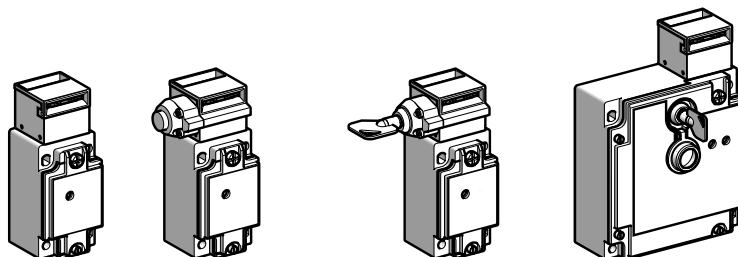


# Safety detection solutions

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

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

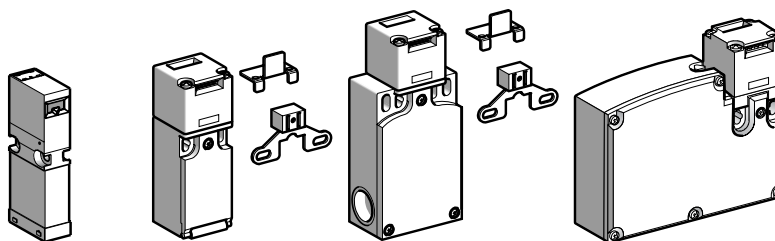
Guard switches with or without locking of the actuator



Pages 3/20 to 3/25

Plastic, types XCS MP, XCS PA  
XCS TA, XCS TE

Guard switches with or without locking of the actuator



Pages 3/32 and 3/36 to 3/41

## Environment characteristics

Guard switch type		XCS A, XCS B, XCS C, XCS E (metal)	XCS MP, XCS PA, XCS TA, XCS TE (plastic)
Conformity to standards	Products	IEC/EN 60947-5-1, UL 508, CSA C22-2 n° 14	
	Machine assemblies	IEC/EN 60204-1, EN 1088/ISO 14119, EN/ISO 12100	
Product certifications		UL, CSA	UL, CSA (c UL for XCS MP)
Protective treatment		Standard version: "TC"	
Ambient air temperature	For operation	- 25... + 70 °C (- 25... + 40 °C for XCS E and - 25... + 60 °C for XCS TE)	
	For storage	- 40... + 70 °C (- 25... + 80 °C for XCS MP)	
Vibration resistance		5 gn (10...500 Hz) conforming to IEC/EN 60068-2-6 (6 gn (10...55 Hz) for XCS MP)	
Shock resistance		10 gn (duration 11 ms) conforming to IEC/EN 60068-2-27 (50 gn (duration 11 ms) for XCS MP)	
Electric shock protection		Class I conforming to IEC/EN 60536	Class 2 conforming to IEC/EN 60536
Degree of protection		IP 67 conforming to IEC/EN 60529 and IEC/EN 60947-5-1 (1)	
Cable entry		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	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
Connecting cable		—	Pre-cabled, either 4 x 0.5 mm <sup>2</sup> or 6 x 0.5 mm <sup>2</sup> (XCS MP)
Materials		XCS A/B/C/E Zamak case	XCS MP/PA/TA/TE/PL/TL/PR/TR Polyamide PA66 fibreglass impregnated enclosure
Actuators (all types): steel XC60, surface treated			

(1) 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.

