**Safety detection solutions**

Guard switches, actuator operated

- **Metal, types XCS A, XCS B, XCS C, XCS E**
- **Plastic, double insulated, turret head, types XCS MP or XCS PA or XCS TA and XCS TE**

---

### Environment characteristics

<table>
<thead>
<tr>
<th>Guard switch type</th>
<th>XCS A, XCS B, XCS C, XCS E (metal)</th>
<th>XCS MP, XCS PA, XCS TA, XCS TE (plastic)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conformity to standards</strong></td>
<td>Products: IEC/EN 60947-5-1, UL 508, CSA C22.2 n° 14</td>
<td>Machine assemblies: IEC/EN 60204-1, EN 1088/ISO 14119, EN/ISO 12100</td>
</tr>
<tr>
<td><strong>Product certifications</strong></td>
<td>UL, CSA</td>
<td>UL, CSA (c-UL for XCS MP)</td>
</tr>
<tr>
<td><strong>Protective treatment</strong></td>
<td>Standard version: &quot;TC&quot;</td>
<td></td>
</tr>
<tr>
<td><strong>Ambient air temperature</strong></td>
<td>For operation: -25...+70 °C (for XCS E and -25...+60 °C for XCS TE) For storage: -40...+70 °C (for XCS MP)</td>
<td></td>
</tr>
<tr>
<td><strong>Vibration resistance</strong></td>
<td>5 gn (10...500 Hz) conforming to IEC/EN 60068-2-6 (6 gn (10...55 Hz) for XCS MP)</td>
<td></td>
</tr>
<tr>
<td><strong>Shock resistance</strong></td>
<td>10 gn (duration 11 ms) conforming to IEC/EN 60068-2-27 (50 gn (duration 11 ms) for XCS MP)</td>
<td></td>
</tr>
<tr>
<td><strong>Electric shock protection</strong></td>
<td>Class I conforming to IEC/EN 60536</td>
<td>Class 2 conforming to IEC/EN 60536</td>
</tr>
<tr>
<td><strong>Degree of protection</strong></td>
<td>IP 67 conforming to IEC/EN 60529 and IEC/EN 60947-5-1 (”T”)</td>
<td></td>
</tr>
<tr>
<td><strong>Cable entry</strong></td>
<td>1 entry (XCS A, XCS B, XCS C) or 2 entries (XCS E) tapped for n° 13 (Pg 13.5) cable gland, tapped M20 or tapped 1/2” NPT</td>
<td>1 entry (XCS PA and XCS TE) or 2 entries (XCS TA) tapped for n° 11 (Pg 11) cable gland, tapped M16 or tapped 1/2” NPT (with adaptor) for XCS TA and XCS TE</td>
</tr>
<tr>
<td><strong>Connecting cable</strong></td>
<td>--</td>
<td>Pre-cabled, either 4 x 0.5 mm² or 6 x 0.5 mm² (XCS MP)</td>
</tr>
<tr>
<td><strong>Materials</strong></td>
<td>XCS A/B/C/E Zamak case</td>
<td>XCS MP/PA/TA/TE/PL/TL/PR/TR Polymamide PA66 fibreglass impregnated enclosure</td>
</tr>
</tbody>
</table>

---

Live parts of these switches are protected against the penetration of dust and water. However, when installing take all necessary precautions to prevent the penetration of solid bodies, or liquids with a high dust content, into the actuator aperture. Not recommended for use in saline atmospheres.
## Characteristics

**Guard switches, actuator operated**

**Metal, types XCS A, XCS B, XCS C and XCS E**

**Plastic, double insulated, turret head, types XCS MP or XCS PA or XCS TA and XCS TE**

### Contact block characteristics

| Rated operational characteristics | XCS A, XCS B, XCS C, XCS TA, XCS PA: ~AC-15, A300: Ue = 240 V, le = 3 A or Ue = 120 V, le = 6 A  
XCS E, XCS TE: ~AC-15, B300: Ue = 240 V, le = 1.5 A or Ue = 120 V, le = 3 A  
XCS MP: ~AC-15, C300: Ue = 240 V, le = 0.75 A or Ue = 120 V, le = 1.5 A  
All models: ~DC-13, Q300: Ue = 250 V, le = 0.27 A or Ue = 125 V, le = 0.55 A conforming to IEC/EN 60947-5-1 |
| 2 contact, snap action | XCS PA: ~AC-15, A300: Ue = 240 V, le = 3 A; Ithe = 10 A  
~DC-13, Q300: Ue = 250 V, le = 0.1 A or Ue = 125 V, le = 0.55 A conforming to IEC/EN 60947-5-1 |
| 3 contact, snap action | XCS PA: ~AC-15, B300: Ue = 240 V, le = 1.5 A; Ithe = 6 A  
~DC-13, R300: Ue = 250 V, le = 0.1 A or Ue = 125 V, le = 0.55 A conforming to IEC/EN 60947-5-1 |
| Conventional thermal current in enclosure | XCS A, XCS B, XCS C, XCS PA (2 & 3 slow break contact and 2 snap action contact versions) XCS E, XCS TE, XCS PA (3 snap action contact version); Ithe = 6 A XCS MP: Ithe = 2.5 A |
| Rated insulation voltage | 2 and 3 contact 3 contacts (XCS A, XCS B, XCS C, XCS E, XCS TA), 2 contacts (XCS PA, XCS TE), and 3 contacts (XCS MP): Ue = 300 V conforming to UL 508, CSA C22-2-14 |
| Rated impulse withstand voltage | XCS PA and XCS TE: Ue = 500 V conforming to IEC/EN 60947-1; Ue = 300 V conforming to UL 508, CSA C22-2-14 |
| Positive operation | XCS A, XCS B, XCS C, XCS E, XCS TA (3 snap action contact versions): Ithe = 6 A XCS PA, XCS TE: Uimp = 6 kV conforming to IEC/EN 60947-5-1 |
| Short-circuit protection | 2 and 3 contact 3 contacts (XCS A, XCS B, XCS C, XCS E, XCS TA), 2 contacts (XCS PA, XCS TE), and 3 contacts (XCS MP): 10 A cartridge fuse type gG (gl) |
| Connection | 4 x 0.5 mm² or 6 x 0.5 mm² (XCS MP), PVC |
| Pre-cabled | 6 A cartridge fuse type gG (gl) |
| Screw clamp terminals | XCS PA, XCS TA: Clamping capacity, min: 1 x 0.34 mm², max: 2 x 1.5 mm² |
| 2 contact, snap action | XCS PA, XCS TA: Clamping capacity, min: 1 x 0.34 mm², max: 2 x 1.5 mm² with or without cable end |
| 3 contact | XCS PA: Clamping capacity, min: 1 x 0.34 mm², max: 1 x 1 mm² or 2 x 0.75 mm² |

