side disconnection, no further protective measures or external components are required. The DC-side disconnection is activated as a standard measure (terminals 3 and 4 are not wired) and causes short switching times on the electromagnetic consumer.

The integrated automatic DC-side disconnection is deactivated by fitting a bridge between the terminals 3 and 4, and the coil is deenergised via the freewheeling diode. This has the advantages of gentler braking actions and quieter switching noise. However, this substantially lengthens the switching times (approx. 6 – 10 times).

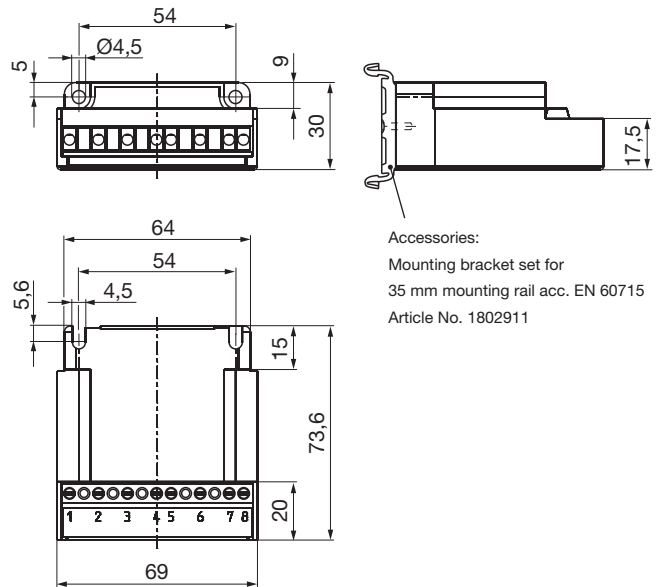
### Electrical Connection (Terminals)

- 1 + 2 Input voltage (fitted protective varistor)
- 3 + 4 Switching between DC and AC-side disconnection
- 5 + 6 Output voltage (fitted protective varistor)
- 7 + 8  $R_{ext}$  for bridge rectification time adjustment

### Technical Data

|                             |                                                |
|-----------------------------|------------------------------------------------|
| Input voltage               | see Table 1                                    |
| Output voltage              | see Table 1                                    |
| Protection                  | IP65 components, IP20 terminal, IP10 $R_{ext}$ |
| Terminal nom. cross-section | 1.5 mm <sup>2</sup> (AWG 22-14)                |
| Ambient temperature         | -25 °C up to +70 °C                            |
| Storage temperature         | -40 °C up to +105 °C                           |

### Dimensions (mm)



Accessories:  
Mounting bracket set for  
35 mm mounting rail acc. EN 60715  
Article No. 1802911

ROBA<sup>®</sup>-switch Sizes, Table 1

|                                                | Size      |           |
|------------------------------------------------|-----------|-----------|
|                                                | 10        | 20        |
| Input voltage<br>VAC ± 10 %                    | 100 - 250 | 200 - 500 |
| Output voltage<br>VDC, $U_{bridge}$            | 90 - 225  | 180 - 450 |
| Output voltage<br>VDC, $U_{half-wave}$         | 45 - 113  | 90 - 225  |
| Output current $I_{RMS}$<br>at ≤ 45 °C, (A)    | 1.5       | 1.5       |
| Output current $I_{RMS}$<br>at max. 70 °C, (A) | 0.75      | 0.75      |
| Conformity markings                            |           |           |

### Order number

— / 0 1 7 . 1 1 0 . 2



Size  
10  
20



## ROBA®-switch 24V / Type 018.100.2

### Application

ROBA®-switch 24V fast switching modules are used to operate DC consumers with overexcitation or power reduction, for example electromagnetic brakes and clutches (ROBA-stop®, ROBA®-quick, ROBATIC®), electromagnets, electrovalves, etc.

#### Fast switching module ROBA®-switch 24V 018.100.2

- Consumer operation with overexcitation or power reduction
- integrated automatic DC-side disconnection (shorter connection time  $t_1$ )
- Input voltage: 24 VDC
- maximum output current: 5 A



The ROBA®-switch 24V with integrated automatic DC-side disconnection is not suitable for being the only safety disconnection in applications!

The ROBA®-switch 24V units are used for an input voltage of 24 VDC. They can switch internally, meaning that the output voltage switches to holding voltage from the input voltage (=overexcitation voltage) via pulse-width modulation using 20 kHz. The overexcitation time can be adjusted via a DIP switch to 150 ms, 450 ms, 1 s, 1.5 s and 2.15 s. The holding voltage can be adjusted via a further DIP switch to  $\frac{1}{4}$ ,  $\frac{1}{3}$ ,  $\frac{1}{2}$  and  $\frac{2}{3}$  of the input voltage (equals 6 V, 8 V, 12 V and 16 V at an input voltage of 24 V).

In addition, the ROBA®-switch 24V features integrated automatic DC-side disconnection. In contrast to the usual DC-side disconnection, no further protective measures or external components are required. The DC-side disconnection is activated in standard mode and causes short switching times on the electromagnetic consumer. This can, however, be deactivated by installing a bridge between terminals 7 and 8 in order to produce soft brakings and quieter switching noises. However, this substantially lengthens the switching times (approx. 6 – 10 times).

