Safety brakes
We safeguard the movements of this world

Specialists in power transmission for more than a century

*mayr*® power transmission is one of the most traditional and yet most innovative German companies in the field of power transmission. From modest beginnings in the year 1897, the family enterprise from the Allgäu region has developed into the world market leader. Today, approximately 700 employees work at the headquarters in Mauerstetten; about 1200 employees work for the company worldwide.

**An unsurpassed standard product range**

*mayr*® power transmission offers a variant variety of torque limiters, safety brakes, backlash-free shaft misalignment compensation couplings and high-quality DC drives. Regarding customer-specific requirements, too, the company possesses the expertise to develop customized and economical solutions. This is why numerous renowned machine manufacturers trust in holistic solutions by *mayr*® power transmission.

**Available worldwide**

With eight subsidiaries in Germany, sales offices in the USA, France, Great Britain, Italy, Singapore and Switzerland as well as 36 additional country representatives, *mayr*® is available in all important industrial areas, guaranteeing optimum customer service around the globe.

Tradition and innovation – the best of both worlds

Tradition and innovation do not contradict each other - on the contrary. They are the two supporting pillars which have guaranteed stability and reliability for generations. Long-term stability, independence as well as a good reputation and satisfied customers are important values for a family enterprise rich in tradition.

Therefore, we place emphasis on:

- Tested product quality,
- Optimum customer service,
- Comprehensive know-how,
- Global presence,
- Successful innovations and
- Effective cost management.

By pursuing our own objective of always offering our customers the technologically most advanced and most economical solution, we have been able to gain the trust of many leading industrial companies from all branches and from all over the world as a reliable partner.

Place your trust in our know-how and our more than 50 years of experience in torque limiters, safety brakes and shaft couplings.
Tested quality and reliability

mayr® products are subject to meticulous quality inspections. These include quality assurance measures during the construction process as well as a comprehensive final inspection. Only the best, tested quality leaves our factory. All products are rigorously tested on calibrated test stands, and adjusted precisely to the requested values. An electronic database in which the measurement values are archived together with the associated serial numbers guarantees 100 % traceability. On request, we confirm the product characteristics with a test protocol.

The certification of our quality management according to DIN EN ISO 9001:2000 confirms the quality-consciousness of our colleagues at every level of the company.

Never compromise on safety

We make no compromises where safety is concerned. Only top products of a perfect quality guarantee that no people are injured or machines damaged in case of malfunctions, collisions and other hazardous situations. The safety of your employees and machines is our motivation to always provide the best and most reliable clutches, couplings or brakes.

mayr® power transmission holds numerous ground-breaking patents, and is the global market or technological leader for
- application-optimised safety brakes, for example for passenger elevators, stage technology and gravity loaded axes
- torque limiters to protect against expensive overload damage and production losses and
- backlash-free servo couplings.
### Function
ROBA-stop® safety brakes are spring applied, electromagnetic safety brakes. These brakes ensure reliable and safe braking of machines and systems in any position in the event of a power switch-off, a power failure or an EMERGENCY STOP.

### Overview

#### Exemplary application areas

<table>
<thead>
<tr>
<th>General mechanical engineering</th>
<th>Electromotors</th>
<th>Servo drives</th>
<th>Crane construction</th>
<th>Harbour/ship/seawater</th>
<th>Elevator construction</th>
<th>Escalators</th>
<th>Stage construction</th>
<th>Hoists</th>
<th>Mobile devices with low voltage</th>
<th>Medical technology</th>
<th>Robots/handling</th>
<th>Gravity loaded axes</th>
<th>Linear motors</th>
<th>Machine tools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Special characteristics

<table>
<thead>
<tr>
<th>CSA-certification</th>
<th>ATEX design</th>
<th>Sealed design</th>
<th>Two independent brake circuits</th>
<th>Minimal noise</th>
</tr>
</thead>
</table>
ROBA-stop®-M
The robust, cost-effective motor brake

Performance Characteristics

- Maintenance-free (no re-adjustment)
- Simple installation
- Completely enclosed brake housing acc. Protection IP54 or IP66
- Class of insulation F
- Can be used for 100 % duty cycle
- Short switching times

ROBA-stop®-M safety brake on the B-bearing side of an electromotor. The design with flange plate is used if there is no suitable counterfriction surface for the brake linings available motor-side.

Designs

- **ROBA-stop®-standard brake**
  As a working brake it brakes from movement, and positions at the required point.

- **ROBA-stop®-M holding brake**
  Holds drives safely in position when they are not running and brakes from movement on EMERGENCY STOP.

<table>
<thead>
<tr>
<th>Technical Data, Dimensions</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Braking torque</td>
<td></td>
</tr>
<tr>
<td>Standard brake M [Nm]</td>
<td>2</td>
</tr>
<tr>
<td>Holding brake M [Nm]</td>
<td>4</td>
</tr>
<tr>
<td>Shaft Ø</td>
<td></td>
</tr>
<tr>
<td>Brake Outer Ø D [mm]</td>
<td>76</td>
</tr>
<tr>
<td>Length L [mm]</td>
<td>39</td>
</tr>
</tbody>
</table>

1) Tolerance +30 % / -10 %
2) Tolerance +40 % / -20 %

For detailed technical data and dimensions, please see catalogue: ROBA-stop®-M K.891.V_ _._ _
**ROBA®-topstop®**

Modular safety brake system for a servomotor attachment on the A-bearing side

*Performance Characteristics*

- The axis is held safely in any position, even with a dismantled servomotor, e.g. during machine maintenance
- Optimum braking system for vertical axes and when handling large weights
- Long lifetime even after frequent EMERGENCY STOP brakings
- Indication of the operating condition (opened/closed) via an integrated condition monitoring
- Short, compact design
- Low rotatory moments of inertia
- Low self-induced heat production even at 100 % duty cycle
- Design with Protection IP65 available

**Designs**

- Single circuit brake with a bearing-supported output shaft: i.e. suitable for toothed belt drives
- Single circuit brake with an integrated plug-in shaft coupling
- Single circuit brake with a shaft coupling and an installed EAS®-smartic® torque limiter
- Redundant dual circuit brake system with a bearing-supported output shaft
- Basic brake module for special brake configurations

Due to their adaptable flange dimensions, ROBA®-topstop® safety brakes can easily be integrated into pre-existing constructions between the servomotor and the counterflange. If necessary, the design can be easily adapted to any installation situation by changing the standard flanges. Seven standard sizes for braking torques of 6 to 400 Nm are available for delivery at short notice.

