HeavyDutySwitch HDS
The modular switchgear platform for heavy industry
The new switchgear generation is based on a standardised housing concept, either in plastic (thermosetting resin) or grey cast iron.

At functional level, both emergency stop and general position monitoring applications can be mapped. A kit of various actuating elements is available, according to the specific application, for position monitoring. To enable better diagnostics, all variants can be optionally equipped with a two-wire field bus solution or an indicator lamp. The requirements of a global product family are satisfied by a range of international approvals.

In addition, all switchgear satisfy the requirements for safety switches with positive break contacts in accordance with IEC 60957-5-1 as well as form fit over the toothed shaft between the basic component and all actuating elements.
The flexible and modular fourth generation switchgear platform for the widest range of applications in heavy industry

Switchgear can be used in emergency-stop applications or for position monitoring of moving machines and plant parts for reliable shut-off up to Performance Level PL e.

Protection classes IP66 and IP67 ensure the preconditions for use of the switchgear family under extreme ambient conditions.

Typical applications include:
- Emergency-stop shut-off on conveyor systems
- Belt alignment monitoring on material handling plants
- Position monitoring in steel production processes
- Fill level monitoring at transfer points or silos
- Belt crack monitoring on conveyor belts
- Slack rope monitoring for cranes or transport equipment
1. Select housing variant

- cast iron
  - BS655-xxx

- thermosetting resin
  - BS656-xxx

2. Combination with function unit

- BELT CONTROL
  - BS-B30-150-RVA
  - BS-B50-150-RVA
  - BS-B90-150-RVA

- POSITION CONTROL
  - BS-H50-110-RKS
  - BS-H50-110-RVA

- LEVEL CONTROL
  - BS-N95-x00-RKS (under preparation)

3. Options

- SIGNAL CONTROL
  - BS65x-Z22-DN
  - BS65x-xxx--G

HDS – the modular switchgear platform
**Pull-wire emergency stop switches**

<table>
<thead>
<tr>
<th>Cast Iron</th>
<th>Thermosetting Resin</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS656-Z22</td>
<td>RS656-Z22</td>
</tr>
</tbody>
</table>

**Specifications**
- Ambient temperature: -40 °C to +70 °C
- IP66: 100 l/min, 3 m, 3 min
- IP67: 1 m, 30 min

**Models**
- RS65x-Z22
- RS65x-Z22-DS
- RS65x-Z22-G

**Approvals**
- up to PL e Cat. 4
- ISO 13849-1
- Fieldbus
- Installationbus
- Visual Alarm

**Under Preparation**
- up to PL e Cat. 4
- ISO 13849-1
Flexible and customised solutions
BS655/BS656

Basic switch – Position Control

The basic switch version is modular in structure and is supplied without actuating elements. A range of functions can be mapped in combination with a specific function unit.

**Belt alignment switches** monitor belt alignment in material handling plants and are arranged in pairs on either side of the belt, close to the drive rollers and pulleys.

In the event of deviations on the conveyor belt, a staggered signal is generated as a pre-warning or to shut off the conveyor belt. This helps to prevent unwanted downtime as a result of damage.

**Position switches** are used to detect the position of and to monitor moving parts on railbound cranes, machinery and plants.

**Level switches** monitor the fill level at conveyor transfer stations, silos and bunkers.

**Slack-wire switches** monitor the wire tension on crane systems or wire-mounted transport equipment.
Connection

The new HDS series includes a closed cover over switching shafts, cams and switch contacts to prevent contamination from dust and dirt when installed in challenging conditions.

The key contacts in the switch elements are routed to a central CAGE CLAMP® connecting terminal. As such, pull-wire emergency stop switches or belt alignment switches, amongst others, can be easily and efficiently connected, including with an indicator lamp, if required.

Safe or standard two-wire bus systems can also be used for signal evaluation as an option. In that case, only the input and output signal wires need to be connected, reducing assembly and connection times considerably.

The integrated cable guide also helps to ensure easy and rapid installation.