### Electrical Connection (Terminals)

- 2 + 3 Input voltage, ground
- 4 Control input
- 5 – 7 Input voltage +24 VDC
- 8 + 9 Output voltage +
- 10 Output voltage -

### Technical Data

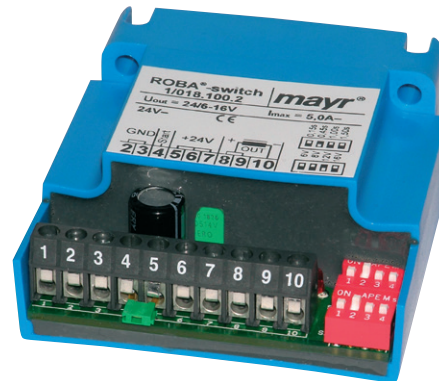
|                                          |                                                                                |
|------------------------------------------|--------------------------------------------------------------------------------|
| Input voltage $U_i$                      | 24 VDC +20 % / -10 %<br>SELV/PELV                                              |
| Output voltage $U_o$                     | Input voltage $U_i$                                                            |
| Output voltage $U_H$                     | $\frac{1}{4}$ , $\frac{1}{3}$ , $\frac{1}{2}$ , $\frac{2}{3}$ x $U_i \pm 20$ % |
| Output current $I_{RMS}$ at $\leq 45$ °C | 5.0 A                                                                          |
| Output current $I_{RMS}$ at max. 70 °C   | 2.5 A                                                                          |
| Protection                               | IP00                                                                           |
| Terminal nominal cross-section           | 1.5 mm <sup>2</sup> (AWG 22-14)                                                |
| Ambient temperature                      | -25 °C up to +70 °C                                                            |
| Storage temperature                      | -40 °C up to +105 °C                                                           |

### Order number

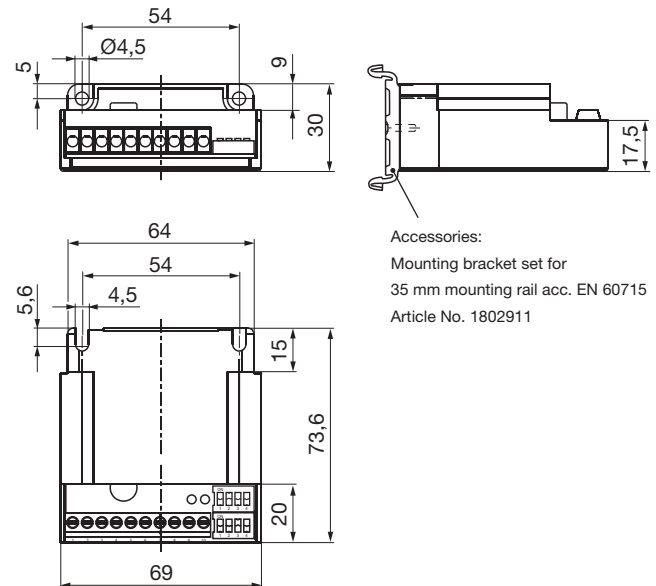
— / 0 1 8 . 1 0 0 . 2



Size  
1



### Dimensions (mm)



Accessories:  
Mounting bracket set for  
35 mm mounting rail acc. EN 60715  
Article No. 1802911

## ROBA<sup>®</sup>-multiswitch / Type 019.100.2

### Application

ROBA<sup>®</sup>-multiswitch fast acting rectifiers are used to connect DC consumers to alternating voltage supplies, for example electromagnetic brakes and clutches (ROBA-stop<sup>®</sup>, ROBA<sup>®</sup>-quick, ROBATIC<sup>®</sup>) as well as electromagnets, electrovalves, etc.

#### Fast acting rectifier ROBA<sup>®</sup>-multiswitch 019.100.2

- Consistently controlled output voltage in the entire input voltage range
- Consumer operation with overexcitation or power reduction
- Input voltage: 100 - 500 VAC
- Maximum output current: 2 A



ROBA<sup>®</sup>-multiswitch units are not suitable for all applications, e.g. use of the ROBA<sup>®</sup>-multiswitch when operating noise-damped brakes is not possible without taking additional measures. The product's suitability should be checked before use.

### Function

The ROBA<sup>®</sup>-multiswitch is (dependent on size) used for operation at an input voltage of between 100 and 500 VAC, depending on the size. After switch-on, it emits the rectified bridge voltage for 50 ms and then control the 90 or 180 VDC overexcitation voltages. After the overexcitation time, they control the 52 or 104 VDC holding voltages. The overexcitation time can be adjusted via a DIP switch to 150 ms, 450 ms, 1 s, 1.5 s and 2 s.

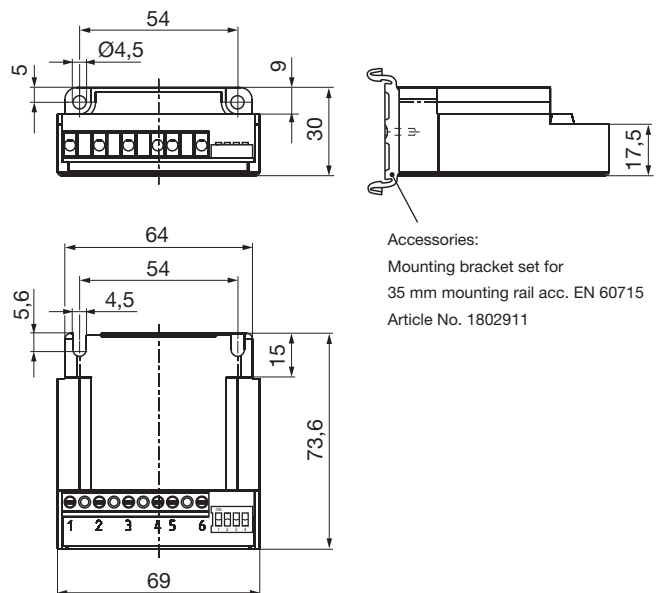
### Electrical Connection (Terminals)

- 1 + 2 Input voltage (fitted protective varistor)
- 3 + 4 Connection for external contact for DC-side switch-off
- 5 + 6 Output voltage (fitted protective varistor)