**Technical Data, Dimensions**

<table>
<thead>
<tr>
<th></th>
<th>100</th>
<th>120</th>
<th>150</th>
<th>175</th>
<th>200</th>
<th>230</th>
<th>260</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Braking torque</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single circuit brake</td>
<td>M [Nm]</td>
<td>6</td>
<td>12</td>
<td>45</td>
<td>70</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>(with overexcitation)</td>
<td>M [Nm]</td>
<td>12</td>
<td>30</td>
<td>90</td>
<td>120</td>
<td>160</td>
<td>300</td>
</tr>
<tr>
<td><strong>4-cornered flange</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>D [mm]</td>
<td>100</td>
<td>126</td>
<td>155</td>
<td>176</td>
<td>194</td>
<td>235</td>
</tr>
<tr>
<td></td>
<td>L [mm]</td>
<td>80</td>
<td>104</td>
<td>119</td>
<td>138.5</td>
<td>138.5</td>
<td>185</td>
</tr>
</tbody>
</table>

1) Tolerance +40 % / -20 %

For detailed technical data and dimensions, please see catalogue: ROBA®-topstop® K.899.V...
ROBA®-topstop®
Brake module with plug-in shaft coupling

These brake modules were conceived for special customer-specific applications. Depending on the respective mounting situation, these brake can be mounted directly onto a pre-installed friction flange, or they can be delivered with a mounting flange which has been specially adapted for the particular application. The brake module can be equipped with the standard clamping hub shaft and ROBA®-ES shaft couplings or with special coupling constructions which can be optimally adapted for individual mounting conditions.

For detailed technical data and dimensions, please see brochure: ROBA®-topstop® P.897.V

ROBA®-alphastop®
Safety brake for A-bearing-side attachment onto Fanuc motors

Performance Characteristics

- Complete unit with backlash-free shaft coupling
- Easy installation between servomotor and mounting flange
- Completely enclosed brake housing
- Design with output shaft for direct installation onto hollow shaft gearboxes
- Can be used for 100 % duty cycle

The ROBA®-alphastop® is a safety brake, installed between the servomotor and a bell housing. The brake toothed hub is combined with the smartflex® backlash-free steel bellows coupling. Frictionally-locking clamping rings ensure backlash-free torque transmission between the motor and the ball screw spindle. The ROBA®-alphastop® is designed with an output shaft for direct mounting onto a gearbox with a hollow shaft, meaning that the shaft coupling is unnecessary.

For detailed technical data and dimensions, please see brochure: ROBA®-alphastop® P.897.V
ROBA®-servostop®
The perfect safety brake for servo motors

Performance Characteristics

- Can be used up to 120 °C
- High permitted friction work
- High performance density
- Low mass moment of inertia
- Axial positioning to shaft not required
- Reliable due to fail-safe principle
- High operational safety
- Simple and robust design
- Simple installation

Installation Example

ROBA®-servostop® in the B-bearing shield of a motor:
Due to their special construction, temperature-induced expansion and bearing backlash have no negative influence on the brake function and reliability.

Optimally tailored to your servomotors
We will design a perfectly adapted and aligned solution suitable for your servomotors. Just contact us!
The table below contains only the most important data and dimensions of the basic sizes.

<table>
<thead>
<tr>
<th>Technical Data, Dimensions</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum holding torque</td>
<td>60 80 100 120 140 160</td>
</tr>
<tr>
<td>at an ambient temperature of 120 °C</td>
<td>Tₘ [Nm]</td>
</tr>
<tr>
<td>Outer Ø</td>
<td>D [mm]</td>
</tr>
<tr>
<td>Length</td>
<td>L [mm]</td>
</tr>
</tbody>
</table>

For detailed technical data and dimensions, please see brochure: ROBA®-servostop® P.898000.V...
ROBA®-servostop® for robotic applications
Robust lightweight brakes for demanding operating conditions

Performance Characteristics

- Extremely thin and lightweight construction shape
- High performance density in spite of low energy intake
- Adapted geometry for very different installation situations
- Extremely short switching times
- Can be used up to 120 °C
- Ready for installation
- Inspected unit
- Can be produced with a large inner diameter, for example for use in hollow shaft motors

The ROBA®-servostop® safety brakes are tailored to robotic requirements with their extremely thin construction shape and low weight, and can therefore easily cope in demanding operating conditions. They guarantee reliable, constant holding torques over the entire service lifetime, have a high performance density and are wear-resistant.

ROBA®-servostop® safety brakes in the compact RoboDrive hollow shaft motors of the RD construction series. Fig: TQ-Systems GmbH

For detailed technical data and dimensions, please see brochure: ROBA®-servostop® P.898000.V
ROBA®-pinionstop
The safe rack and pinion brake

**Performance Characteristics**

- Safe holding of the axis via ready-to-install brake module with pinion shaft
- Independent, electromagnetically releasing spring applied brake system
- Integrated release monitoring
- Sealed brake housing
- Individual dimensioning and design possibilities of the brake configuration
- Simple installation
- Easy implementation of a redundant brake system (according to category 3) by mounting a second ROBA®-pinionstop brake or by using an additional brake on the servomotor.

The ROBA®-pinionstop as an independent brake system engages directly and in any position onto the toothed rack and is closed in a de-energised condition. This safety brake is therefore able to offer high safety on power failure and EMERGENCY STOP as well as during installation and maintenance work.

For detailed technical data and dimensions, please contact the manufacturers.
ROBA®-linearstop
The hydraulic, pneumatic and electromagnetic brake system for linear axes

Performance Characteristics

- Backlash-free force transmission having an effect on both sides
- Safety brake system according to the fail-safe principle
- No self-reinforcement during clamping
- Clearing the clamping device is not necessary
- Maximum performance density
- Suitable for EMERGENCY STOP braking actions
- Minimum reaction times
- Integrated switching condition monitoring possible
- Long service lifetime
- Can easily be integrated into existing constructions
- TÜV (German Technical Inspectorate) -tested acc. Trade Association inspection policies (not valid for Type 382)

Additionally on pneumatic design Type 381.1_ _._0
- Reliable dynamic braking

As a new brake system, the ROBA®-linearstop offers unique possibilities for increasing the safety of machinery. As a compact brake unit it can be integrated into already existing machinery and system constructions easily, quickly and without extensive adjustment work. By mounting a second ROBA®-linearstop brake or by using an additional brake on the servomotor, a redundant brake system can be implemented easily.

The unit having a direct effect on the rod brakes independently from the drive system.

In linear motor axes, the ROBA®-linearstop prevents e.g. not only unpermitted height loss of the vertical carriage due to power failure or other malfunctions, but is also capable of braking dynamic movements safety in EMERGENCY STOP situations.

### Technical Data, Dimensions

<table>
<thead>
<tr>
<th>Nominal holding force</th>
<th>F_{H} [kN]</th>
<th>Pneumatic brake system</th>
<th>Hydraulic brake system</th>
<th>Electromagnetic brake system</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.45 – 1.2</td>
<td>0.8 – 2.2</td>
<td>4.6 – 13.8</td>
<td>7.5 – 22.5</td>
</tr>
<tr>
<td>Outer Ø</td>
<td>D [mm]</td>
<td>46</td>
<td>56</td>
<td>70</td>
</tr>
<tr>
<td>Brake rod Ø</td>
<td>d [mm]</td>
<td>16</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Max. length</td>
<td>L [mm]</td>
<td>147,9</td>
<td>152,9</td>
<td>157,9</td>
</tr>
</tbody>
</table>

For detailed technical data and dimensions, please see catalogue: ROBA®-linearstop K.381.V __. __.
ROBA®-guidestop
Safety brake and backlash-free clamping unit for profiled rail guides

Performance Characteristics

- Maximum safety thanks to direct, backlash-free and rigid clamping
- Maximum safety thanks to extremely high holding forces and fail-safe principle
- Powerpack with two braking circuits for double the holding force or redundant dimensioning
- Cost-efficient solution for limited installation space
- High degree of rigidity up to the full nominal force
- Extremely high holding forces
- Designed for standard linear guides

The backlash-free and rigid clamping
- Reinforces the NC axis
- Is gentle on the ball screw spindle
- Improves process accuracy
- Increases the machining performance

Design
Integrated into a carriage, the ROBA®-guidestop works with two brake circuits independent of each other, and as a result can be used as a redundant dual circuit brake.