### Contact block characteristics

Rated operational characteristics	2 and 3 contact, slow break	<b>XCS A, XCS B, XCS C, XCS TA, XCS PA:</b> ~ AC-15, A300: $U_e = 240\text{ V}$ , $I_e = 3\text{ A}$ or $U_e = 120\text{ V}$ , $I_e = 6\text{ A}$ <b>XCS E, XCS TE:</b> ~ AC-15, B300: $U_e = 240\text{ V}$ , $I_e = 1.5\text{ A}$ or $U_e = 120\text{ V}$ , $I_e = 3\text{ A}$ <b>XCS MP:</b> ~ AC-15, C300: $U_e = 240\text{ V}$ , $I_e = 0.75\text{ A}$ or $U_e = 120\text{ V}$ , $I_e = 1.5\text{ A}$ All models: --- DC-13, Q300: $U_e = 250\text{ V}$ , $I_e = 0.27\text{ A}$ or $U_e = 125\text{ V}$ , $I_e = 0.55\text{ A}$ conforming to IEC/EN 60947-5-1
	2 contact, snap action	<b>XCS PA:</b> ~ AC-15, A300: $U_e = 240\text{ V}$ , $I_e = 3\text{ A}$ ; $I_{the} = 10\text{ A}$ --- DC-13, Q300: $U_e = 250\text{ V}$ , $I_e = 0.27\text{ A}$ or $U_e = 125\text{ V}$ , $I_e = 0.55\text{ A}$ conforming to IEC/EN 60947-5-1
	3 contact, snap action	<b>XCS PA:</b> ~ AC-15, B300: $U_e = 240\text{ V}$ , $I_e = 1.5\text{ A}$ ; $I_{the} = 6\text{ A}$ --- DC-13, R300: $U_e = 250\text{ V}$ , $I_e = 0.1\text{ A}$ or $U_e = 125\text{ V}$ , $I_e = 0.55\text{ A}$ conforming to IEC/EN 60947-5-1
Conventional thermal current in enclosure		<b>XCS A, XCS B, XCS C, XCS PA</b> (2 & 3 slow break contact and 2 snap action contact versions) <b>XCS E, XCS TE, XCS PA</b> (3 snap action contact version): $I_{the} = 6\text{ A}$ <b>XCS MP:</b> $I_{the} = 2.5\text{ A}$
Rated insulation voltage	2 and 3 contact	3 contacts ( <b>XCS A, XCS B, XCS C, XCS E, XCS TA</b> ), 2 contacts ( <b>XCS PA, XCS TE</b> ), 2 and 3 contacts ( <b>XCS MP</b> ): $U_i = 500\text{ V}$ conforming to IEC/EN 60947-1; $U_i = 300\text{ V}$ conforming to UL 508, CSA C22-2 n° 14
	3 contact	<b>XCS PA and XCS TE:</b> $U_i = 400\text{ V}$ degree of pollution 3 conforming to IEC 60947-1 $U_i = 300\text{ V}$ conforming to UL 508, CSA C22-2 n° 14
Rated impulse withstand voltage	2 and 3 contact	3 contacts ( <b>XCS A, XCS B, XCS C, XCS E, XCS TA</b> ), 2 contacts ( <b>XCS PA, XCS TE</b> ), 2 and 3 contacts ( <b>XCS MP</b> ): $U_{imp} = 6\text{ kV}$ conforming to IEC/EN 60947-5-1
	3 contact	<b>XCS PA:</b> $U_{imp} = 4\text{ kV}$ conforming to IEC/EN 60947-5-4
Positive operation		N/C contact(s) with positive opening operation conforming to IEC/EN 60947-5-1, Section 3
Resistance across terminals		$\leq 30\text{ m}\Omega$ conforming to IEC/EN 60947-5-4
Short-circuit protection	2 and 3 contact	3 contacts ( <b>XCS A, XCS B, XCS C, XCS E, XCS TA</b> ), 2 contacts ( <b>XCS PA, XCS TE</b> ), 2 and 3 contacts ( <b>XCS MP</b> ): 10 A cartridge fuse type gG (gl)
	3 contact	<b>XCS PA:</b> 6 A cartridge fuse type gG (gl)
Connection	Pre-cabled	4 x 0.5 mm <sup>2</sup> or 6 x 0.5 mm <sup>2</sup> ( <b>XCS MP</b> ), PVC
	Screw clamp terminals	<b>XCS PA, XCS TA:</b> Clamping capacity, min: 1 x 0.34 mm <sup>2</sup> , max: 2 x 1.5 mm <sup>2</sup>
		3 contacts ( <b>XCS A, XCS B, XCS C, XCS E, XCS TA</b> ), 2 contacts ( <b>XCS PA, XCS TE</b> ): Clamping capacity, min: 1 x 0.5 mm <sup>2</sup> , max: 2 x 1.5 mm <sup>2</sup> with or without cable end
		<b>XCS PA:</b> clamping capacity, min: 1 x 0.34 mm <sup>2</sup> , max: 1 x 1 mm <sup>2</sup> or 2 x 0.75 mm <sup>2</sup>