### Electrical durability

- Load factor: 0.5

**a.c. supply ~ 50/60 Hz 3 mm, inductive circuit**

- Power broken in W for 5 million operating cycles.

**d.c. supply ~ 50/60 Hz 3 mm, inductive circuit**

- Power broken in W for 5 million operating cycles.

## Contact block characteristics

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current in A</th>
<th>Conformity</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/24/48 V</td>
<td>24</td>
<td>48</td>
</tr>
<tr>
<td>W</td>
<td>10</td>
<td>7</td>
</tr>
</tbody>
</table>

For XE2S PA151 on ~ or ~, N/C and N/O contacts simultaneously loaded to the values shown with reverse polarity.

### 3 snap action contact version XCS PA

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current in A</th>
<th>Conformity</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/24/48 V</td>
<td>24</td>
<td>48</td>
</tr>
<tr>
<td>W</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

### 3 slow break contact version XCS PA

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current in A</th>
<th>Conformity</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/24/48 V</td>
<td>24</td>
<td>48</td>
</tr>
<tr>
<td>W</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>
### References, characteristics

**Safety detection solutions**

**Guard switches**
Metal, turret head (1), types XCS A, XCS B, XCS C and XCS E
1 or 2 cable entries M20 x 1.5 (2)

<table>
<thead>
<tr>
<th>Type of switch</th>
<th>Without locking of actuator</th>
<th>With locking of actuator, manual unlocking (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED indication on opening of N/C contacts</td>
<td>Without</td>
<td>Without</td>
</tr>
<tr>
<td></td>
<td>1 orange LED</td>
<td>Without</td>
</tr>
<tr>
<td></td>
<td>24/48 V</td>
<td>Without</td>
</tr>
</tbody>
</table>

#### References of switches without actuator (4) N/C contact with positive opening operation)

<table>
<thead>
<tr>
<th>3-pole N/C + N/O + N/O (2 N/O staggered)</th>
<th>XCS A502</th>
<th>XCS A512</th>
<th>XCS B502</th>
<th>XCS C502</th>
</tr>
</thead>
<tbody>
<tr>
<td>slow break</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-pole N/C + N/O + N/O (N/O staggered)</td>
<td>XCS A702</td>
<td>XCS A712</td>
<td>XCS B702</td>
<td>XCS C702</td>
</tr>
<tr>
<td>slow break</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-pole N/C + N/C + N/C (N/C staggered)</td>
<td>XCS A802</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>slow break</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Weight (kg)

|                  | 0.440    | 0.440    | 0.475    | 0.480    |

#### Complementary characteristics not shown under General characteristics (3/19)

- **Actuation speed**: Maximum: 0.5 m/s, minimum: 0.01 m/s
- **Resistance to forcible withdrawal of actuator**: XCS B and XCS C: 1500 N; XCS E: 2000 N
- **Mechanical durability**: XCS A and XCS E: > 1 million operating cycles
  XCS B and XCS C: 0.6 million operating cycles
- **Maximum operating rate**: For maximum durability: 600 operating cycles per hour
- **Minimum force for extraction of actuator**: ≥ 20 N
- **Cable entry**:
  XCS A, XCS B, XCS C: 1 cable entry.
  XCS E: 2 cable entries
  Entries tapped M20 x 1.5 for ISO cable gland. Clamping capacity 7 to 13 mm

#### References of actuators

- **Description**
  - Straight actuator
  - Actuator with wide fixing
  - Pivoting actuator
  - Latch for sliding doors (Padlockable in open position)

<table>
<thead>
<tr>
<th>For guard switches XCS A, B, C, E</th>
<th>XCS Z01</th>
<th>XCS Z02</th>
<th>XCS Z03</th>
<th>XCS Z05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (kg)</td>
<td>0.020</td>
<td>0.020</td>
<td>0.095</td>
<td>0.600</td>
</tr>
</tbody>
</table>

---

(1) Head adjustable in 90° steps throughout 360°. Blanking plug for operating head slot included with switch.

(2) For cable entries tapped for n° 13 (Pg 13.5) cable gland, replace the last number in the reference (2) by 1 (see page 3/22).

Example: XCS A502 becomes XCS A501.

(3) Unlocking by pushbutton for XCS D and by key operated lock for XCS C.

(4) Schematic diagrams shown represent the contact states whilst the actuator is inserted in the head of the switch.