Technical Data, Dimensions

<table>
<thead>
<tr>
<th>Standard</th>
<th>Pneumatic brake system</th>
<th>Size</th>
<th>Hydraulic brake system</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>Nominal holding force</td>
<td>FN [kN]</td>
<td>1.4 - 2.2</td>
<td>2.8 - 4.4</td>
</tr>
<tr>
<td>Brake Length L [mm]</td>
<td>145</td>
<td>192</td>
<td>225</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>40.2</td>
<td>50.7</td>
<td>59</td>
</tr>
<tr>
<td>Width B [mm]</td>
<td>70</td>
<td>100</td>
<td>120</td>
</tr>
<tr>
<td>Rail Width B1 [mm]</td>
<td>23</td>
<td>34</td>
<td>45</td>
</tr>
</tbody>
</table>

Function
The spring-loaded, enclosed ROBA®-guidestop, which can be opened hydraulically or pneumatically, clamps a profiled rail steplessly and backlash-free. Due to the spring-loaded system, the fail-safe principle can be guaranteed, the ROBA®-guidestop works as a safety brake.

ROBA®-guidestop clamps with extremely high rigidity directly onto the linear guide.
The direct clamping on the linear guide provides decisive advantages, above all on gravity loaded axes, when the risk of injuries to people is to be minimised.
ROBA®-guidestop takes on the load when the vertical axis is stationary, for example during machining. In this phase, the drive motor can be switched off and removed from the control. Switching off the motor eliminates the regulating movements and thus is gentle on the ball screw spindle.
The additional reinforcement of the NC axis increases process accuracy, increases the machining performance and can offer other technological advantages, for example during heavy machining. The machining process is lower in vibrations and thus improves the surface quality.

For detailed technical data and dimensions, please see brochure: ROBA®-guidestop P.380000.V _ _ _
ROBA-stop®-silenzio®
The quietest safety brake for elevator and stage drives

**Performance Characteristics**

- Noise level of the basic version under 60 dB(A) even after several million switchings
- Dual circuit brake as redundant brake system brake in accordance with DGUV Rule 115-002 (previously BGV C1), DIN 56950-1, EN 81-A3 and other international standards
- Very short construction length
- Simplest possible installation
- No air gap adjustment necessary
- Microswitch or proximity switch can be mounted for release monitoring
- Brakes can be individually switched and inspected
- Type examination tested

### Technical Data, Dimensions

<table>
<thead>
<tr>
<th>Size</th>
<th>Max. braking torque 1)</th>
<th>Shaft Ø min - max</th>
<th>Outer Ø</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[Nm]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
</tr>
<tr>
<td>4</td>
<td>5 2 x 5</td>
<td>88 108</td>
<td>8 – 15</td>
<td>87</td>
</tr>
<tr>
<td>8</td>
<td>10 2 x 10</td>
<td>108 130</td>
<td>9 – 20</td>
<td>91</td>
</tr>
<tr>
<td>16</td>
<td>19 2 x 19</td>
<td>130 153</td>
<td>14 – 24</td>
<td>99</td>
</tr>
<tr>
<td>32</td>
<td>40 2 x 40</td>
<td>153 168</td>
<td>18 – 30</td>
<td>109</td>
</tr>
<tr>
<td>64</td>
<td>77 2 x 77</td>
<td>168 195</td>
<td>18 – 35</td>
<td>127</td>
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<tr>
<td>100</td>
<td>120 2 x 120</td>
<td>195 223</td>
<td>18 – 46</td>
<td>134</td>
</tr>
<tr>
<td>200</td>
<td>240 2 x 240</td>
<td>223 261</td>
<td>23 – 50</td>
<td>152</td>
</tr>
<tr>
<td>300</td>
<td>360 2 x 360</td>
<td>261 285</td>
<td>24 – 60</td>
<td>159</td>
</tr>
<tr>
<td>500</td>
<td>600 2 x 600</td>
<td>285 329</td>
<td>40 – 70</td>
<td>172</td>
</tr>
<tr>
<td>800</td>
<td>1000 2 x 1000</td>
<td>329 370</td>
<td>45 – 75</td>
<td>189</td>
</tr>
<tr>
<td>1300</td>
<td>1560 2 x 1560</td>
<td>370 415</td>
<td>56 – 90</td>
<td>199</td>
</tr>
<tr>
<td>1800</td>
<td>2150 2 x 2150</td>
<td>415</td>
<td>66 – 100</td>
<td>205</td>
</tr>
</tbody>
</table>

1) Tolerance +60 %

For detailed technical data and dimensions, please see catalogue: ROBA-stop®-silenzio® K.896.V_ _ _
ROBA®-diskstop®
The electromagnetic safety brake system for brake disks

Performance Characteristics

- Operation without rubbing noise due to unique patented alignment mechanism
- Attractive solution for large braking torques
- Minimum-noise operation
- Redundancy according to EN 81 when assembling two brakes
- Brakes can be individually switched and inspected
- Type examination tested
- High performance density

---

**Technical Data, Dimensions**

<table>
<thead>
<tr>
<th>Size</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Braking torque &quot;performance-optimised&quot;</strong>&lt;br&gt;Example for brake disk diameter D = 1000 mm</td>
<td>M [Nm]</td>
<td>1551</td>
<td>1774</td>
<td>2325</td>
</tr>
<tr>
<td><strong>Braking torque &quot;noise-optimised&quot;</strong>&lt;br&gt;Example for brake disk diameter D = 1000 mm</td>
<td>M [Nm]</td>
<td>1241</td>
<td>1421</td>
<td>1858</td>
</tr>
<tr>
<td><strong>Brake disk</strong>&lt;br&gt;Outer diameter</td>
<td>D [mm]</td>
<td>270 – ∞</td>
<td>390 – 1500</td>
<td>390 – ∞</td>
</tr>
<tr>
<td>Width</td>
<td>K [mm]</td>
<td>15</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td><strong>Bolt distance</strong>&lt;br&gt;Length</td>
<td>A [mm]</td>
<td>140</td>
<td>180</td>
<td>220</td>
</tr>
<tr>
<td>Length</td>
<td>L [mm]</td>
<td>139</td>
<td>135</td>
<td>148</td>
</tr>
<tr>
<td>Length (with alignment mechanism for Sizes 6 – 8)</td>
<td>L₁ [mm]</td>
<td>161</td>
<td>161</td>
<td>173</td>
</tr>
<tr>
<td><strong>Height</strong></td>
<td>H [mm]</td>
<td>198</td>
<td>225.5</td>
<td>230.5</td>
</tr>
<tr>
<td><strong>Width</strong></td>
<td>B [mm]</td>
<td>184</td>
<td>229</td>
<td>275</td>
</tr>
</tbody>
</table>

