Insert switch with connection cores
This switching element can be universally used for switching, controlling and regulating operations within Ex-areas. The insert switch is audited to the latest EC guideline 94/9/EC. Devices equipped with these insert switches have to be approved by a testing authority, the switch itself needs not be retested. The cable cores are cast-in at the back of the switch. Their standard length is 500 mm; other lengths are available on request. To connect the cores we recommend the miniterminals from BARTEC.

Limit switch with connection cable
The limit switches have been developed for Ex-areas where safe and reliable signalling is required, for example on pumps, petrol pumps, as well as in mechanical and high-tech engineering. The switches must be mounted into the respective devices or systems in such a way as to guarantee mechanical protection. No further tests are required. The connection cable is cast-in on the back of the switch. For the connection in Ex-areas BARTEC provides a large variety of terminals and terminal boxes.

Technical data

<table>
<thead>
<tr>
<th>Ex d insert switch/limit switch DIN EN 60947-5-1/DIN EN 60947-1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical data for control switch in accordance with</strong></td>
</tr>
<tr>
<td><strong>Rated operating voltage</strong></td>
</tr>
<tr>
<td><strong>Utilization category</strong></td>
</tr>
<tr>
<td><strong>AC</strong></td>
</tr>
<tr>
<td>400 V</td>
</tr>
<tr>
<td>250 V</td>
</tr>
<tr>
<td>30 V</td>
</tr>
</tbody>
</table>

**AC switching capacity**
- ohmic load: 400 V, 2 A
- inductive load: $\cos \varphi = 0.6$

**DC switching capacity**
- ohmic load: 250 V, 0.4 A
- inductive load: $L/R = 3 \, \mu s$

**Ambient temperature +40 °C**

**AC switching capacity**
- ohmic load: 400 V, 3 A
- inductive load: $\cos \varphi = 0.6$

**DC switching capacity**
- ohmic load: 250 V, 0.4 A
- inductive load: $L/R = 3 \, \mu s$

**Ambient temperature -60 °C to +100 °C**

**Protection class**
- IP 66 (IEC/EN 60529)

**Tightening torque of fixing screws**
- 0.6 Nm

**Rating of gold-coated contacts**
- Voltage: min. 5 V, max. 30 V
- Current: min. 4 mA, max. 400 mA
- the product of voltage and current should not exceed 0.12 VA
- for alternating current these values have to be interpreted as peak values

**Explosion protection**

**Limit switch**
- ATEX
  - II 2G Ex d IIC T6, T5 Gb
  - II 2D Ex tb IIIC T80°C, T95°C Db
- Certification
  - EPS 14 ATEX 1 766 X
- IECEx
  - Ex d IIC T6, T5 Gb
  - Ex tb IIIC T80°C, T95°C Db
- Certification
  - IECEx EPS 14.0092 X
- Other approvals and certificates, see www.bartec.de

**Insert switch**
- ATEX
  - II 2G Ex d IIC Gb
  - I M2 Ex d I Mb
- Certification
  - EPS 14 ATEX 1 765 U
- IECEx
  - Ex db IIC Gb
  - Ex db I Mb
- Certification
  - IECEx EPS 14.0091 U
- Other approvals and certificates, see www.bartec.de

**Ambient temperature**
- -60 °C to +100 °C depending on the type and materials used
- T6 to max. +75 °C depending on the rated current
- constant: IP 66 (IEC/EN 60529)
**Insert switch/limit switch**

**Dimensions in mm**

<table>
<thead>
<tr>
<th>Component</th>
<th>Single switch</th>
<th>Double switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretravel</td>
<td>VLW</td>
<td>max. 0.9</td>
</tr>
<tr>
<td>Overtravel</td>
<td>NLW</td>
<td>min. 0.5</td>
</tr>
<tr>
<td>Differential travel</td>
<td>DW</td>
<td>max. 0.45</td>
</tr>
<tr>
<td>Reset travel</td>
<td>RLW</td>
<td>0.9</td>
</tr>
<tr>
<td>No-load travel</td>
<td>LLW</td>
<td>0.1 bis 0.45</td>
</tr>
<tr>
<td>Repeat accuracy WHG</td>
<td></td>
<td>± 0.02</td>
</tr>
</tbody>
</table>

**Switching point**

- Switching point: VLV
- Rest position: WHG
- End position: DW

**Contact travels (in mm)**

- Pretravel: VLW max. 0.9
- Overtravel: NLW min. 0.5
- Differential travel: DW max. 0.45
- Reset travel: RLW 0.9
- No-load travel: LLW 0.1 bis 0.45
- Repeat accuracy WHG ± 0.02

**Contact break distance**

- 2 x ≥ 0.3 mm

**Electrical connection**

- Insert switch: cores 0.75 mm² L07G-K/Radox
- Limit switch: cable 0.75 mm² H05VV-F/A05VV-F/BETAlum
- Other cores and cables on request