Adjustable switching points

The user can adjust the pre-set switching points of the basic switches between 10° and 35° at 1 increments. To do this, the dial on the respective switching element needs to be moved into the desired end position.
**Flexible and customised solutions**
**BS655/BS656**

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**Modular selection (construction kit)**

**Basic switch**

The basic switch version is modular in structure and is supplied without actuating elements. A range of functions can be mapped through combination with a specific actuating element.

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**Ordering code**

**Basic switch**

**EX-BS655-Z22-DN-G-2GD**

- **EX-versions (Metal enclosure only)**
  - EX-BS655-…-2GD: Zone 1 (Ex ib), Zone 21 (Ex tb)
  - non-EX version (Standard)

- **Housing material**
  - 655: Metal enclosure (Grey cast iron)
  - 656: Thermosetting resin

- **Switching elements**
  - Z22: Snap action, 2 NO contacts / 2 NC contacts
  - T22: Slow action, 2 NO contacts / 2 NC contacts
  - Z33: Snap action, 3 NO contacts / 3 NC contacts
  - T33: Slow action, 3 NO contacts / 3 NC contacts

- **Indicator lamp**
  - Included in standard version
  - G024: Indicator lamp 24 VDC, red
  - G115: Indicator lamp 115 VAC, red
  - G230: Indicator lamp 230 VAC, red

- **Network options**
  - not included in standard version
  - DN: Dupline non safe

- **Contact design**
  - Silver contacts (Standard)
  - A1: Gold-plated contacts 0.3 µm
  - A2: Gold-plated contacts 3 µm
  - under preparation
Modular selection (construction kit)

Actuator heads

- Position switch lever (Roller diameter 50 mm)
  - H50-110-RVA Stainless steel lever with stainless steel roller
  - H50-110-RKS Stainless steel lever with plastic roller

- Belt alignment lever (running surface 150 mm)
  - B30-150-RVA Stainless steel lever with Ø 30 mm stainless steel roller
  - B50-150-RVA Stainless steel lever with Ø 50 mm stainless steel roller
  - B90-150-RVA Stainless steel lever with Ø 90 mm stainless steel roller

- Slack-wire switch lever (running surface 150 mm)
  - S30-150-RVA Stainless steel lever with Ø 30 mm stainless steel roller

- Level switch lever (95 x 140 mm)
  - N95-300-RKS Stainless steel lever, 300 mm, with plastic plate
  - N95-400-RKS Stainless steel lever, 400 mm, with plastic plate

Ordering code

Actuator heads

- BS-B30-150-RVA

- BS-H50-110-RVA up to 3 m/s
- BS-B30-150-RVA up to 6 m/s
- BS-B50-150-RVA up to 12 m/s
- BS-B90-150-RVA
- N95-x00-RKS up to 3 m/s
- BS-H50-110-RVAS-H50-110-RKS BS-B50-150-RVA
- up to 6 m/s
- BS-B90-150-RVA
- under preparation
Pull-wire emergency stop switches
RS655/RS656

The two-sided pull-wire emergency stop switches are designed for lengths of wire up to 100 m on each side, under optimal conditions. Pull-wire emergency stop switches with wire breakage detection ensure a reliable emergency-stop function on material handling plants. If actuated, two-sided pull-wire emergency stop switches latch in the emergency-stop position and can only be unlocked when the release device is actuated. All devices satisfy the requirements of international standards IEC 60947-5-5, ISO 13850 and EN 620.

In conjunction with an appropriate safety evaluation or a safe network, the pull-wire emergency stop switch can be used up to Performance Level PL e in safety applications.

As a status display, the pull-wire emergency stop switch is equipped with a mechanical status indicator that is visible when triggered. The switch can be reset with the blue RESET button integrated into the trigger lever.