1) Tolerance -0 % / +60 %
2) Other brake disk widths are possible

For detailed technical data and dimensions, please see catalogue: ROBA®-diskstop® K.894.V_ _._ _
ROBA®-duplostop®
The doubled safety brake for elevator drives

**Performance Characteristics**

- Highest safety system of two independent brake circuits according to EN 81
- Also licensed as protection against excessive upward speeds when fitted with release monitoring
- Exceptionally short construction
- Cost-effective redundant elevator brake
- Brakes can be individually switched and inspected
- Mounting the encoder does not lengthen the construction
- Simple installation
- No air gap adjustment necessary
- Virtually silent due to patented mayr® noise damping
- Brake release via rotating hand release (for Bowden cable or with hand release lever) is a possible option

### Technical Data, Dimensions

<table>
<thead>
<tr>
<th>Size</th>
<th>200</th>
<th>400</th>
<th>600</th>
<th>800</th>
<th>1000</th>
<th>1500</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>short</td>
<td>long</td>
<td>short</td>
<td>long</td>
<td>short</td>
<td>long</td>
</tr>
<tr>
<td>Braking torque ¹</td>
<td>M [Nm]</td>
<td>2 x 200</td>
<td>2 x 410</td>
<td>2 x 430/480</td>
<td>2 x 590</td>
<td>2 x 830</td>
</tr>
<tr>
<td>(with overexcitation)</td>
<td>M [Nm]</td>
<td>2 x 240</td>
<td>–</td>
<td>2 x 490/540</td>
<td>2 x 590</td>
<td>2 x 930</td>
</tr>
<tr>
<td>Shaft Ø</td>
<td>[mm]</td>
<td>60 x 2,5 x 22</td>
<td>65 x 3 x 20</td>
<td>72 x 3 x 22</td>
<td>72 x 3 x 22</td>
<td>82 x 3 x 26 * 90 x 3 x 28</td>
</tr>
<tr>
<td>Directly toothed motor shaft DIN 5480 ² ³</td>
<td>[mm]</td>
<td>65 x 3 x 20</td>
<td>67 x 3 x 21</td>
<td>82 x 3 x 26</td>
<td>82 x 3 x 26</td>
<td>90 x 3 x 28 *</td>
</tr>
<tr>
<td></td>
<td>[mm]</td>
<td>67 x 3 x 21</td>
<td>72 x 3 x 22</td>
<td>90 x 3 x 28</td>
<td>–</td>
<td>98 x 4 x 23 *</td>
</tr>
<tr>
<td>Length (with rotor)</td>
<td>L [mm]</td>
<td>86,1/91,1 *</td>
<td>96,1</td>
<td>101,1</td>
<td>101,1</td>
<td>108,1</td>
</tr>
<tr>
<td>Height</td>
<td>H [mm]</td>
<td>244</td>
<td>268</td>
<td>290</td>
<td>298</td>
<td>336</td>
</tr>
<tr>
<td></td>
<td>H₁ [mm]</td>
<td>256</td>
<td>280</td>
<td>303</td>
<td>311</td>
<td>349</td>
</tr>
<tr>
<td>Width</td>
<td>B [mm]</td>
<td>270</td>
<td>315</td>
<td>290/355</td>
<td>355</td>
<td>375</td>
</tr>
<tr>
<td>Single brake</td>
<td>B₁ [mm]</td>
<td>100</td>
<td>120</td>
<td>120</td>
<td>140</td>
<td>150</td>
</tr>
</tbody>
</table>

1) Tolerance +60 %  2) Design with toothed hub available on request 3) spline length on request ¹) Dimension valid for braking torque with overexcitation

For detailed technical data and dimensions, please see brochure: ROBA®-duplostop® P.Q8012.V
**ROBA®-twinstop®**

The dual-circuit safety brake for elevator drives

**Performance Characteristics**

- Highest safety system of two independent brake circuits according to EN 81
- Also licensed as protection against excessive upward speeds when fitted with release monitoring
- Exceptionally short construction
- Cost-effective redundant elevator brake
- Brakes can be individually inspected electrically
- Mounting the encoder does not lengthen the construction or add further parts
- Installation of microswitches for function monitoring possible
- No air gap adjustment necessary
- Virtually silent due to patented mayr® noise damping
- Brake release via rotating hand release (for Bowden cable or with hand release lever) is a possible option

**Design**

The ROBA®-twinstop® consists of a compact brake block with two independent brake circuits which is fixed to the motor using four screws. In comparison to brake systems with brakes which are positioned behind each other, it has an extremely short construction length. Even the addition of a compact encoder does not alter this length, as it is located in the central bore.

**Function**

The redundant electromagnetic safety brake ROBA®-twinstop® is spring applied. If the power is switched off, or on power failure / EMERGENCY STOP, the brake ensures reliable and secure stops in any position.

---

### Technical Data, Dimensions

<table>
<thead>
<tr>
<th>Sizes</th>
<th>125</th>
<th>150</th>
<th>180</th>
<th>225</th>
<th>250</th>
<th>350</th>
<th>600</th>
<th>800</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal braking torque $M_N$ [Nm]</td>
<td>$2 \times 125$</td>
<td>$2 \times 150$</td>
<td>$2 \times 180$</td>
<td>$2 \times 225$</td>
<td>$2 \times 250$</td>
<td>$2 \times 250$</td>
<td>$2 \times 350$</td>
<td>$2 \times 550$</td>
<td>$2 \times 850$</td>
</tr>
<tr>
<td>Shaft Ø Directly toothed motor shaft DIN 5480 1) [mm]</td>
<td>$45 \times 2$</td>
<td>$55 \times 2$</td>
<td>$50 \times 2$</td>
<td>$55 \times 2$</td>
<td>$55 \times 2$</td>
<td>$65 \times 3$</td>
<td>$65 \times 3$</td>
<td>$72 \times 3$</td>
<td>$80 \times 3$</td>
</tr>
<tr>
<td>Length (with rotor) $L$ [mm]</td>
<td>85.6</td>
<td>90.6</td>
<td>92.6</td>
<td>97.6</td>
<td>100.6</td>
<td>100.6</td>
<td>102.6</td>
<td>112</td>
<td>126</td>
</tr>
<tr>
<td>Height $H$ [mm]</td>
<td>212</td>
<td>250</td>
<td>237</td>
<td>267</td>
<td>290</td>
<td>300</td>
<td>303</td>
<td>340</td>
<td>395</td>
</tr>
<tr>
<td>Width $B$ [mm]</td>
<td>200</td>
<td>170</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>170</td>
<td>210</td>
<td>315</td>
<td>340</td>
</tr>
<tr>
<td>Rotor $R$ [mm]</td>
<td>181</td>
<td>223</td>
<td>196</td>
<td>196</td>
<td>222.5</td>
<td>253</td>
<td>273</td>
<td>315</td>
<td>315/338</td>
</tr>
</tbody>
</table>

1) design with toothed hub available on request
2) Further Sizes available on request

For detailed technical data and dimensions, please see brochure: ROBA®-twinstop® P.Q8012.V_ _._ _
ROBA®-quatrostop
The extremely compact multiple-circuit brake for stage technology

**Performance Characteristics**

- Highest safety due to redundant system
- Braking torque is not doubled
- Reduces loads on the mounted parts
- Allows lighter connection constructions
- Low-noise operation
- Brakes gently
- Switches extremely quickly
- Saves costs
- Integrated, protected sensors can be mounted

Low increase in braking torque due to four individual brake circuits

On redundant systems with two brake circuits, one circuit must produce the entire nominal braking torque required. If both brakes are functioning correctly, the increase in braking torque is 100 percent. The system brakes with double the nominal braking torque.