Other versions: please consult your Regional Sales Office.
### Safety detection solutions

**Guard switches**

Metal, turret head (1), types XCS A, XCS B, XCS C and XCS E

1 or 2 cable entries M20 x 1.5 (2)

#### Type of switch

<table>
<thead>
<tr>
<th>Type of switch</th>
<th>With interlocking, locking by solenoid</th>
</tr>
</thead>
</table>

#### Type of interlocking

Locking on de-energisation and unlocking on energisation of solenoid (3).

To order a guard switch with locking on energisation and unlocking on de-energisation of the solenoid, replace the 2nd number (3) by 5 in the references shown below.

Example: XCS E5312 becomes XCS E5512.

#### LED indication

Orange LED: “guard open” signalling.

Green LED: “guard closed and locked” signalling.

#### Supply voltage of solenoid

<table>
<thead>
<tr>
<th>Voltage</th>
<th>24 V (50/60 Hz on ~)</th>
<th>48 V (50/60 Hz on ~)</th>
<th>110/120 V (4) (50/60 Hz on ~)</th>
<th>220/240 V (4) (50/60 Hz on ~)</th>
</tr>
</thead>
</table>

#### Type of contact on solenoid

<table>
<thead>
<tr>
<th>Type of contact</th>
<th>2 N/O staggered</th>
<th>slow break (5)</th>
</tr>
</thead>
</table>

#### References of switches without actuator

<table>
<thead>
<tr>
<th>References</th>
<th>3-pole N/C + N/O + N/O</th>
<th>slow break (5)</th>
</tr>
</thead>
</table>

#### Solenoid characteristics

- **Load factor**: 100%
- **Rated operational voltage**
  - 24 V
  - 48 V
  - 110/120 V
  - 220/240 V
- **Voltage limits**
  - -20% to +10% of the rated operational voltage (including ripple)
- **Service life**: 20,000 hours
- **Consumption**
  - Inrush: 10 VA
  - Sealed: 10 VA

#### LED indicator characteristics

- **Rated insulation voltage**
  - 50 V conforming to IEC/EN 60947-1
  - 250 V conforming to IEC/EN 60947-1
- **Current consumption**
  - 7 mA
  - 7 mA
- **Rated operational voltage**
  - 24/48 V
  - 110/240 V
- **Voltage limits**
  - 20...52 V (including ripple)
  - 95...264 V (including ripple)
- **Service life**: 100,000 hours
- **Protection against overvoltages**: Yes

### References, characteristics (continued)

**Metal, turret head (1)**, types XCS A, XCS B, XCS C and XCS E

1 or 2 cable entries M20 x 1.5 (2)

(1) Head adjustable in 90° steps throughout 360°. Blanking plug for operating head slot included with switch.

(2) For cable entries tapped for n° 13 (Pg 13.5) cable gland, replace the last number in the reference (2) by 1 (see page 3/23).

Example: XCS E5312 becomes XCS E5311.

(3) A key operated lock enables forced opening of the interlocking mechanism, by authorised personnel, allowing withdrawal of the actuator and subsequent opening of the N/C safety contacts.

(4) For use on 110/120 V or 220/240 V, remove the LED indicator module.

(5) Schematic diagrams shown represent the contact states whilst the actuator is inserted in the head of the switch.

(6) Switches supplied with a single green LED.

Other versions: please consult your Regional Sales Office.

---

**Dimensions:** page 3/27 and 3/28

**Schemes:** page 3/29
### Safety detection solutions

**Guard switches**

Metal, turret head (1), types XCS A, XCS B, XCS C and XCS E.

Cable entries tapped for n° 13 (Pg 13.5) cable gland

---

#### Type of switch

<table>
<thead>
<tr>
<th>Without locking of actuator</th>
<th>With locking of actuator, manual unlocking (2)</th>
</tr>
</thead>
</table>

#### LED indication on opening of N/C contacts

<table>
<thead>
<tr>
<th>Without</th>
<th>1 orange LED 24/48 V</th>
<th>Without</th>
<th>1 orange LED ~110/240 V</th>
<th>Without</th>
<th>1 orange LED 24/48 V</th>
</tr>
</thead>
</table>

#### References of switches without actuator (N/C contact with positive opening operation)

- 3-pole N/C + N/O + N/O (2 N/O staggered) slow break (3)
  - XCS A501
  - XCS A511
  - XCS A521
  - XCS B501
  - XCS B511
  - XCS C501
  - XCS C511

- 3-pole N/C + N/C + N/O (N/O staggered) slow break (3)
  - XCS A701
  - XCS A711
  - XCS A721
  - XCS B701
  - –
  - XCS C701
  - –

- 3-pole N/C + N/C + N/C slow break (3)
  - XCS A801
  - –
  - XCS B801
  - –
  - XCS C801
  - –

#### Weight (kg)

- 0.440
- 0.440
- 0.440
- 0.475
- 0.475
- 0.480
- 0.480

#### Complementary characteristics

**not shown under General characteristics (3/19)**

- **Actuation speed**
  - Maximum: 0.5 m/s, minimum: 0.01 m/s

- **Resistance to forcible withdrawal of actuator**
  - XCS B and XCS C: 1500 N; XCS E: 2000 N

- **Mechanical durability**
  - XCS A and XCS E: > 1 million operating cycles
  - XCS B and XCS C: 0.6 million operating cycles

- **Maximum operating rate**
  - For maximum durability: 600 operating cycles per hour