### Technical Data

|                             |                                 |
|-----------------------------|---------------------------------|
| Input voltage               | see Table 1                     |
| Output voltage              | see Table 1                     |
| Protection                  | IP65 components, IP20 terminals |
| Terminal nom. cross-section | 1.5 mm <sup>2</sup> (AWG 22-14) |
| Ambient temperature         | -25 °C up to +70 °C             |
| Storage temperature         | -40 °C up to +105 °C            |

### Dimensions (mm)



Accessories:  
Mounting bracket set for  
35 mm mounting rail acc. EN 60715  
Article No. 1802911

ROBA<sup>®</sup>-multiswitch Sizes, Table 1

|                                               | Size      |           |
|-----------------------------------------------|-----------|-----------|
|                                               | 10        | 20        |
| Input voltage<br>VAC ± 10 % acc. EN 50160     | 100 - 275 | 200 - 500 |
| Frequency input voltage<br>Hz                 | 50 - 60   | 50 - 60   |
| Output voltage $U_o$<br>VDC ± 10 %            | 90        | 180       |
| Output voltage $U_H$<br>VDC ± 10 %            | 52        | 104       |
| Output current $I_{RMS}$ at ≤ 45 °C<br>ADC    | 2.0       | 2.0       |
| Output current $I_{RMS}$ at max. 70 °C<br>ADC | 1.0       | 1.0       |
| Conformity markings                           |           |           |

### Order number

— / 0 1 9 . 1 0 0 . 2



Size  
10  
20

## Spark Quenching Unit / Type 070.000.6

### Application

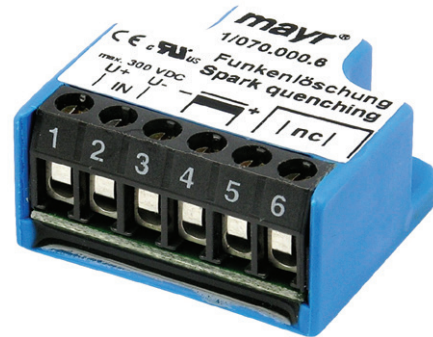
Reduces spark production on the switching contacts occurring during DC-side switch-off of inductive loads.



- Voltage limitation according to VDE0580 2000-07, Item 4.6.
- Reduction of EMC-disturbance by voltage rise limitation, suppression of switching flanks.
- Reduction of brake engagement times by a factor of 2-4 compared to freewheeling diodes.

### Function

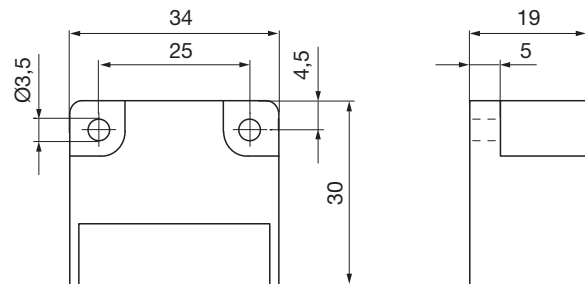
The spark quenching unit will absorb voltage peaks resulting from inductive load switching, which can cause damage to insulation and contacts. It limits these to 70 V and reduces the contact load. Switching products with a contact opening distance of >3 mm are suitable for this purpose.



### Electrical Connection (Terminals)

- 1 (+) Input voltage
- 2 (-) Input voltage
- 3 (-) Coil
- 4 (+) Coil
- 5 Free nc terminal
- 6 Free nc terminal

### Dimensions (mm)



### Technical Data

|                                 |                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------|
| Input voltage                   | max. 300 VDC, max. 615 V <sub>peak</sub><br>(rectified voltage 400 VAC, 50/60 Hz) |
| Switch-off energy               | max. 9J/2 ms                                                                      |
| Power dissipation               | max. 0.1 Watt                                                                     |
| Rated voltage                   |                                                                                   |
| nc terminal                     | 250 V                                                                             |
| Protection                      | IP65 / IP20 terminals                                                             |
| Ambient temperature             | -25 °C up to +85 °C                                                               |
| Storage temperature             | -25 °C up to +105 °C                                                              |
| Max. conductor cross-section    | 2.5 mm <sup>2</sup> / AWG 26-12                                                   |
| Max. terminal tightening torque | 0.5 Nm                                                                            |

### Accessories

Mounting bracket set for 35 mm mounting rail acc. EN60715:  
Article No. 1803201

### Order number

— / 0 7 0 . 0 0 0 . 6



Size  
1

## ROBA®-brake-checker DC / Type 058.600.2

### Application

ROBA®-brake-checker DC monitoring modules are used to supply permitted ROBA®-stop safety brakes. Motion monitoring of the armature disk for released ROBA-stop® safety brakes is possible.

#### Monitoring module ROBA®-brake-checker DC

- Fast or slow disconnection
- Preventative function monitoring (wear recognition and error recognition, functional reserve)
- Armature disk motion recognition (release and drop-out recognition)
- Continuous drop-out recognition
- Maximum output current  $I_{RMS} = 10\text{ A}$
- Safe monitoring of the switching times (optional)
- Electrical isolation on the output channels

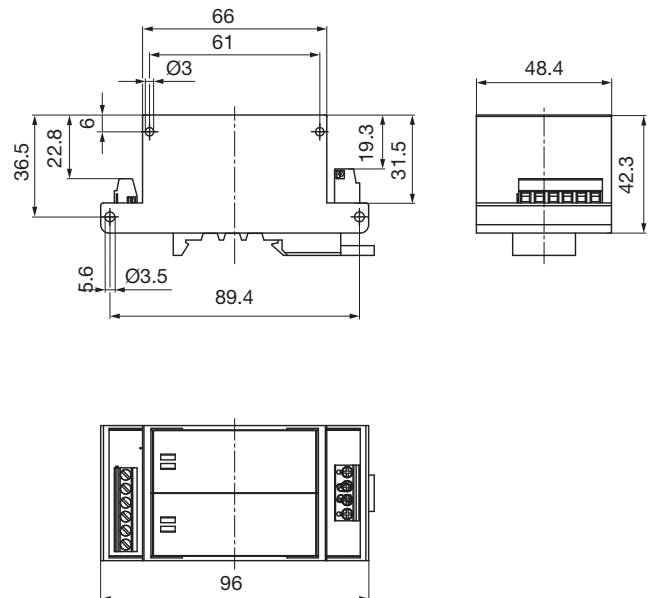
### Function





The ROBA®-brake-checker DC monitoring module is intended for use with an input voltage of 24/48 VDC. The monitoring module monitors the movement of the armature disk and emits the determined switching condition via control terminal (signal output).