In the new ROBA®-quatrostop braking system, four brake circuits work independently of each other. Together, three brake circuits produce the required nominal braking torque. The fourth circuit ensures the necessary redundancy, in order to fulfill the safety requirements for elevator technology.

In malfunction-free operation, the system has a braking torque increase of a mere 33 percent.

<table>
<thead>
<tr>
<th>Technical Data, Dimensions</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal braking torque</strong></td>
<td></td>
</tr>
<tr>
<td>minimal</td>
<td></td>
</tr>
<tr>
<td>( M_{\text{min}} ) [Nm]</td>
<td></td>
</tr>
<tr>
<td>( 4 \times 50 )</td>
<td></td>
</tr>
<tr>
<td>( (150 + 50) )</td>
<td></td>
</tr>
<tr>
<td>( 4 \times 55 )</td>
<td></td>
</tr>
<tr>
<td>( (165 + 55) )</td>
<td></td>
</tr>
<tr>
<td>( 4 \times 67 )</td>
<td></td>
</tr>
<tr>
<td>( (201 + 67) )</td>
<td></td>
</tr>
</tbody>
</table>

| **Shaft Ø** [mm] | 38 |
| **Length** [mm] | 92.5 |
| **Height** [mm] | 261 |
| **Width** [mm]  |      |

For detailed technical data and dimensions, please contact the manufacturers.
ROBA-stop®-Universal
The multifunctional all-round safety brake

Performance Characteristics
- Sensitive braking torque adjustment
- Simple wear re-adjustment
- Designs as positioning brake, holding brake, tacho brake and peak load brake
- Enclosed construction
- Simple installation
- Class of insulation F
- Can be used for 100 % duty cycle
- Short switching times

ROBA-stop® application in a high rack warehouse

Designs
- ROBA-stop®-positioning brake
  Brake as working brakes from movement and offer high positioning and repetitive accuracy.
- ROBA-stop®-holding brake
  Achieve very high braking torques and hold drives safely in position when they are not running.
- ROBA-stop®- tacho brakes
  Feature a centering recess and tapped holes on the back of the brake for mounting a tacho-generator.
- ROBA-stop®-tacho peak load brakes
  Allow a tacho-generator to be mounted and have a special armature disk for high friction work.
- ROBA-stop®- peak load brakes
  Have a special, extremely strong armature disk which allows high friction work.

Technical Data, Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Braking torque 1)</td>
<td>M  [Nm]</td>
</tr>
<tr>
<td>Holding brake</td>
<td>M  [Nm]</td>
</tr>
<tr>
<td>Outer Ø [mm]</td>
<td>59</td>
</tr>
<tr>
<td>Length [mm]</td>
<td>28</td>
</tr>
<tr>
<td>Length peak load brake [mm]</td>
<td></td>
</tr>
</tbody>
</table>

1) Tolerance +40 % / -20 %

For detailed technical data and dimensions, please see catalogue: ROBA-stop® K.800.V_ _ _
ROBA-stop\textsuperscript{®}-S
The waterproof, robust monoblock brake

Performance Characteristics

\begin{itemize}
  \item Completely enclosed and sealed design in Protection IP67
  \item Robust, single-part monoblock housing
  \item All components are corrosion-resistant
  \item High friction work is permitted
  \item Can be used in extreme ambient conditions
  \item Long-distance diagnosis via integration of release monitoring and wear monitoring
  \item Anti-condensation heating system to avoid condensation formation inside the brake
\end{itemize}

Application fields

\begin{itemize}
  \item Harbour/ship/seawater
  \item Outdoor applications
  \item Steel works
  \item Crane systems
  \item Heavy industries
  \item Recycling plants
  \item Environmental technology
\end{itemize}

<table>
<thead>
<tr>
<th>Technical Data, Dimensions</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Braking torque (\text{\textdegree})</td>
<td>M [Nm]</td>
</tr>
<tr>
<td>Shaft Ø</td>
<td>[mm]</td>
</tr>
<tr>
<td>Brake Outer Ø</td>
<td>D [mm]</td>
</tr>
<tr>
<td>Length</td>
<td>L [mm]</td>
</tr>
<tr>
<td>Height of terminal box</td>
<td>H [mm]</td>
</tr>
</tbody>
</table>

1) Tolerance $+40\% / -20\%$

For detailed technical data and dimensions, please see catalogue: ROBA-stop\textsuperscript{®} K.800.V
Electrical Accessories

Functions of the DC Voltage Modules

<table>
<thead>
<tr>
<th>Protection circuit</th>
<th>Safe Brake Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overexcitation (short separation time) and/or power reduction (reduction in coil capacity and temperature)</td>
<td>Variable output voltage</td>
</tr>
<tr>
<td>Fixed output voltage</td>
<td></td>
</tr>
</tbody>
</table>

- **Type 024.000.6**
  - Half-wave Rectifier
  - Page 22
- **Type 025.000.6**
  - Bridge Rectifier
  - Page 22
- **Type 017.000.2**
  - ROBA®-switch
  - Page 23
- **Type 017.110.2**
  - ROBA®-switch 24V
  - Page 24
- **Type 018.000.2**
  - ROBA®-switch
  - Page 25
- **Type 018.100.2**
  - ROBA®-switch 24V
  - Page 25
- **Type 028.100.2**
  - ROBA®-multiswitch plus DC
  - Page 27
- **Type 019.00.2**
  - Spark Quenching Unit
  - Page 28
- **Type 017.000.6**
  - ROBA®-SBCplus
  - Page 29
- **Type 070.000.6**
  - Page 30

Application

- Standard application
- Standard application, preferred for noise-damped brakes
- Allows short separation time
- Allows short separation time + short connection time
- Allows short separation time + consistent controlled output voltage with variable input voltage
- Reductions in switch-off voltage and wear on contacts

For detailed information on our DC voltage modules, please go to: www.mayr.com

Electrical Accessories

For input voltage: 24 VDC max. output current 2.5 A / 5 A no wear on contacts

For input voltages: 24 VDC / 48 VDC max. output current 5 A / 10 A no wear on contacts

Controls and monitors up to two ROBA-stop® 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.