- **Minimum force for extraction of actuator**
  - ≥ 20 N

- **Cable entry**
  - XCS A, XCS B, XCS C: 1 cable entry.
  - XCS E: 2 cable entries
  - Entries tapped for n° 13 cable gland conforming to NF C 68-300 (DIN Pg 13.5). Clamping capacity 9 to 12 mm

- **Materials**

#### References of actuators

- **Description**
  - Straight actuator
  - Actuator with wide fixing
  - Pivoting actuator
  - Latch for sliding doors (Padlockable in open position)

- **For guard switches XCS A, B, C, E**
  - XCS Z01
  - XCS Z02
  - XCS Z03
  - XCS Z05

- **Weight (kg)**
  - 0.020
  - 0.020
  - 0.095
  - 0.600

---

1. Head adjustable in 90° steps throughout 360°. Blanking plug for operating head slot included with switch.
2. Unlocking by pushbutton for XCS B and by key operated lock for XCS C.
3. Schematic diagrams shown represent the contact states whilst the actuator is inserted in the head of the switch.

Other versions: please consult your Regional Sales Office.
Type of switch | With interlocking, locking by solenoid
---|---

### Type of interlocking
- Locking on de-energisation and unlocking on energisation of solenoid (2).
- To order a guard switch with locking on energisation and unlocking on de-energisation of the solenoid, replace the 2nd number (3) by S in the references shown below.

### LED indication
- Orange LED: “guard open” signalling.
- Green LED: “guard closed and locked” signalling.

### Supply voltage of solenoid
- ~ or 24 V (50/60 Hz on ~)
- ~ or 48 V (50/60 Hz on ~)
- ~ or 110/120 V (3)
- ~ or 220/240 V (3)

### Type of contact on solenoid
- N/C + N/O 2 N/C
- N/C + N/O 2 N/C
- N/C + N/O 2 N/C
- N/C + N/O 2 N/C

### References of switches without actuator

#### 3-pole
- N/C + N/O + N/O (2 N/O staggered) slow break (4)

<table>
<thead>
<tr>
<th>Reference</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XCS E5311</td>
<td>-</td>
</tr>
<tr>
<td>XCS E5321</td>
<td>-</td>
</tr>
<tr>
<td>XCS E5331</td>
<td>-</td>
</tr>
<tr>
<td>XCS E5341</td>
<td>-</td>
</tr>
<tr>
<td>XCS E7311</td>
<td>-</td>
</tr>
<tr>
<td>XCS E7317</td>
<td>-</td>
</tr>
<tr>
<td>XCS E7321</td>
<td>-</td>
</tr>
<tr>
<td>XCS E7327</td>
<td>-</td>
</tr>
<tr>
<td>XCS E7331</td>
<td>-</td>
</tr>
<tr>
<td>XCS E7337</td>
<td>-</td>
</tr>
<tr>
<td>XCS E7341</td>
<td>-</td>
</tr>
<tr>
<td>XCS E7347</td>
<td>-</td>
</tr>
</tbody>
</table>

### Weight (kg)
- 1.140
- 1.140
- 1.140

### Solenoid characteristics

#### Load factor
- 100%

#### Rated operational voltage
- ~ or 24 V
- ~ or 48 V
- ~ or 110/120 V
- ~ or 220/240 V

#### Voltage limits
- ~ 20%, + 10% of the rated operational voltage (including ripple on ~)
- conforming to IEC/EN 60947-1

#### Service life
- 20 000 hours

#### Consumption
- Inrush: 10 VA. Sealed: 10 VA

### LED indicator characteristics

#### Rated insulation voltage
- 50 V conforming to IEC/EN 60947-1
- 250 V conforming to IEC/EN 60947-1

#### Current consumption
- 7 mA
- 7 mA

#### Rated operational voltage
- ~ or 24/48 V
- ~ 110/240 V

#### Voltage limits
- ~ or 20...52 V (including ripple)
- ~ 95...264 V (including ripple)

#### Service life
- 100 000 hours
- 100 000 hours

#### Protection against overvoltages
- Yes
- Yes

(1) Head adjustable in 90° steps throughout 360°. Blanking plug for operating head slot included with switch.
(2) A key operated lock enables forced opening of the interlocking mechanism, by authorised personnel, allowing withdrawal of the actuator and subsequent opening of the N/C safety contacts.
(3) For use on ~ 110/120 V or ~ 220/240 V, remove the LED indicator module.
(4) Schematic diagrams shown represent the contact states whilst the actuator is inserted in the head of the switch.
(5) Switches supplied with a single green LED.

Other versions: please consult your Regional Sales Office.
Safety detection solutions

Guard switches

Metal, turret head \((1)\), types XCS A, XCS B, XCS C and XCS E

Cable entries tapped 1/2” NPT

<table>
<thead>
<tr>
<th>Type of switch</th>
<th>Without locking of actuator</th>
<th>With locking of actuator, manual unlocking ((2))</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED indication on opening of N/C contacts</td>
<td>Without 1 orange LED (\leq 24/48) V 1 orange LED (\sim 110/240) V</td>
<td>Without 1 orange LED (\leq 24/48) V 1 orange LED (\sim 110/240) V</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>References of switches without actuator ((\text{N/C contact with positive opening operation}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-pole N/C + N/O + N/O ((2 \text{ N/O staggered})) slow break ((3))</td>
</tr>
<tr>
<td>3-pole N/C + N/O + N/O ((\text{N/O staggered})) slow break ((3))</td>
</tr>
<tr>
<td>3-pole N/C + N/C + N/C ((\text{slow break})) ((3))</td>
</tr>
</tbody>
</table>

| Weight (kg) | 0.440 | 0.440 | 0.440 | 0.475 | 0.475 | 0.475 | 0.480 |

Complementary characteristics: not shown under General characteristics \((\text{page 3/19})\)