Critical conditions (line breakages, wear, excess temperature) can be recognised and the respective signal can be emitted via control terminal (error output).



### Dimensions (mm)



| Technical Data                     |                        |           | Size 2                                                                                                                                                                  |
|------------------------------------|------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supply voltage<br>Control terminal | $U_I$                  | [VDC]     | 24 (SELV/PELV)<br>(18 – 32)                                                                                                                                             |
| Coil current                       | maximum                | $I_{max}$ | [A] 15                                                                                                                                                                  |
|                                    | at $\leq 45\text{ °C}$ | $I_{RMS}$ | [A] 10                                                                                                                                                                  |
|                                    | at $\leq 60\text{ °C}$ | $I_{RMS}$ | [A] 8                                                                                |
|                                    | at $\leq 70\text{ °C}$ | $I_{RMS}$ | [A] 8                                                                                |
| Coil voltage maximum               | $U_{max}$              | [VDC]     | 50                                                                                                                                                                      |
| Conformity markings                |                        |           |   |
| Protection                         |                        |           | IP20                                                                                                                                                                    |

### Order Number

— / 0 5 8 . 6 0 0 . 2

  
Size  
2



# ROBA®-brake-checker plus DC / Type 028.100.2

## Application

ROBA®-brake-checker monitoring and supply modules are used to operate DC consumers.

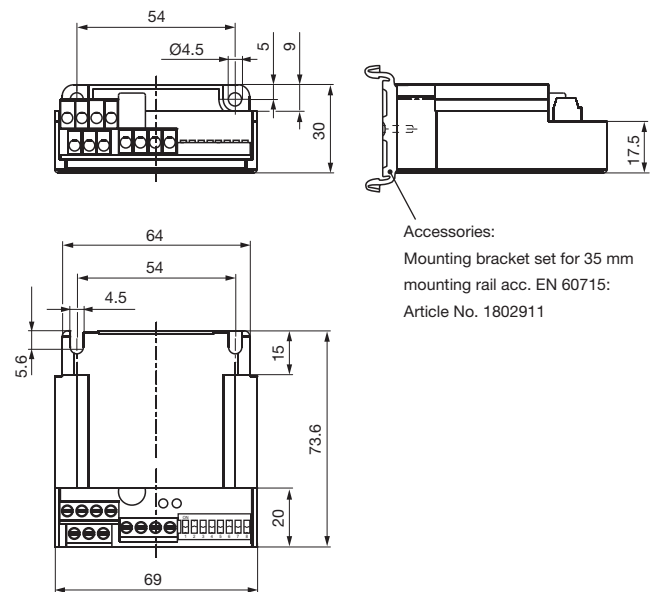
Motion monitoring of the armature disk for released ROBA-stop® safety brakes is possible.

### Monitoring module ROBA®-brake-checker 028.100.2

- Consumer operation with overexcitation and/or power reduction
- Controlled output voltage (on reduction)
- Simple adjustment of holding voltage and overexcitation time via a DIP switch
- Fast or slow disconnection
- Armature disk condition recognition (release and drop-out recognition)
- Wear recognition and error recognition
- Wide input voltage range
- Maximum output current  $I_{RMS} = 10 \text{ A} / 5 \text{ A}$
- Maximum overexcitation current  $I_O = 20 \text{ A} / 10 \text{ A}$
- Automatic reduction to holding voltage  $U_H$
- Electrical isolation of power terminal and control terminal



## Dimensions (mm)



Accessories:  
Mounting bracket set for 35 mm mounting rail acc. EN 60715: Article No. 1802911

### CAUTION



The ROBA®-brake-checker with integrated DC-side disconnection is not suitable for being the only safety disconnection in applications!

## Function

The ROBA®-brake-checker plus DC monitoring and supply module is intended for use with an input voltage of 24 or 48 VDC. The module monitors the movement of the armature disk and emits the determined switching condition via control terminal 3 (signal output). Critical conditions (line breakages, wear) can be recognised and the respective signal can be emitted via control terminal 7 (error output).

After a brake-specific overexcitation time period, the integrated voltage reduction mechanism mode adjusts to the pre-set reduction voltage. The voltage reduction mechanism mode can be switched off using a DIP switch.

In case of switched-off voltage reduction mechanism mode, the overexcitation time can be adjusted manually to 150 ms, 450 ms, 1 s, 1.5 s, and 2 s using the DIP switch.