Patent pending.
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)

Order Number

<table>
<thead>
<tr>
<th>Size</th>
<th>1 to 4</th>
<th>4 Half-wave rectifier</th>
<th>5 Bridge rectifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/02</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>02</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0.6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Technical Data

<table>
<thead>
<tr>
<th>Type</th>
<th>Calculation output voltage</th>
<th>Bridge rectifier</th>
<th>Half-wave rectifier</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VDC = VAC x 0.9</td>
<td>VDC = VAC x 0.45</td>
<td></td>
</tr>
<tr>
<td>Max. input voltage ± 10%</td>
<td>U_{AC} [VAC]</td>
<td>230</td>
<td>500</td>
</tr>
<tr>
<td>Max. output voltage</td>
<td>U_{DC} [VDC]</td>
<td>400</td>
<td>600</td>
</tr>
<tr>
<td>Output current ≤ 50°C</td>
<td>I_{IN} [A]</td>
<td>2.5</td>
<td>3.0</td>
</tr>
<tr>
<td>at max. 85°C</td>
<td></td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Max. coil nominal capacity at U_{AC} = 115 VAC ≤ 50°C</td>
<td>P_{N} [W]</td>
<td>260</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>260</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>177</td>
<td>-</td>
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<tr>
<td></td>
<td></td>
<td>177</td>
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<td></td>
<td></td>
<td>1.7</td>
<td>1.8</td>
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<td></td>
<td></td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>U_{AC} = 230 VAC ≤ 50°C</td>
<td>P_{N} [W]</td>
<td>517</td>
<td>416</td>
</tr>
<tr>
<td></td>
<td></td>
<td>312</td>
<td>416</td>
</tr>
<tr>
<td></td>
<td></td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td></td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>U_{AC} = 400 VAC ≤ 50°C</td>
<td>P_{N} [W]</td>
<td>352</td>
<td>432</td>
</tr>
<tr>
<td></td>
<td></td>
<td>324</td>
<td>432</td>
</tr>
<tr>
<td></td>
<td></td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td></td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>U_{AC} = 500 VAC ≤ 50°C</td>
<td>P_{N} [W]</td>
<td>400</td>
<td>540</td>
</tr>
<tr>
<td></td>
<td></td>
<td>540</td>
<td>540</td>
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<td></td>
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<td>400</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>U_{AC} = 600 VAC ≤ 50°C</td>
<td>P_{N} [W]</td>
<td>416</td>
<td>1080</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<td>1080</td>
<td>-</td>
</tr>
<tr>
<td>Peak reverse voltage</td>
<td>[V]</td>
<td>1600</td>
<td>648</td>
</tr>
<tr>
<td>Rated insulation voltage</td>
<td>U_{RMS} [V_{RMS}]</td>
<td>320</td>
<td>-</td>
</tr>
<tr>
<td>Pollution degree (insulation coordination)</td>
<td>1 1 1 1 1 1 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Device Fuses</td>
<td>FF 3.15 A</td>
<td>FF 3.15 A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FF 4 A</td>
<td>FF 5 A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FF 5 A</td>
<td>FF 5 A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FF 5 A</td>
<td>FF 5 A</td>
<td></td>
</tr>
<tr>
<td>Protection</td>
<td>IP65 components, encapsulated / IP20 terminals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminals</td>
<td>Cross-section 0.14 – 1.5 mm² (AWG 26-14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 up to +85</td>
<td>-40 up to +85</td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-25 up to +85</td>
<td>-40 up to +85</td>
<td></td>
</tr>
<tr>
<td>Conformity markings</td>
<td>UL, CE</td>
<td>UL, CE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UL, CE</td>
<td>UL, CE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UL, CE</td>
<td>UL, CE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UL, CE</td>
<td>UL, CE</td>
<td></td>
</tr>
<tr>
<td>Installation conditions</td>
<td>The installation position can be user-defined. Please ensure sufficient heat dissipation and air convection! Do not install near to sources of intense heat!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 \( i_{\text{rms}} \): 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 \( R_{\text{ext}} \).

**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 \( R_{\text{ext}} \) for bridge rectification time adjustment

**Technical Data**

- Input voltage
- Output voltage
- Protection: IP65 components, IP20 terminals, IP10 \( R_{\text{ext}} \)
- Terminal nom. cross-section: 1.5 mm² (AWG 22-14)
- Ambient temperature: -25 °C up to + 70 °C
- Storage temperature: -40 °C up to + 70 °C

**ROBA®-switch Sizes, Table 1**

<table>
<thead>
<tr>
<th>Size</th>
<th>10</th>
<th>20</th>
<th>10</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>017.000.2</td>
<td>017.100.2</td>
<td>017.000.2</td>
<td>017.100.2</td>
</tr>
<tr>
<td>Input voltage ±10% ( U_{\text{AC}} ) [VAC]</td>
<td>100–250</td>
<td>200–500</td>
<td>100–250</td>
<td>200–500</td>
</tr>
<tr>
<td>Output voltage ( U_{\text{bridge}} ) [VDC]</td>
<td>90–225</td>
<td>180–450</td>
<td>90–225</td>
<td>180–450</td>
</tr>
<tr>
<td>Output voltage ( U_{\text{half-wave}} ) [VDC]</td>
<td>45–113</td>
<td>90–225</td>
<td>45–113</td>
<td>90–225</td>
</tr>
<tr>
<td>Output current at ( \leq 45 °C ) ( i_{\text{FAG}} ) [A]</td>
<td>2.0</td>
<td>1.8</td>
<td>3.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Output current at max. 70 °C ( i_{\text{FAG}} ) [A]</td>
<td>1.0</td>
<td>0.9</td>
<td>1.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Conformity markings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Order Number**

\[ \_ / 0 1 7 . \_ 0 0 . 2 \]

- UL-approved
  - 0 up to 300 V
  - 1 up to 500 V
ROBA®-switch Type 017.110.2

**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 017.110.2**

- Integrated DC-side disconnection (shorter connection time t₁)
- Consumer operation with overexcitation or power reduction
- Input voltage: 100 – 500 VAC
- Maximum output current I_{rms}: 1.5 A
- UL-approved

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

**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 U_{O} output voltage to half-wave rectification U_{H} output voltage. The bridge rectification time can be modified from 0.05 to 2 seconds by exchanging the external resistor (R_{ext}).

In addition, the ROBA®-switch features integrated 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 DC-side disconnection is deactivated by fitting a bridge between the terminals 3 and 4, and the coil is de-energised 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 – 10x).

**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 terminals, IP10 R_{ext} |
| Terminal nom. cross-section | 1.5 mm² (AWG 22-14) |
| Ambient temperature | -25 °C up to +70 °C |
| Storage temperature | -40 °C up to +70 °C |

**Order Number**

___ / 0 1 7 . 1 1 0 . 2

**Dimensions (mm)**

**ROBA®-switch Sizes, Table 1**

<table>
<thead>
<tr>
<th>Size</th>
<th>10</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>U_{I} [VAC]</td>
<td>100 – 250</td>
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<tr>
<td>Output voltage</td>
<td>U_{O} [VDC]</td>
<td>90 – 225</td>
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<tr>
<td></td>
<td>U_{H} [VDC]</td>
<td>45 – 113</td>
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<tr>
<td>Output current</td>
<td>I_{max} [A] at ≤ 45 °C</td>
<td>1.5</td>
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<tr>
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<td>I_{rms} [A] at max. 70 °C</td>
<td>0.75</td>
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<td>Conformity markings</td>
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</tbody>
</table>

**Accessories:**

Mounting bracket set for 35 mm mounting rail acc. EN 60715:

Article No. 1802911
ROBA®-switch 24V Type 018.000.2

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 018.000.2

• Consumer operation with overexcitation or power reduction
• Integrated DC-side disconnection (shorter connection time t₁)
• Input voltage: 24 VDC
• Max. output current Iᵣms: 2.5 A

Dimensions (mm)

Function

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 and holding voltage can be switched.