**Conductor diameter**

- 2-wire 6.1 ± 0.3 mm
- 3-wire 6.6 ± 0.3 mm
- 4-wire 6.7 ± 0.3 mm
- 6-wire 8.9 ± 0.3 mm

**Contact element**

- Snap-action contact element (double-break)
- Defined switch sequence: chamber I switches mechanically safe 0.03 up to 0.3 mm before chamber II

**Contact material**

- Silver or gold-coated contacts
- All contact elements have a standard protective gold-coating as standard

**Double-break switch**

- Switch options: simultaneous switch sequence: chamber I and II almost simultaneous
- Defined switch sequence: chamber I switches mechanically safe 0.03 up to 0.3 mm before chamber II

**Weight**

- Insert switch with 500 mm cores:
  - Single-break switch: 35 g
  - Double-break switch: 70 g
- Limit switch with 3 m cable:
  - Single-break switch: 210 g
  - Double-break switch: 415 g

**Housing material**

- Plastic (thermoplastics)

**Plunger/additional actuator**

- Stainless steel

**Service life**

- Mechanical > 2 x 10⁶
- Electrical: dependent on load
- Maximum switching rate: 1000 operations/h

**Switching actuation force**

- Single-break switch: max. 2.0 N
- Double-break switch: max. 3.6 N

**Reset force**

- Single-break switch: min. 0.4 N
- Double-break switch: min. 0.8 N

**Operating rate**

- > 10 µm/sec.

**Contact Travels**

- Contact Travels
- Switching point
- Rest position
- End position

**Clip-on pockets**

- **When packing several switches, these dimensions are reduced to 11 mm resp. 15.5 mm**

**Technical data subject to change without notice.**
### Insert switch/limit switch

#### Selection chart Single-break switch

<table>
<thead>
<tr>
<th>Type of contact</th>
<th>Code no.</th>
<th>Additional actuator*</th>
<th>Options code no.</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td></td>
<td>without additional actuator</td>
<td>00</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td>03</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td>22</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
<td>41</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Technical data

- **Contact material:** Ambient temperature (\(T_a\))
  - 1 Silver: -20 °C to +60 °C
  - 3 Gold: -20 °C to +60 °C
  - 5 Silver: -55 °C to +60 °C
  - 6 Gold: -55 °C to +60 °C
  - 7 Silver: -60 °C to +75 °C
  - 8 Gold: -60 °C to +75 °C

---

**Insert switch with connection cores**

- Code for connection cable
- Technical data subject to change without notice.

**Limit switch with connection cable**

- Dimensions for additional actuator are reference values
- Standard product printing: ATEX and IECEx marking. Other international imprints obtainable on request. Please specify in plain text.
## Insert switch/limit switch

### Selection chart Double-break switch

<table>
<thead>
<tr>
<th>Type of contact</th>
<th>Switch chamber 1</th>
<th>Switch chamber 2</th>
<th>Code no.</th>
<th>Options</th>
<th>Code no.</th>
<th>Options</th>
<th>Code no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defined switch sequence</td>
<td>12</td>
<td>22</td>
<td>11</td>
<td>without additional actuator</td>
<td>00</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Defined switch sequence</td>
<td>14</td>
<td>22</td>
<td>21</td>
<td></td>
<td>01</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Defined switch sequence</td>
<td>14</td>
<td>24</td>
<td>22</td>
<td></td>
<td>02</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Defined switch sequence</td>
<td>14</td>
<td>24</td>
<td>33</td>
<td></td>
<td>03</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Switch chamber 1</td>
<td>12 (SN)</td>
<td>22 (SN)</td>
<td>11</td>
<td>without additional actuator</td>
<td>00</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Switch chamber 2</td>
<td>11 (BK)</td>
<td>21 (BK)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Technical data subject to change without notice.

<table>
<thead>
<tr>
<th>Contact material</th>
<th>Ambient temperature (T_a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Silver</td>
<td>-20 °C to +60 °C</td>
</tr>
<tr>
<td>2 Gold</td>
<td>-20 °C to +60 °C</td>
</tr>
<tr>
<td>3 Silver</td>
<td>-20 °C to +60 °C</td>
</tr>
<tr>
<td>4 Gold</td>
<td>-15 °C to +60 °C</td>
</tr>
<tr>
<td>5 Gold</td>
<td>-60 °C to +75 °C</td>
</tr>
<tr>
<td>6 Gold</td>
<td>-60 °C to +75 °C</td>
</tr>
</tbody>
</table>

### Complete order no.**

Please enter code number.

Technical data subject to change without notice.

<table>
<thead>
<tr>
<th>Insert switch with connection cores 1</th>
<th>Limit switch with connection cable 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

( ) Code for connection cable

* Dimensions for additional actuator are reference values

** Standard product printing: ATEX and IECEx marking. Other international imprints obtainable on request. Please specify in plain text.