## Electrical Connection (Terminals)

### Power terminal

- 1 Supply voltage +24 VDC / +48 VDC
- 2 Output voltage +
- 3 Output voltage -
- 4 Supply voltage 0 VDC

### Signal Terminal

- 1 Supply voltage 0 VDC
- 2 Switch-off fast/slow (input)
- 3 Signal output (release monitoring)
- 4 24 V (auxiliary power supply for bridging)
- 5 Supply voltage +24 VDC
- 6 Start (input)
- 7 Error output max. 300 mA

## Technical Data

Input voltage see Table 1  
Output voltage see Table 1  
Protection IP65 components, IP20 terminals, IP20 DIP switch

Terminal nominal cross-section  
Power terminals 4 mm<sup>2</sup>, (AWG 20-12)  
Signal terminals 1.5 mm<sup>2</sup>, (AWG 30-14)  
Ambient temperature -25 °C up to +70 °C  
Storage temperature -40 °C up to +105 °C

ROBA®-brake-checker Sizes, Table 1

|                                |                                     |               | Size                     |         |
|--------------------------------|-------------------------------------|---------------|--------------------------|---------|
|                                |                                     |               | 2                        | 4       |
|                                |                                     |               | 24 VDC                   | 48 VDC  |
| Input voltage, power terminal  | SELV/PELV                           | $U_i$ [VDC]   | 18 – 30                  | 42 – 54 |
| Input voltage, signal terminal |                                     | $U_i$ [VDC]   | 24 (19 – 28)             |         |
| Output voltage                 | $\pm 5\%$                           | $U_o$ [VDC]   | Input voltage $U_i$      |         |
|                                | $\pm 5\%$                           | $U_H$ [VDC]   | 6 8 12 16<br>12 16 24 32 |         |
| Output current                 | at $\leq 45 \text{ }^\circ\text{C}$ | $I_{RMS}$ [A] | 10.0                     | 5.0     |
|                                | at max. $70 \text{ }^\circ\text{C}$ | $I_{RMS}$ [A] | 5.0                      | 2.5     |
| Protection                     |                                     |               | IP20                     |         |
| Conformity markings            |                                     |               | CE                       | CE      |

## Order Number

— / 0 2 8 . 1 0 0 . 2



Size  
2  
4



## ROBA®-brake-checker plus DC / Type 028.600.2

### Application

ROBA®-brake-checker plus DC monitoring and supply modules are used to supply permitted ROBA®-stop safety brakes. Motion monitoring of the armature disk for released ROBA-stop® safety brakes is possible.



### Monitoring module ROBA®-brake-checker DC

- Consumer operation with overexcitation and/or power reduction
- Controlled output voltage (on reduction)
- Automatic reduction to holding voltage  $U_H$
- Fast or slow disconnection
- Preventative function monitoring (wear recognition and error recognition, functional reserve)
- Armature disk motion recognition (release and drop-out recognition)
- Continuous drop-out recognition
- Maximum output current  $I_{RMS} = 5\text{ A}$
- Maximum overexcitation current  $I_o = 16\text{ A}$
- Safe monitoring of the switching times (optional)



### CAUTION



The ROBA®-brake-checker with integrated DC-side disconnection is not suitable for being the only safety disconnection in applications!

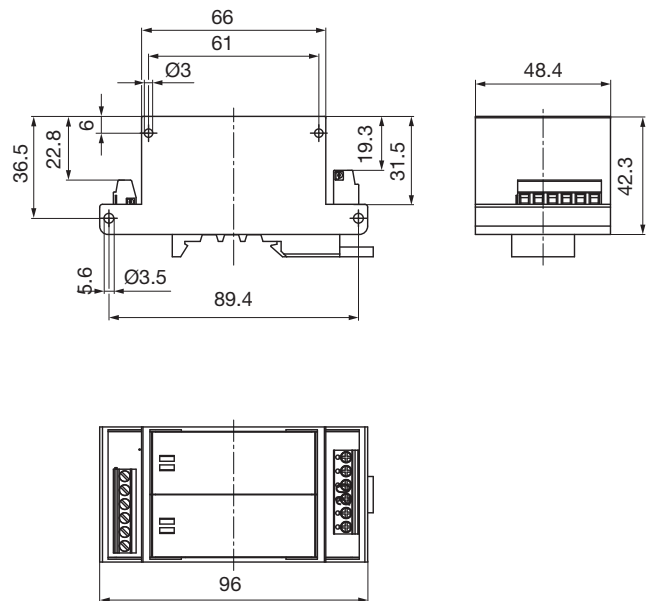
### Function

The ROBA®-brake-checker plus DC monitoring and supply module is intended for use with an input voltage of 24 VDC. The monitoring module monitors the movement of the armature disk and emits the determined switching condition via control terminal (signal output). Critical conditions (line breakages, wear, excess temperature) can be recognised and the respective signal can be emitted via control terminal (error output).

It is possible to select between fast and slow disconnection via the input F/S on the control terminal.

Louder switching noises are generated on the brakes in case of fast switch-off than in case of slow switch-off.

### Dimensions (mm)



### Technical data

|                              |                                                  |                         |
|------------------------------|--------------------------------------------------|-------------------------|
| Input voltage power terminal | SELV/PELV, $U_i$ [VDC]                           | 24 (18 - 32)            |
| Output voltage               | $\pm 5\%$ $U_o$ [VDC]                            | $0.99 \times U_i$       |
|                              | $U_H$ [VDC]                                      | 4, 6, 8, 12, 16, 20, 24 |
| Output current               | at $\leq 45\text{ }^\circ\text{C}$ $I_{RMS}$ [A] | 5                       |
|                              | at max. $70\text{ }^\circ\text{C}$ $I_{RMS}$ [A] | 2.5                     |
| Conformity markings          |                                                  | cULus CE                |
| Protection                   |                                                  | IP20                    |

### Order Number

— / 0 2 8 . 6 0 0 . 2

▲  
Size  
2

## ROBA®-brake-checker plus AC / Type 029.700.2

### Application

ROBA®-brake-checker plus AC monitoring and supply modules are used to connect permitted ROBA®-stop safety brakes to AC voltage.