Electrical Connection (Terminals)

1 Control input
2 + 3 Input voltage, ground
4 + 5 Input voltage +24V
6 Output voltage +
7 Output voltage -
8 + 9 Selection of overexcitation time
9 + 10 Selection of holding voltage

Technical Data

Input voltage Uᵢ
24 VDC (18 – 32 VDC) SELV/PELV

Output voltage Uₒ
Input voltage Uᵢ, see Table 1

Output current Iᵣms, at ≤ 45 °C
2.5 A

Output current Iᵣms, at max. 70 °C
1.25 A

Protection
IP65 components, IP20 terminals

Terminal nominal cross-section
1.5 mm² (AWG 22-14)

Ambient temperature
-25 °C up to +70 °C

Storage temperature
-40 °C up to +70 °C

Order Number

Example:
Order number 1 / 018.000.2 and article number 8237581
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 DC-side disconnection (shorter connection time t₁)
- Input voltage: 24 VDC
- Max. output current I: 5 A
- UL-approved

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

Function
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 ¼, ⅓, ½ and ⅔ 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 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 – 10x).

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 Uᵢ    24 VDC + 20 % / - 10 %
SELV/PELV
Output voltage Uₒ    Input voltage Uᵢ
Output voltage U₉     ¼, ⅓, ½, ⅔ x Uᵢ ± 20 %
can be selected
via a DIP switch
Output current Iₒ₉₈ at ≤ 45 °C 5.0 A
Output current Iₒ₉₈ at max. 70 °C 2.5 A
Protection    IP00
Terminal nominal cross-section 1.5 mm² (AWG 22-14)
Ambient temperature -25 °C up to +70 °C
Storage temperature -40 °C up to +70 °C

Order Number
__/018.100.2

Size 1
ROBA®-brake-checker plus DC Type 028.100.2

Application
ROBA®-brake-checker plus DC monitoring 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 plus DC 028.100.2
- Consumer operation with overexcitation and/or power reduction
- Controlled holding voltage (on reduction)
- Simple adjustment of holding voltage and overexcitation time via a DIP switch
- Fast or slow disconnection
- Armature disk motion recognition (release and drop-out recognition)
- Preventative function monitoring (wear recognition and error recognition, functional reserve)
- Wide input voltage range
- Maximum output current I = 10 A / 5 A
- Maximum overexcitation current I_o = 20 A / 10 A
- Automatic reduction to holding voltage U_h
- Electrical isolation of performance terminal and control terminal

Function
The ROBA®-brake-checker plus DC monitoring 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 automatic voltage reduction mode adjusts to the pre-set reduction voltage. The automatic voltage reduction mode can be switched off using a DIP switch.

In case of switched-off automatic voltage reduction mechanism, 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)
4 VDC (auxiliary voltage 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 mm², (AWG 20-12)
Signal terminals 1.5 mm², (AWG 30-14)
Ambient temperature -30 °C up to +70 °C
Storage temperature -40 °C up to +105 °C

Order Number
__ / 0 2 8 . 1 0 0 . 2
**ROBA®-multiswitch Type 019._00.2**

**Application**

ROBA®-multiswitch 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®-multiswitch 019._00.2**

- Consistently controlled output voltage in the entire input voltage range
- Consumer operation with overexcitation or power reduction
- Input voltage: 100 – 500 VAC
- Max. output current \( I_{\text{RMS}} \): 2 A; 4.5 A
- UL-approved

**Dimensions (mm)**

![Dimensions diagram]

**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
- Frequency 50 – 60 Hz
- Output voltage see Table 1
- Output current
  - Type 019.100.2: 2 A bei \( \leq 45 \) °C; 1 A at max. 70 °C
  - Type 019.200.2: 4.5 A bei \( \leq 45 \) °C; 2.25 A at max. 70 °C
- Protection IP65 components, IP20 terminals, IP20 DIP switch
- Terminal nom. cross-section 1.5 mm² (AWG 22-14)
- Ambient temperature -25 °C up to +70 °C
- Storage temperature -40 °C up to +70 °C

**Order Number**

<table>
<thead>
<tr>
<th>Size</th>
<th>Type</th>
<th>Input voltage *</th>
<th>Output voltage *</th>
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<td>019.100.2</td>
<td>100 – 275</td>
<td>90</td>
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<td>019.100.2</td>
<td>200 – 500</td>
<td>180</td>
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<td>200 – 500</td>
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<td>019.100.2</td>
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<td>230</td>
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</tr>
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<td></td>
<td>019.100.2</td>
<td>300 – 500</td>
<td>240</td>
</tr>
</tbody>
</table>

* On special designs, deviating values are possible. The values stated on the Type tag are decisive.
** \( U_{\text{O}} \) : overexcitation voltage; \( U_{\text{H}} \) : Holding voltage

**Example:**
Order number 20 / 019.100.2 and article number 8225580
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 VDE 0580 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

Technical Data
Input voltage max. 300 VDC, max. 615 Vpeak (rectified voltage 400 VAC, 50/60 Hz)
Switch-off energy max. 9 J / 2 ms
Power dissipation max. 0.1 Watt
Rated voltage nc terminals 250 V
Protection IP65 components, IP20 terminals
Ambient temperature -25 °C up to +85 °C
Storage temperature -40 °C up to +85 °C
Max. conductor cross-section 2.5 mm², (AWG 26-12)
Max. terminal tightening torque 0.5 Nm

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

Dimensions (mm)

Order Number
___ / 0 7 0 0 0 0 0 . 6

Size
1
ROBA®-SBCplus
The safe brake control - for use up to PLe and SIL CL3

Application
The safe brake control ROBA®-SBCplus is used to control and monitor two ROBA-stop® 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:

- Safe electronic switching of two brakes
- Input voltage power circuit 24 - 48 VDC
- Connection for up to 2 brakes up to 4.5 A / 24 VDC or 2.25 A / 48 VDC (108 W)
- Output voltage (holding voltage) can be selected as 6, 8, 12, 24, 48 VDC
  → Power reduction, temperature reduction, electricity costs reduction
- Overexcitation time configurable
- Feedback inputs release monitoring for proximity switch or microswitch
- 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:
  Contactor, 24 VDC fast acting rectifier, safety relay, spark quenching
- Safe holding voltage and overexcitation time
- Safety functions are programmed into the ROBA®-SBCplus and only have to be parameterised
  → Plausibility check integrated and must not be programmed and validated
- Applicable up to PLe and SIL CL3,
  Type examination TÜV Süd
  (German Technical Inspectorate)

Maximum switching reliability
The brake control must safely interrupt the current in the magnetic coil on switching off the brake. The ROBA®-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.
Product Summary