- **Actuation speed**: Maximum: 0.5 m/s, minimum: 0.01 m/s
- **Resistance to forcible withdrawal of actuator**: XCS B and XCS C: 1500 N; XCS E: 2000 N
- **Mechanical durability**: XCS A and XCS E: > 1 million operating cycles
  XCS B and XCS C: 0.6 million operating cycles
- **Maximum operating rate**: For maximum durability: 600 operating cycles per hour
- **Minimum force for extraction of actuator**: \(\geq 20\) N
- **Cable entry**: XCS A, XCS B, XCS C: 1 cable entry
  XCS E: 2 cable entries
  Entries tapped for 1/2” NPT \((\text{USAS B2-1})\) conduit

References of actuators

<table>
<thead>
<tr>
<th>Description</th>
<th>Straight actuator</th>
<th>Actuator with wide fixing</th>
<th>Pivoting actuator</th>
<th>Latch for sliding doors ((\text{Paddlockable in open position}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>For guard switches XCS A, B, C, E</td>
<td>XCS Z01</td>
<td>XCS Z02</td>
<td>XCS Z03</td>
<td>XCS Z05</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>0.020</td>
<td>0.020</td>
<td>0.095</td>
<td>0.600</td>
</tr>
</tbody>
</table>

\((1)\) Head adjustable in 90° steps throughout 360°. Blanking plug for operating head slot included with switch.

\((2)\) Unlocking by pushbutton for XCS B and by key operated lock for XCS C.

\((3)\) Schematic diagrams shown represent the contact states whilst the actuator is inserted in the head of the switch.

Other versions: please consult your Regional Sales Office.
References, characteristics (continued)

Safety detection solutions
Guard switches
Metal, turret head (1), types XCS A, XCS B, XCS C and XCS E
Cable entries tapped 1/2” NPT

<table>
<thead>
<tr>
<th>Type of switch</th>
<th>With interlocking, locking by solenoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of interlocking</td>
<td>Locking on de-energisation and unlocking on energisation of solenoid (2).</td>
</tr>
<tr>
<td>To order a guard switch with locking on energisation and unlocking on de-energisation of the solenoid, replace the 2nd number (3) by 5 in the references shown below. Example: XCS E5313 becomes XCS E5513.</td>
<td></td>
</tr>
<tr>
<td>Supply voltage of solenoid</td>
<td>~ or ~ 24 V (50/60 Hz on ~) ~ or ~ 110/120 V (3) (50/60 Hz on ~)</td>
</tr>
<tr>
<td>Type of contact on solenoid</td>
<td>N/C + N/O 2 N/O N/C N/C + N/O 2 N/C</td>
</tr>
<tr>
<td>References of switches without actuator (4) N/C contact with positive opening operation</td>
<td></td>
</tr>
<tr>
<td>3-pole N/C + N/O + N/O (2 N/O staggered) slow break (4)</td>
<td>XCS E5313 – XCS E5333 –</td>
</tr>
<tr>
<td>3-pole N/C + N/C + N/O (N/O staggered) slow break (4)</td>
<td>XCS E7313 XCS E73137 XCS E7333 XCS E73337</td>
</tr>
<tr>
<td>3-pole N/C + N/C + N/C slow break (4)</td>
<td>XCS E8313 (3) (5) – – –</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>1.140</td>
</tr>
</tbody>
</table>

Solenoïd characteristics
Load factor | 100 % |
Rated operational voltage | ~ or ~ 24 V ~ or ~ 110/120 V |
Voltage limits | ~ 20%, + 10% of the rated operational voltage (including ripple on ~) conforming to IEC/EN 60947-1 |
Service life | 20 000 heures |
Consumption | Inrush: 10 VA. Sealed: 10 VA |

LED indicator characteristics
Rated insulation voltage | 50 V conforming to IEC/EN 60947-1 250 V conforming to IEC/EN 60947-1 |
Current consumption | 7 mA 7 mA |
Rated operational voltage | ~ or ~ 24/48 V ~ 110/240 V |
Voltage limits | ~ or ~ 20...52 V (including ripple) ~ 95...264 V (including ripple) |
Service life | 100 000 hours 100 000 hours |
Protection against overvoltages | Yes Yes |

(1) Head adjustable in 90° steps throughout 360°. Blanking plug for operating head slot included with switch.
(2) A key operated lock enables forced opening of the interlocking mechanism, by authorised personnel, allowing withdrawal of the actuator and subsequent opening of the N/C safety contacts.
(3) For use on ~ 110/120 V, remove the LED module.
(4) Schematic diagrams shown represent the contact states whilst the actuator is inserted in the head of the switch.
(5) Switches supplied with a single green LED.

Other versions: please consult your Regional Sales Office.
## Safety detection solutions

### Guard switches

Metal, turret head, types XCS A, XCS B, XCS C and XCS E

### Separate components

<table>
<thead>
<tr>
<th>Description</th>
<th>For use with</th>
<th>Supply voltage</th>
<th>Reference</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 orange LED indicator module with cover, seal and 2 fixing screws</td>
<td>XCS A, XCS B, XCS C</td>
<td>~ or ~ 24/48 V</td>
<td>XCS Z31</td>
<td>0.040</td>
</tr>
<tr>
<td>1 orange LED + 1 green LED indicator module with cover + lock (1), seal and 4 fixing screws (2 keys included for lock)</td>
<td>XCS E73</td>
<td>~ or ~ 24/48 V</td>
<td>XCS Z43</td>
<td>0.175</td>
</tr>
</tbody>
</table>

(1) Lock incorporated as standard on guard switches XCS E: key withdrawal in LOCK and UNLOCK positions.