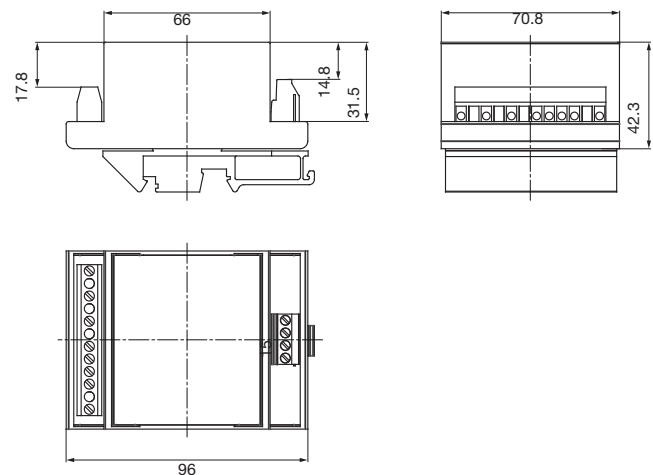
Motion monitoring of the armature disk for released ROBA-stop® safety brakes is possible.



### Monitoring and supply module ROBA®-brake-checker plus AC

- Consistently controlled output voltage in the entire input voltage range
- Consumer operation with overexcitation or power reduction
- Input voltage: 200 – 480 VAC
- Supply voltage with 50 or 60 Hz
- Max. output current  $I_{RMS}$ : 2 A
- Sensorless and contactless detection of switching statuses
- Motion recognition of the brake (release and drop-out recognition of the armature disk)
- Preventative function monitoring (wear recognition and error recognition, functional reserve)
- Continuous drop-out recognition
- Simple installation or retrofitting
- Electrical isolation on the output channels

### Dimensions (mm)



### CAUTION



The ROBA®-brake-checker cannot be used in all applications (e.g. when operating noise-damped brakes, it cannot be used without additional measures). The product's suitability should be checked before use.

### Function

The ROBA®-brake-checker monitoring and supply module is intended for use with an input voltage from 200 up to 480 VAC. The module supplies the connected brakes and regulates to a permanently programmed overexcitation voltage. After the overexcitation time ends, it regulates to the permanently programmed holding voltage.

The overexcitation time is set automatically. The module monitors the movement of the armature disk and emits the determined switching condition via control terminal 2 (signal output).

Critical conditions (line breakages, wear) can be recognised and the respective signal can be emitted via control terminal 3 (error output).

### Order Number

— / 0 2 9 . 7 0 0 . 2



Size  
20

| Technical Data                  |                 | 104 VDC                       | 180/<br>207 VDC   |
|---------------------------------|-----------------|-------------------------------|-------------------|
| Brake nominal voltage           |                 | 104 VDC                       | 180/<br>207 VDC   |
| Supply voltage, power terminal  | $U_i$ [VAC]     | 200 – 480 / 320 <sup>1)</sup> |                   |
| Input voltage, control terminal | $U_i$ [VDC]     | 24 (SELV/PELV)<br>(7 – 30)    |                   |
| Output voltage                  | $U_o$ [VDC]     | 104                           | 207 <sup>2)</sup> |
| Reduction                       | $U_H$ [VDC]     | 52                            | 104               |
| Output voltage                  | $U_o$ [VDC]     | 185                           | 360 <sup>2)</sup> |
| Overexcitation                  | $U_H$ [VDC]     | 104                           | 185 <sup>2)</sup> |
| Output current                  | at $\leq 45$ °C | $I_{RMS}$ [A]                 | 2                 |
|                                 | at $\leq 60$ °C | $I_{RMS}$ [A]                 | 1 cUL US          |
|                                 | at $\leq 70$ °C | $I_{RMS}$ [A]                 | 1 CE              |
| Protection                      |                 | IP20                          |                   |
| Conformity markings             |                 | CE cUL US                     |                   |

1) CSA-C22.2 No. 14-18

2) Approx.  $0.9 \times U_i$  (supply voltage, power terminal)

## ROBA®-torqcontrol / Type 068.200.2

### Application

ROBA®-torqcontrol monitoring modules are used to supply, monitor and control released ROBA-stop® safety brakes. Motion monitoring of the armature disk for released ROBA-stop® safety brakes is possible without a sensor.

#### Monitoring module ROBA®-torqcontrol 068.200.2

- Consumer operation with overexcitation and/or power reduction
- Controlled output voltage (on reduction)
- Simple adjustment of holding voltage and overexcitation time via a DIP switch
- Fast or slow disconnection
- Armature disk condition recognition (release and drop-out recognition)
- Preventative function monitoring (wear and error detection)
  - warning is provided regarding critical conditions before it becomes impossible to operate the brake, for example due to wear
    - ➔ Analogue OUT
- Control of the resulting brake rotor clamping force for adaptation of the braking torque
- Extensive input voltage range (24...48 VDC)
- Max. output current I (10...5 A)
- Maximum overexcitation current I<sub>O</sub> (20...10 A)
- Automatic reduction to holding voltage U<sub>H</sub>
- Electrical isolation between power terminal and control terminal

#### Power Terminal (7-pole)

|    |                                                                   |
|----|-------------------------------------------------------------------|
| 20 | + Input voltage (24 <sup>±20%</sup> - 48 <sup>+10/-20%</sup> VDC) |
| 21 | + Output voltage                                                  |
| 22 | External NO contact 1                                             |
| 23 | not assigned                                                      |
| 24 | External NO contact 2                                             |
| 25 | - Output voltage                                                  |
| 26 | - Input voltage (ground)                                          |

#### CAUTION



The ROBA®-torqcontrol with integrated DC-side disconnection, release monitoring and torque-control function is not suitable for being the only safety disconnection in applications!