Status display
Blue reset button
Length of wire 100 m in both directions
Ordering code
Pull-wire emergency stop switches

EX-RS655-Z22A1-DS-G-2GD

EX-versions (Metal enclosure only)
- non-EX version (Standard)
- EX-RS655-…-2GD Zone 1 (Ex ib), Zone 21 (Ex tb)

Housing material
- 655 Metal enclosure (Grey cast iron)
- 656 Thermosetting resin

Switching elements
- Z22 Snap action, 2 NO contacts / 2 NC contacts

Indicator lamp RS656
- Included in standard version
- G024 Indicator lamp 24 VDC, red
- G115 Indicator lamp 115 VAC, red
- G230 Indicator lamp 230 VAC, red

Network options
- not included in standard version
- DS DuplineSafe

Contact design
- Silver contacts (Standard)
- A1 Gold-plated contacts 0.3 µm
- A2 Gold-plated contacts 3 µm
  under preparation
## Technical data

### Key Features

<table>
<thead>
<tr>
<th>Pull-wire emergency stop switch RS</th>
<th>Basic switch BS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Symmetry thanks to centrally located shaft</td>
<td>• Platform concept with different function units</td>
</tr>
<tr>
<td>• Central connection terminal</td>
<td>• Symmetry thanks to toothed, centrally located shaft</td>
</tr>
<tr>
<td>• Mechanical switching position indication</td>
<td>• Central connection terminal</td>
</tr>
<tr>
<td>• Maximum length of wire 2 x 100 m</td>
<td>• Different actuating elements</td>
</tr>
<tr>
<td>• Wire pull and wire breakage detection</td>
<td>• Actuating elements adjustable in 10° steps</td>
</tr>
<tr>
<td>• Switching point setting</td>
<td></td>
</tr>
</tbody>
</table>

### Technical features

#### Electrical characteristics

<table>
<thead>
<tr>
<th></th>
<th>2 NO / 2 NC</th>
<th>Up to 3 NO / 3 NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of contacts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. switching capacity</td>
<td>12 VDC / 1 mA</td>
<td>12 VDC / 1 mA</td>
</tr>
<tr>
<td>Thermal test current $I_{th}$</td>
<td>6 A</td>
<td>6 A</td>
</tr>
<tr>
<td>Switching principle</td>
<td>Snap action</td>
<td>Snap- or slow action</td>
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</tbody>
</table>

#### Mechanical data

<table>
<thead>
<tr>
<th></th>
<th>2 x M25 x 1.5</th>
<th>2 x M25 x 1.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable entry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable section</td>
<td>0.5 … 2.5 mm²</td>
<td>0.5 … 2.5 mm²</td>
</tr>
<tr>
<td>(central connection terminal)</td>
<td>(central connection terminal)</td>
<td></td>
</tr>
<tr>
<td>Mechanical life</td>
<td>100,000</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>234 x 108 x 163 mm</td>
<td>234 x 108 x 143 mm</td>
</tr>
<tr>
<td>Housing material</td>
<td>Grey cast iron or thermosetting resin</td>
<td>Grey cast iron or thermosetting resin</td>
</tr>
</tbody>
</table>

#### Ambient conditions

<table>
<thead>
<tr>
<th></th>
<th>–40 °C … +70 °C</th>
<th>–40 °C … +70 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection class</td>
<td>IP66, IP67</td>
<td>IP66, IP67</td>
</tr>
<tr>
<td>Network connection (optional)</td>
<td>DuplineSafe</td>
<td>Dupline</td>
</tr>
</tbody>
</table>

### Safety classification

<table>
<thead>
<tr>
<th></th>
<th>200,000</th>
<th>2,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_{105}$ NC contact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R_{105}$ Normally open contact (NO)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approvals (Standard)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approvals (EX)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EX zones (Metal enclosure only)</td>
<td>1 (Ex ib), 21 (Ex tb)</td>
<td>1 (Ex ib), 21 (Ex tb)</td>
</tr>
<tr>
<td>Approvals (under preparation)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Accessories