<table>
<thead>
<tr>
<th>Description</th>
<th>For use with</th>
<th>Key withdrawal positions from lock</th>
<th>Unit reference</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blanking plugs for operating head slot (Sold in lots of 10)</td>
<td>XCS A, XCS B, C, XCS E</td>
<td>–</td>
<td>XCS Z27</td>
<td>0.050</td>
</tr>
<tr>
<td>Keys for interlock “forced opening” device (Sold in lots of 10)</td>
<td>XCS B, C, XCS E</td>
<td>–</td>
<td>XCS Z25</td>
<td>0.100</td>
</tr>
<tr>
<td>Padlocking device to prevent insertion of actuator, for up to 3 padlocks (padlocks not included)</td>
<td>XCS A, XCS B, C, XCS E</td>
<td>–</td>
<td>XCS Z90</td>
<td>0.055</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>For use with</th>
<th>Unit reference</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2” NPT conduit adaptor (Sold in lots of 5)</td>
<td>XCS A, XCS B, XCS C, XCS E</td>
<td>DE9 RA2012</td>
<td>0.048</td>
</tr>
<tr>
<td>M20 x 1.5 adaptor (Sold in lots of 5)</td>
<td>XCS A, XCS B, XCS C, XCS E</td>
<td>DE9 RA13520</td>
<td>0.010</td>
</tr>
</tbody>
</table>
## Safety detection solutions
Guard switches
Metal, turret head, types XCS A, XCS B, XCS C and XCS E

### Dimensions

<table>
<thead>
<tr>
<th>Guard switches</th>
<th>XCS B**, XCS C**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>XCS A</strong></td>
<td><strong>XCS E</strong></td>
</tr>
</tbody>
</table>

![Diagrams of guard switches](image)

<table>
<thead>
<tr>
<th>Description</th>
<th>XCS A</th>
<th>XCS E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø: 2 elongated holes</td>
<td>Ø 5.3 x 7.3</td>
<td>Ø 5.3 x 7.3</td>
</tr>
<tr>
<td>(1) 1 tapped entry for cable gland</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>(2) Pg 13.5 threaded shank</td>
<td>48</td>
<td>48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>XCS B</th>
<th>XCS C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø: 2 elongated holes</td>
<td>Ø 5.3 x 7.3</td>
<td>Ø 5.3 x 7.3</td>
</tr>
<tr>
<td>(1) 1 tapped entry for cable gland</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>(2) M20 x 1.5 tapped entry</td>
<td>48</td>
<td>48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>XCS E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø: 2 elongated holes</td>
<td>Ø 5.3 x 7.3</td>
</tr>
<tr>
<td>(1) 1 tapped entry for cable gland</td>
<td>16</td>
</tr>
<tr>
<td>(2) M20 x 1.5 tapped entry</td>
<td>48</td>
</tr>
</tbody>
</table>

### M20 x 1.5 adaptor<br>DE9 RA13520

### 1/2” NPT conduit adaptor<br>DE9 RA2012

![Reference pages](image)
**Dimensions (continued)**

**Safety detection solutions**

**Guard switches**

Metal, turret head, types XCS A, XCS B, XCS C and XCS E

---

**Dimensions (continued)**

<table>
<thead>
<tr>
<th>XCS Z01</th>
<th>XCS Z02</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Diagram of XCS Z01" /></td>
<td><img src="image2" alt="Diagram of XCS Z02" /></td>
</tr>
</tbody>
</table>

(1) Adaptor (included with actuator XCS Z01) for replacing, without drilling additional fixing hole, a guard switch XCK J with actuator ZCK Y07 by a guard switch XCS A, B, C or E with actuator XCS Z01.

Ø: 2 elongated holes Ø 5.3 x 10

<table>
<thead>
<tr>
<th>XCS Z03</th>
<th>XCS Z05</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3" alt="Diagram of XCS Z03" /></td>
<td><img src="image4" alt="Diagram of XCS Z05" /></td>
</tr>
</tbody>
</table>

Ø: 2 elongated holes Ø 5.3 x 10

**Fixing axis % related to actuator.**

**Operating radius required for actuator**

<table>
<thead>
<tr>
<th>XCS Z01</th>
<th>XCS Z02</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image5" alt="Diagram of XCS Z01" /></td>
<td><img src="image6" alt="Diagram of XCS Z02" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XCS Z03</th>
<th>XCS Z05</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image7" alt="Diagram of XCS Z03" /></td>
<td><img src="image8" alt="Diagram of XCS Z05" /></td>
</tr>
</tbody>
</table>

R = minimum radius

---

**References:**

pages 3/20 to 3/25

**Schemes:**

page 3/29
Safety detection solutions
Guard switches
Metal, turret head, types XCS A, XCS B, XCS C and XCS E

Setting-up, schemes

Setting-up
Functional diagrams

| XCS e5|| XCS e7|| XCS e8|| Contact operation |
|---|---|---|---|---|
| ![Diagram](image1) | ![Diagram](image2) | ![Diagram](image3) |  |

Contact closed
Contact open
Unstable

Schemes
Note: These schemes are given as examples only, the designer must refer to the relevant safety standards for guidance

Wiring to category 1 conforming to EN 954-1/ISO 13849-1
Example with 3-pole N/C + N/O + N/O contact and protection fuse to prevent shunting of the N/C contact, either by cable damage or by tampering.