### Order Number

\_\_\_ / 0 6 8 . 2 0 0 . 2



Size  
2

#### Example:

Order number 2 / 068.200.2



#### Control terminal (13-pole)

|    |                                 |                                                                                                                                                                                                                                                                                                                 |
|----|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  |                                 | Supply voltage 0 VDC                                                                                                                                                                                                                                                                                            |
| 2  | Start (input)                   | The brake is energised via the application of a 24 VDC signal. (24 VDC ➔ ON / 0 VDC ➔ OFF)                                                                                                                                                                                                                      |
| 3  |                                 | Supply voltage +24 VDC                                                                                                                                                                                                                                                                                          |
| 4  | Fast/slow disconnection (input) | In normal operation, it is possible to change between fast (input = 24 VDC) and slow (input = 0 VDC) disconnection. When operating with torque-control function, however, fast disconnection is mandatory.                                                                                                      |
| 5  | ERROR (Output)                  | Error output which is switched in case of problems regarding detection or wear. (24 VDC ➔ no error / 0 VDC ➔ error)                                                                                                                                                                                             |
| 6  | TC                              | Torque-control function ON/OFF                                                                                                                                                                                                                                                                                  |
| 7  | SIGNAL (output)                 | Output signal: Brake condition. (24 VDC ➔ released / 0 VDC ➔ closed)                                                                                                                                                                                                                                            |
| 8  | Analogue IN                     | On activation of the torque-control function, this input can be used to adjust the nominal torque of the brake at an input voltage of 0 – 10 VDC using a potentiometer.<br><b>Prerequisites For assignment of signal terminals SPS1 and SPS2 please see Table 1</b>                                             |
| 9  | Analogue OUT                    | PA (proportional attraction current) and error code                                                                                                                                                                                                                                                             |
| 10 | SPS1 (Input)                    | Assignment see Table 1                                                                                                                                                                                                                                                                                          |
| 11 | SPS3 (Dynamic Control)          | Should the <b>Dynamic Control</b> be activated, the condition detection of the armature disk is deactivated when the torque control function is ON. As a result, faster control of the braking torque is possible. (Recommended for the operation of ROBA®-torqcontrol as an actuator in a closed control loop) |
| 12 | SPS2 (Input)                    | Assignment see Table 1                                                                                                                                                                                                                                                                                          |
| 13 | RESET                           | On activating the reset procedure, the ROBA®-torqcontrol restarts, and as a result, all pending signals (ERROR) are deleted.                                                                                                                                                                                    |


## ROBA<sup>®</sup>-SBCplus

### The safe brake control - for use up to PLe and SIL CL3

#### Application

The safe brake control ROBA<sup>®</sup>-SBCplus is used to control and monitor two ROBA-stop<sup>®</sup> safety brakes, especially in applications, which have to fulfill requirements regarding personal protection according to the standards for functional reliability, such as for example ISO 13849 and IEC 62061.

#### Characteristics:

-  **UL US LISTED**
- Applicable up to PLe and SIL CL3, Type examination TÜV Süd (German Technical Inspectorate)
- Safe electronic switching of two brakes
- Input voltage power circuit 24 / 48 VDC
- Connection for up to 2 brakes up to 6.5 A / 24 VDC or 3.25 A / 48 VDC (132 W)
- Output voltage (holding voltage) can be selected as 6,8,12,24,32,48 VDC
  - Power reduction, temperature reduction, electricity costs reduction
- Overexcitation time configurable
- Feedback inputs release monitoring for proximity switch, microswitch or ROBA<sup>®</sup>-brake-checker DC / Type 058.600.2
- Monitoring for plausibility of the feedback
  - Error diagnostics of the brake
- Status and error outputs for feedback to the control
- No mechanic contacts for controlling and monitoring
  - High reliability, no wear, independent of cycle frequency and cycle rate
- Fast (“DC-side”) or slow (“AC-side”) switch off possible
- Galvanic separation between the control part and the power part
  - Prevention of EMC issues
- Four integrated functions:
  - Contactors, 24 VDC fast acting rectifier, safety relay, spark quenching
- Safe holding voltage and overexcitation time
- Safety functions are programmed into the ROBA<sup>®</sup>-SBCplus and only have to be parameterised
  - Plausibility check integrated and must not be programmed and validated



#### Maximum switching reliability

The brake control must safely interrupt the current in the magnetic coil on switching off the brake. The ROBA<sup>®</sup>-SBCplus module works with wear-free electronic semiconductors and thus achieves almost unlimited switching frequencies and switching reliability.

#### Safe inner configuration

Amongst other things, the internal diagnostics inspections for short circuits, earth short-circuits and line breaks as well as safe overexcitation for releasing the brake and switching to reduced holding voltage when the brake is opened are the components required for “fail-safe” inner configuration.

#### Numerous safety functions

Numerous safety functions permit comprehensive error diagnostics. The brake voltage is monitored. An excessively high voltage could dangerously extend the drop-out time on switch-off, if, for example, this were to cause a vertical axis to drop to an unpermittedly low level. The monitoring of the switching times, which influence the braking distance, is therefore another component of error diagnostics.

#### Safe switching condition monitoring

The signal evaluation of the release monitoring with plausibility check permits a switching condition monitoring of the brake. The plausibility is controlled as follows: If voltage is applied, the brake must be opened after a defined time and vice versa. The switching condition monitoring can be used to reliably prevent the drive starting up against a closed brake. In this way, creeping errors, such as gradually increasing wear, which affects the switching times, can be detected.