### Pull-wire emergency stop switches

<table>
<thead>
<tr>
<th>#</th>
<th>Accessory</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wire rope</td>
<td>With red PVC sheath, Ø total 5 mm, Ø of the steel core 3 mm</td>
<td>on request</td>
</tr>
<tr>
<td>2</td>
<td>Eyebolt or anchoring hook</td>
<td>BM 10 x 40, BM 8 x 70 stainless steel, Included in delivery: Eyebolt with nut</td>
<td>101084928, 101192471</td>
</tr>
<tr>
<td>3</td>
<td>Tension spring</td>
<td>Stainless steel tension spring with elongation limiter</td>
<td>103032772</td>
</tr>
<tr>
<td>4</td>
<td>Wire clamp</td>
<td>3 mm stainless steel, 5 mm stainless steel</td>
<td>101203477, 101203478</td>
</tr>
<tr>
<td>5</td>
<td>Tensioner</td>
<td>Tensioner M6 (Galvanised steel), Setting range 145 ... 225 mm, ACC-TBLE-RVA (Stainless steel), Setting range 180 ... 250 mm</td>
<td>101087930, 103031494</td>
</tr>
<tr>
<td>6</td>
<td>Wire tensioner S 900</td>
<td>Wire tensioner S 900, Smooth and time-saving adjustment</td>
<td>101186704</td>
</tr>
<tr>
<td>7</td>
<td>Wire thimble</td>
<td>3 mm stainless steel, 5 mm stainless steel</td>
<td>101203472, 101203476</td>
</tr>
</tbody>
</table>
## Accessories

<table>
<thead>
<tr>
<th>Eyebolt</th>
<th>Anchoring hook</th>
<th>Anchoring hook</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Eyebolt" /></td>
<td><img src="image2.png" alt="Anchoring hook" /></td>
<td><img src="image3.png" alt="Anchoring hook" /></td>
</tr>
<tr>
<td>BM 10 x 40</td>
<td>101084928</td>
<td><strong>Galvanised steel</strong></td>
</tr>
<tr>
<td>BM 8 x 70 stainless steel</td>
<td>101192471</td>
<td>ACC-EBLT-M8 103031495</td>
</tr>
<tr>
<td>Included in delivery: Eyebolt with nut</td>
<td></td>
<td>ACC-RBLT-M10 103031498</td>
</tr>
<tr>
<td>Stainless steel</td>
<td>103031496</td>
<td>ACC-EBLT-M8-RVA 103031499</td>
</tr>
<tr>
<td>Galvanised steel</td>
<td>Included in delivery: anchoring hooks incl. 2 nuts and washers</td>
<td>Included in delivery: anchoring hooks incl. 2 nuts and washers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wire clamp</th>
<th>Duplex wire clamp</th>
<th>Egg-shaped wire clamp</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4.png" alt="Wire clamp" /></td>
<td><img src="image5.png" alt="Duplex wire clamp" /></td>
<td><img src="image6.png" alt="Egg-shaped wire clamp" /></td>
</tr>
<tr>
<td>Wire clamp</td>
<td>Duplex wire clamp 3 mm (stainless steel)</td>
<td>Egg-shaped wire clamp, size 3</td>
</tr>
<tr>
<td>3 mm stainless steel</td>
<td>101203477</td>
<td></td>
</tr>
<tr>
<td>5 mm stainless steel</td>
<td>101203478</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wire thimbles</th>
<th>Pulley</th>
<th>Tensioning Jack</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image7.png" alt="Wire thimbles" /></td>
<td><img src="image8.png" alt="Pulley" /></td>
<td><img src="image9.png" alt="Tensioning Jack" /></td>
</tr>
<tr>
<td>Wire thimble</td>
<td>Pulley (stainless steel) to guide the wire rope where the path is not a straight line</td>
<td>Galvanised steel</td>
</tr>
<tr>
<td>3 mm stainless steel</td>
<td>According to ISO 13850, pulleys may only be mounted in such a way that the complete length of the pull-wire is visible.</td>
<td></td>
</tr>
<tr>
<td>5 mm stainless steel</td>
<td></td>
<td>Tensioner M6 101087930</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Setting range 145 ... 225 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC-TBLE-RVA 103031494</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Setting range 180 ... 250 mm</td>
</tr>
</tbody>
</table>