Wiring to category 3 conforming to EN 954-1/ISO 13849-1
Example with 3-pole N/C + N/O + N/O contact with mixed redundancy of the contacts and the associated control relays. To activate K1, it is necessary to remove and re-insert the actuator when the supply is switched on.

Wiring to category 4 conforming to EN 954-1/ISO 13849-1. Wiring method used in conjunction with Preventa safety module
(1) Signalling contact
H1: “actuator not inserted” indicator

Wiring method used in conjunction with Preventa safety module
(The guard switch should be used in conjunction with a safety limit switch to give electrical/mechanical redundancy)

Method for machines with quick rundown time (low inertia)
Method for machines with long rundown time (high inertia)

Locking or interlocking device based on the principle of redundancy and self-monitoring.
The safety modules ensure these functions.

Locking of actuator and operation in positive mode associated with a safety module.
Interlocking device for actuator fitted on guard and zero speed detection.

References:
pages 3/20 to 3/25
Dimensions:
pages 3/27 and 3/28
Safety detection solutions
Guard switches with solenoid interlocking
Metal, turret head, type XCS E

Wiring to category 1 conforming to EN 954-1/ISO 13849-1
Wiring examples with protection fuse to prevent shunting of the N/C contact, either by cable damage or by tampering.

**Locking on de-energisation, N/C + N/O + N/O**
XCS E53

**Locking on energisation, N/C + N/O + N/O**
XCS E55

---

(1) Solenoid
(2) Auxiliary contact
E1-E2: Solenoid supply
43-44: Solenoid signalling contact
13-14: Safety contact, available for redundancy
33-X1: LED (orange): actuator withdrawn
51-X1: LED (green): actuator inserted and locked
21-52: Safety pre-wiring obligatory

---

Note: These schemes are given as examples only, the designer must refer relevant safety standards for guidance.

References:
pages 3/20 to 3/25
Dimensions:
pages 3/27 and 3/28
Safety detection solutions
Guard switches with solenoid interlocking
Metal, turret head, type XCS E

Wiring to category 3 conforming to EN 954-1/ISO 13849-1
Wiring examples with redundancy for the guard switch contacts, without monitoring or redundancy in the power circuit

**Schemes (continued)**

<table>
<thead>
<tr>
<th>Locking on de-energisation, N/C + N/C + N/O</th>
<th>Locking on de-energisation, N/C + N/C + N/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>XCS E73**&lt;sub&gt;3&lt;/sub&gt;***</td>
<td>XCS E73**&lt;sub&gt;3&lt;/sub&gt;***</td>
</tr>
</tbody>
</table>

![Diagram of wiring connections]

1. Solenoid
2. Auxiliary contact
E1-E2: Solenoid supply
43-44: Solenoid signalling contact
21-22 and 31-32: Safety contacts, available for redundancy
13-X1: LED (orange): actuator withdrawn
51-X1: LED (green): actuator inserted and locked
21-52: Safety pre-wiring obligatory

**Locking on energisation, N/C + N/C + N/O**

XCS E75**<sub>3</sub>***

![Diagram of wiring connections]

1. Solenoid
2. Auxiliary contact
E1-E2: Solenoid supply
41-42 and 51-52: Solenoid signalling contacts
21-22 and 31-32: Safety contacts, available for redundancy
13-X1: LED (orange): actuator withdrawn
51-X1: LED (green): actuator inserted and locked
21-52 and 42-31: Safety pre-wiring obligatory

References:
pages 3/20 to 3/25

Dimensions:
pages 3/27 and 3/28
Type of switch | With interlocking, locking by solenoid
---|---
Type of interlocking | Locking on de-energisation and unlocking on energisation of solenoid (3)

Supply voltage of solenoid | ~ or ± 24 V (50/60 Hz on ~)

**References of switches without actuator (N/C contact with positive opening operation)**

<table>
<thead>
<tr>
<th>2-pole N/C + N/O (4)</th>
<th>XCS TE5312 (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>break before make</td>
<td>slow break</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2-pole N/C + N/C (4)</th>
<th>XCS TE7312 (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>break before make</td>
<td>slow break</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Weight (kg) | 0.360

**Solenoide characteristics**

<table>
<thead>
<tr>
<th>Load factor</th>
<th>100 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operational voltage</td>
<td>~ or ± 24 V</td>
</tr>
<tr>
<td>Voltage limits</td>
<td>-20%, +10% of the rated operational voltage (including ripple on ±) conforming to IEC/EN 60947-1</td>
</tr>
<tr>
<td>Service life</td>
<td>20 000 hours</td>
</tr>
<tr>
<td>Consumption</td>
<td>10 VA max.</td>
</tr>
</tbody>
</table>

**References of actuators and guard retaining device**

<table>
<thead>
<tr>
<th>Description</th>
<th>Straight actuator</th>
<th>Actuator with wide fixing (5)</th>
<th>Pivoting actuator</th>
<th>Right-angled actuator</th>
<th>Guard retaining device (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For guard switches XCS PA, TA, TE</td>
<td>XCS Z11</td>
<td>XCS Z12</td>
<td>XCS Z15</td>
<td>XCS Z13</td>
<td>XCS Z14</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>0.015</td>
<td>0.015</td>
<td>0.012</td>
<td>0.085</td>
<td>0.025</td>
</tr>
</tbody>
</table>

(1) Head adjustable in 90° steps throughout 360°. Blanking plug for operating head slot included with switch.
(2) For cable entries tapped for no. 11 (Pg 11) cable gland, replace the last number in the reference (2) by 1 (see page 3/39).
Example: XCS TE5312 becomes XCS TE5311.
(3) A special tool included with the guard switch enables forced opening of the interlocking mechanism, by authorised personnel, allowing withdrawal of the actuator and subsequent opening of the N/C safety contacts.
(4) Schematic diagrams shown represent the contact states whilst the actuator is inserted in the head of the switch.
(5) 2 actuator lengths, XCS Z12: L = 40 mm, XCS Z15: L = 29 mm.
(6) Only for use with guard switches XCS PA and XCS TA (without the actuator centering device XCS Z200), used in conjunction with actuators XCS Z12, XCS Z13 or XCS Z15.