# ROBA®-SBCplus

Type 021.100.2

## Technical Data

### Electrical connection

|                      |                                   |
|----------------------|-----------------------------------|
| Supply voltage logic | 24 VDC -15 % / +20 %              |
| Supply voltage power | 24 VDC or 48 VDC<br>-10 % / +20 % |

### Inputs:

|                  |                      |
|------------------|----------------------|
| Safe inputs      | 4 (Y10 – Y23)        |
| Standard inputs  | 4 (S35, S36, Y1, Y2) |
| Monitoring times | 30 ms ... 4000 ms    |

### Outputs:

|                         |                        |
|-------------------------|------------------------|
| Supply voltage S11      | 24 V 0.1 A             |
| Acknowledgement outputs | 24 V 0.1 A             |
|                         | O3 Fault message       |
|                         | O4 Status circuit 1    |
|                         | O5 Status circuit 2    |
| Test pulse outputs      | T0, T1, 24 V, 0.1 A    |
| Power outputs           | O1, O2                 |
| Continuous operation    | 24 V / 2 x 5.5 A max.  |
| Continuous operation    | 48 V / 2 x 2.75 A max. |
| Overexcitation          | 24 V / 2 x 6.5 A max.  |
| Overexcitation          | 48 V / 2 x 3.25 A max. |

|                                   |                                          |
|-----------------------------------|------------------------------------------|
| Reduced voltages                  | 6/8/12/16/24/32 V ±10 %                  |
| Overexcitation times              | 100 ms ... 2500 ms                       |
| Cycle frequency                   | 4/min max.                               |
| Ambient temperature               | 0 – 45 °C                                |
| Protection                        | IP20                                     |
| Installation into control cabinet | IP54                                     |
| Dimension                         | 45x100x120 mm                            |
| Connection terminal               | 0.20 – 2.5 mm <sup>2</sup> , 24 – 12 AWG |
| Clamping terminals per connection | 2                                        |

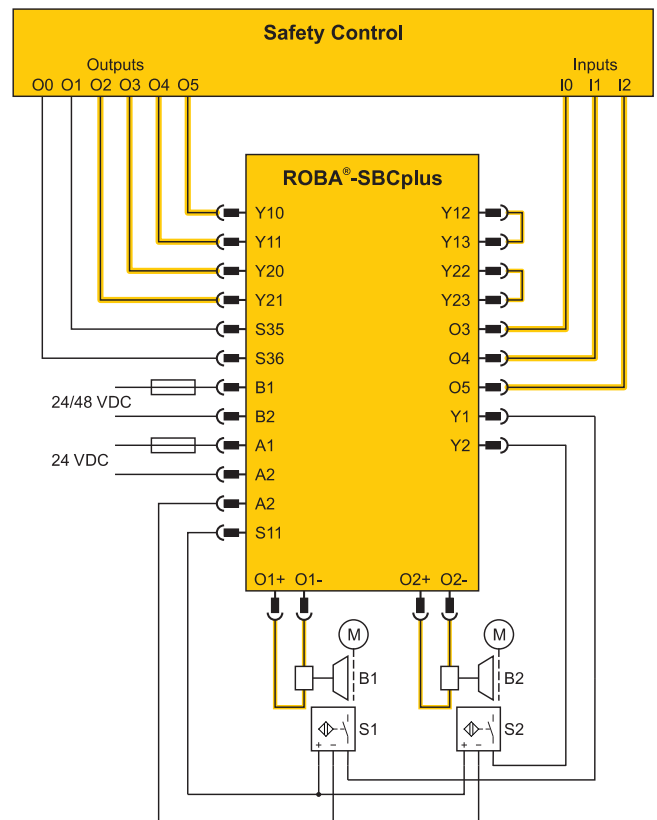
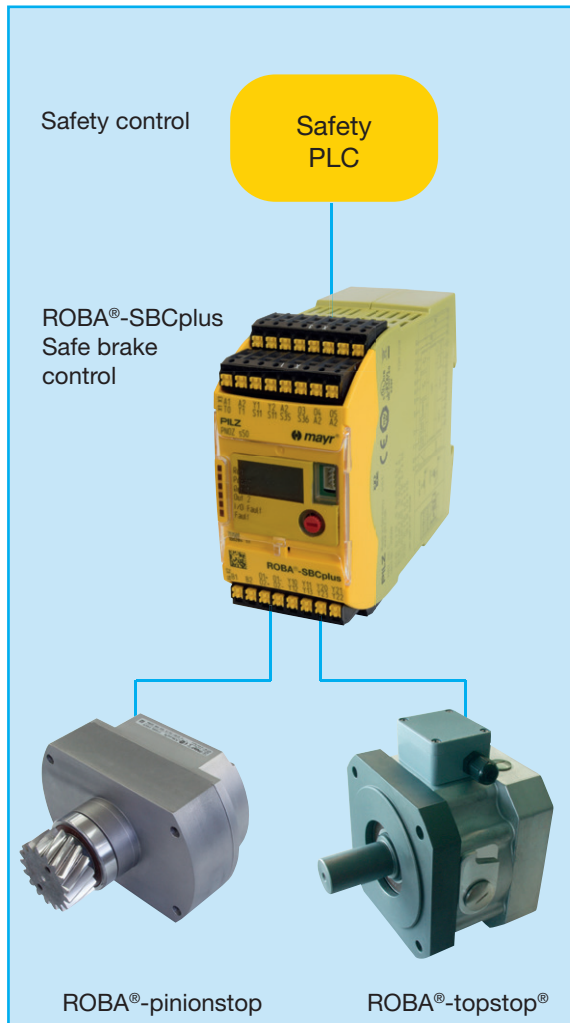
### Certification:

Type examination tested by TÜV (German Technical Inspectorate), CE, UL

### Parameterisation:

- On delivery, the device is completely parameterised for the respective ROBA-stop® brake
- Only due to the correct parameterisation, a diagnostic coverage DC of 60 % can be assumed for the brake without additional measures via the feedback of the release monitoring signal

## Application Example





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You can find the complete address for the representative responsible for your area under [www.mayr.com](http://www.mayr.com) in the internet.