For detailed information on selection, visit [www.schmersal.net](http://www.schmersal.net).
## Accessories

<table>
<thead>
<tr>
<th>Tension spring</th>
<th>Wire rope</th>
<th>Wire unit complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>103032772</td>
<td>103006012</td>
<td>103006010</td>
</tr>
</tbody>
</table>

- Stainless steel tension spring with elongation limiter
- For Pull-wire emergency stop switch RS65x
- Wire rope
- With red PVC sheath
- Ø total 5 mm
- Ø of the steel core 3 mm
- Wire unit complete
- Ready-to-fit
- Included in delivery: 1 Wire rope; 2 Wire clamps; 1 Duplex wire clamp; 1 Wire thimble; 1 Eyebolt

<table>
<thead>
<tr>
<th>S 900 rope tensioner</th>
<th>ACC-CGLD-M25-MS</th>
<th>103031491</th>
</tr>
</thead>
<tbody>
<tr>
<td>101186704</td>
<td>ACC-CGLD-M25-MS</td>
<td>103031489</td>
</tr>
</tbody>
</table>

- S 900 rope tensioner
- Smooth and time-saving adjustment
- Cable gland M25 x 1.5
- Brass, nickel-plated
- For RS655/BS655
- Authorised cable diameter 9 … 16 mm
- Tightening torque 8 Nm
- Locking screw M25 x 1.5
- Brass, nickel-plated
- For RS655/BS655
- Tightening torque 8 Nm

<table>
<thead>
<tr>
<th>ACC-CGLD-P-M25</th>
<th>ACC-CGLD-P-M25-MS</th>
<th>103032469</th>
</tr>
</thead>
</table>

- Cable gland M25 x 1.5
- Thermoplastic with pressure compensation element
- For RS656/BS656
- Authorised cable diameter 9 … 17 mm
- Tightening torque 8 Nm
- Cable gland M25 x 1.5
- Brass, nickel-plated with pressure compensation element
- For RS655/BS655
- Authorised cable diameter 9 … 17 mm
- Tightening torque 8 Nm
- Emergency-stop release cord marking label
- 50 pieces, according to ISO 13850

For detailed information on selection, visit [www.schmersal.net](http://www.schmersal.net).
The Schmersal Group

In the demanding field of machine safety, the owner-managed Schmersal Group is one of the international market leaders. The company, which was founded in 1945, has a workforce of about 2000 people and seven manufacturing sites on three continents along with its own companies and sales partners in more than 60 countries.

Customers of the Schmersal Group include global players from the area of mechanical engineering and plant manufacturing as well as operators of machinery. They profit from the company’s extensive expertise as a provider of systems and solutions for machine safety. Furthermore, Schmersal specialises in various areas including food & beverage, packaging, machine tools, lift switchgear, heavy industry and automotive.

A major contribution to the systems and solutions offered by the Schmersal Group is made by tec.nicum with its comprehensive range of services: certified Functional Safety Engineers advise machinery manufacturers and machinery operators in all aspects relating to machinery and occupational safety – and do so with product and manufacturer neutrality. Furthermore, they design and realise complex solutions for safety around the world in close collaboration with the clients.

Safety Products
- Safety switches and sensors, solenoid interlocks
- Safety controllers and safety relay modules, safety bus systems
- Optoelectronic and tactile safety devices
- Automation technology: position switches, proximity switches

Safety Systems
- Complete solutions for safeguarding hazard areas
- Individual parametrisation and programming of safety controllers
- Tailor-made safety technology – be it for individual machines or a complex production line
- Industry-specific safety solutions

Safety Services
- tec.nicum academy – Seminars and training
- tec.nicum consulting – Consultancy services
- tec.nicum engineering – Design and technical planning
- tec.nicum integration – Execution and installation

The details and data referred to have been carefully checked. Subject to technical amendments and errors.

www.schmersal.com