Other versions: please consult your Regional Sales Office.
Type of switch | With interlocking, locking by solenoid

Type of interlocking | Locking on de-energisation and unlocking on energisation of solenoid

Supply voltage of solenoid | ~ or ± 24 V (50/60 Hz on ~) | ~ or ± 120 V (50/60 Hz on ~) | ~ or ± 230 V (50/60 Hz on ~)

References of switches without actuator (N/C contact with positive opening operation)

2-pole N/C + N/O (3) break before make slow break | XCS TE5311 | XCS TE5331 | XCS TE5341

2-pole N/O + N/C (3) make before break slow break | XCS TE6311 | – | –

2-pole N/C + N/C (3) slow break | XCS TE7311 | XCS TE7331 | XCS TE7341

Weight (kg) | 0.360 | 0.360 | 0.360

Solenoid characteristics

Load factor | 100 %

Rated operational voltage | ~ or ± 24 V | ~ or ± 120 V | ~ or ± 230 V

Voltage limits | - 20%, + 10% of the rated operational voltage (including ripple on ~) conforming to EN/IEC 60947-1

Service life | 20 000 hours

Consumption | 10 VA max.

References of actuators and guard retaining device

Description | Straight actuator | Actuator with wide fixing (5) | Pivoting actuator | Right-angled actuator | Guard retaining device (4)

For guard switches XCS PA, TA, TE | XCS Z11 | XCS Z12 | XCS Z15 | XCS Z13 | XCS Z14 | XCS Z21

Weight (kg) | 0.015 | 0.015 | 0.012 | 0.085 | 0.025 | 0.080

(1) Head adjustable in 90° steps throughout 360°. Blanking plug for operating head slot included with switch.

(2) A special tool included with the guard switch enables forced opening of the interlocking mechanism, by authorised personnel, allowing withdrawal of the actuator and subsequent opening of the N/C safety contacts.

(3) Schematic diagrams shown represent the contact states whilst the actuator is inserted in the head of the switch.

(4) Only for use with guard switches XCS PA and XCS TA (without the actuator centering device XCS Z200), used in conjunction with actuators XCS Z12, XCS Z13 or XCS Z15.

(5) 2 actuator lengths, XCS Z12: L = 40 mm, XCS Z15: L = 29 mm.

Other versions: please consult your Regional Sales Office.
### Safety detection solutions
Guard switches
Plastic, turret head, types XCS PA, XCS TA and XCS TE

#### Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>XCS PA91, XCS PA92</th>
<th>XCS PA93</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>XCS PA91</strong></td>
<td><img src="image1.png" alt="Diagram" /></td>
<td><img src="image2.png" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>XCS PA92</strong></td>
<td><img src="image3.png" alt="Diagram" /></td>
<td><img src="image4.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

- **XCS TA93**
- **XCS TE94**

1. 1 tapped entry for cable gland
2. 2 elongated holes Ø 4.3 x 8.3 on 22 centres, 2 holes Ø 4.3 on 20 centres

1. 1 tapped entry for 1/2" NPT conduit
2. 2 elongated holes Ø 4.3 x 8.3 on 22 centres, 2 holes Ø 4.3 on 20 centres

#### 1/2" NPT conduit adaptor
- **DE9 RA1012**
- **M16 x 1.5 adaptor**
- **DE9 RA1016**
- **Actuator centering device**
- **XCS Z200**

1. Tapped entry for 1/2" NPT conduit
2. Pg 11 threaded shank
3. M16 x 1.5 tapped entry
4. Pg 11 threaded shank

#### References:
- Pages 3/36 to 3/41
- Schemes: page 3/44
Safety detection solutions
Guard switches
Plastic, turret head, type XCS TE

Schemes (continued)

Wiring to category 1 conforming to EN 954-1/ISO 13849-1
Wiring examples with protection fuse to prevent shunting of the N/C contact, either by cable damage or by tampering

Locking on de-energisation

N/C + N/O
XCS TE53

(1) Solenoid
(2) Auxiliary contact
E1-E2: Solenoid supply
13-14: Safety contact, available for redundancy or signalling

Locking on energisation

N/C + N/O
XCS TE55

(1) Solenoid
(2) Auxiliary contact
E1-E2: Solenoid supply
13-14: Safety contact, available for redundancy or signalling

Wiring to category 3 conforming to EN 954-1/ISO 13849-1
Wiring examples with redundancy for the guard switch contacts, without monitoring

Locking on de-energisation

N/C + N/C
XCS TE73

(1) Solenoid
(2) Solenoid auxiliary contact
E1-E2: Solenoid supply
11-12: Safety contact, available for redundancy

Locking on energisation

N/C + N/C
XCS TE75

(1) Solenoid
(2) Solenoid auxiliary contact
E1-E2: Solenoid supply
11-12: Safety contact, available for redundancy

References:
pages 3/36 to 3/41
Dimensions:
pages 3/42 and 3/43