Torque Limiters/Overload Clutches

- **EAS®-Compact®/EAS®-NC/EAS®-smartic®**
  Positive locking and completely backlash-free torque limiting clutches
- **EAS®-reverse**
  Reversing, re-engaging torque limiter
- **EAS®-element clutch/EAS®-elements**
  Load-disconnecting protection against high torques
- **EAS®-axial**
  Exact limitation of tensile and compressive forces
- **EAS®-Sp/EAS®-Sm/EAS®-Zr**
  Load-disconnecting torque limiting clutches with switching function
- **ROBA®-slip hub**
  Load-holding, frictionally locked torque limiting clutches
- **ROBA®-contitorque**
  Magnetic continuous slip clutches
- **EAS®-HSC/EAS®-HSE**
  High-speed torque limiters for high-speed applications

Shaft Couplings

- **smartflex®/primeflex®**
  Perfect precision couplings for servo and stepping motors
- **ROBA®-ES**
  Backlash-free and damping for vibration-sensitive drives
- **ROBA®-DS/ROBA®-D**
  Backlash-free, torsionally rigid all-steel couplings
- **ROBA®-DSM**
  Cost-effective torque-measuring couplings

Electromagnetic Brakes/Clutches

- **ROBA-stop® standard**
  Multifunctional all-round safety brakes
- **ROBA-stop®-M motor brakes**
  Robust, cost-effective motor brakes
- **ROBA-stop®-S**
  Water-proof, robust monoblock brakes
- **ROBA®-duplastop®/ROBA®-twinstop®/ROBA®-stop®-silenzio®**
  Doubly safe elevator brakes
- **ROBA®-diskstop®**
  Compact, very quiet disk brakes
- **ROBA®-topstop®**
  Brake systems for gravity loaded axes
- **ROBA®-linearstop**
  Backlash-free brake systems for linear motor axes
- **ROBA®-guidestop**
  Backlash-free holding brake for profield rail guides
- **ROBATIC®/ROBA®-quick/ROBA®-takt**
  Electromagnetic clutches and brakes, clutch brake units

DC Drives

- **tendo®-PM**
  Permanent magnet-excited DC motors
## Service Germany/Austria

**Baden-Württemberg**
Eisslinger Straße 7
70771 Leinfelden-Echterdingen
Tel.: 07 11/78 26 26 40
Fax: 07 11/78 26 26 39

**Bavaria**
Industriestraße 51
82194 Gröbenzell
Tel.: 0 81 42/50 19 80-7

**Chemnitz**
Bornaer Straße 205
09114 Chemnitz
Tel.: 03 71/4 74 18 98
Fax: 03 71/4 74 18 95

**Franconia**
Unter Markt 9
91217 Hersbruck
Tel.: 0 91 51/81 48 64
Fax: 0 91 51/81 62 45

**Kamen**
Herbert-Wehner-Straße 2
59174 Kamen
Tel.: 0 23 07/24 26 79
Fax: 0 23 07/24 26 74

**North**
Schiefer Brink 8
32699 Extertal
Tel.: 0 57 54/9 20 77
Fax: 0 57 54/9 20 78

**Rhine-Main**
Kreuzgrundweg 3a
36100 Petersberg
Tel.: 06 61/96 21 02 15

**Austria**
Pummerinplatz 1, TIZ I, A27
4490 St. Florian, Austria
Tel.: 0 72 24/2 20 81-12
Fax: 0 72 24/2 20 81 89

## Branch Offices

**China**
Mayr Zhangjiagang
Power Transmission Co., Ltd.
Fuxin Road No.7, Yangshe Town
215637 Zhangjiagang
Tel.: 05 12/58 91-75 67
Fax: 05 12/58 91-75 66
info@mayr-ptc.cn

**Great Britain**
Mayr Transmissions Ltd.
Valley Road, Business Park
Keighley, BD21 4LZ
Tel.: 0 1535/66 39 00
Fax: 0 1535/66 32 61
sales@mayr.co.uk

**France**
Mayr France S.A.S.
Z.A.L. du Minopole
Rue Nungesser et Coli
62160 Bully-Les-Mines
Tel.: 03.21.72.91.91
Fax: 03.21.29.71.77
contact@mayr.fr

**Switzerland**
Mayr Kupplungen AG
Tobeläckerstraße 11
8212 Neuhausen am Rheinfall
Tel.: 0 52/6 74 08 70
Fax: 0 52/6 74 08 75
info@mayr.ch

**USA**
Mayr Corporation
10 Industrial Avenue
Mahwah
NJ 07430
Tel.: 0 201/4 45-72 10
Fax: 0 201/4 45-80 19
info@mayrcorp.com

**Turkey**
Representative Office Turkey
Kucukbakkalkoy Mah.
Brandom Residence R2
Blok D:254
34750 Atasehir - Istanbul, Turkey
Tel.: 02 16/2 32 20 44
Fax: 02 16/5 04 41 72
info@mayr.com.tr

## Representatives

**Australia**
Drive Systems Pty Ltd.
8/32 Melverton Drive
Hallam, Victoria 3803
Australien
Tel.: 0 3/97 96 48 00
info@drivesystems.com.au

**India**
National Engineering Company (NENCO)
J-225, M.I.D.C.
Bhosari Pune 411026
Tel.: 0 20/27 13 00 29
nenco@nenco.org

**Japan**
MATSUMI Corporation
2-4-7 Azabudai
Minato-ku
Tokyo 106-8641
Tel.: 03/35 86-41 41
Fax: 03/35 24 24 10
k.goto@matsui-corp.co.jp

**Netherlands**
Grongeman BV
Aamristraat 11
7554 TV Hengelo OV
Tel.: 074/2 55 11 40
Fax: 074/2 55 11 09
aandrijftechniek@grongeman.nl

**Poland**
Wanex Sp. z o.o.
ul. Pozarskiego, 28
04-703 Warszawa
Tel.: 0 22/6 15 90 80
Fax: 0 22/6 15 61 80
wanex@wanex.com.pl

**South Korea**
Mayr Korea Co. Ltd.
15, Yeondeok-ro 9beon-gil
Seongsan-gu
51571 Changwon-si
Gyeongsangnam-do, Korea
Tel.: 0 55/2 62-40 24
Fax: 0 55/2 62-40 25
info@mayrkorea.com

**Taiwan**
German Tech Auto Co., Ltd.
No. 28, Fenggong Zhong Road,
Shengang Dist.,
Taichung City 429, Taiwan R.O.C.
Tel.: 04/25 15 05 66
Fax: 04/25 15 24 13
abby@zfgta.com.tw

**Czech Republic**
BMC - TECH s.r.o.
Hviezdoslavova 29 b
62700 Brno
Tel.: 05/45 22 60 47
Fax: 05/45 22 60 48
info@bmctech.cz

More representatives:
Belgium, Brazil, Canada, Colombia, Croatia, Denmark, Finland, Greece, Hongkong, Hungary, Indonesia, Israel, Luxembourg, Malaysia, Mexico,New Zealand, Norway, Philippines, Portugal, Romania, Russia, Slovakia, Slovenia, South Africa, Spain, Sweden, Thailand

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