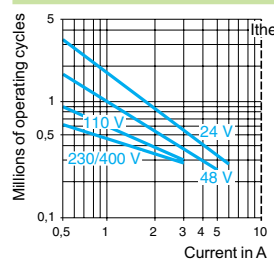
### Electrical durability

Conforming to IEC/EN 60947-5-1 Appendix C.  
Utilisation categories AC-15 and DC-13.  
Maximum operating rate: 3600 operating cycles/hour.  
Load factor: 0.5

Only applicable to **XCS MP**: Conforming to IEC/EN 60947-5-1 Appendix C.  
Utilisation categories AC-15 and DC-13.  
Maximum operating rate: 900 operating cycles/hour.

#### 2 snap action contact version

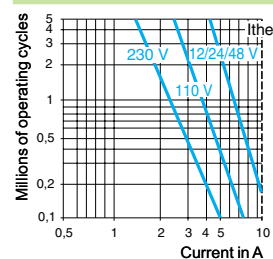
a.c. supply ~ 50/60 Hz  
~ inductive circuit



Voltage	V	24	48	120
Power broken in W for 5 million operating cycles.	W	10	7	4

For XE2S P•151 on ~ or ---, N/C and N/O contacts simultaneously loaded to the values shown with reverse polarity.

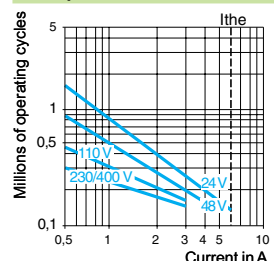
#### 3 contact version XCS A/B/C/E/TA and 2 slow break contact version



Voltage	V	24	48	120
Power broken in W for 5 million operating cycles.	W	13	9	7

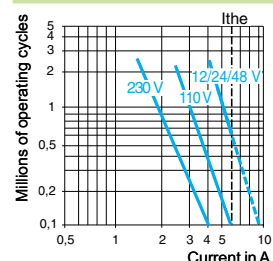
#### 3 snap action contact version XCS PA

a.c. supply ~ 50/60 Hz  
~ inductive circuit



Voltage	V	24	48	120
Power broken in W for 5 million operating cycles.	W	3	2	1

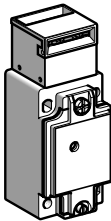
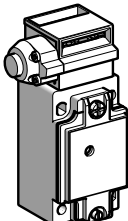
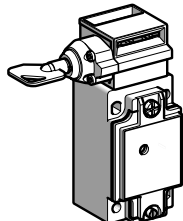
#### 3 slow break contact version XCS PA

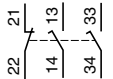
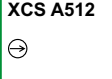
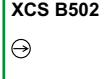
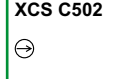
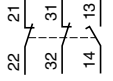
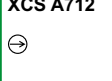
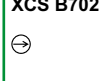
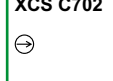
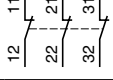


Voltage	V	24	48	120
Power broken in W for 5 million operating cycles.	W	4	3	2

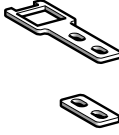

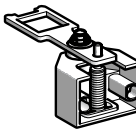
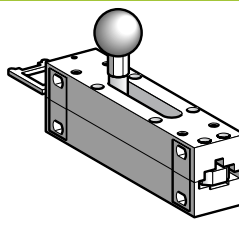
Safety detection solutions

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	Without locking of actuator	With locking of actuator, manual unlocking (3)		
				

LED indication on opening of N/C contacts	Without	1 orange LED ≈ 24/48 V	Without	Without
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 (4)	 XCS A502	 XCS A512	 XCS B502	 XCS C502
3-pole N/C + N/C + N/O (N/O staggered) slow break (4)	 XCS A702	 XCS A712	 XCS B702	 XCS C702
3-pole N/C + N/C + N/C slow break (4)	 XCS A802	—	—	—
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
Materials	Body: zamak. Head: zamak. Safety screws: 5-lobe torque. Protective plate: steel.

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) 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 B●●● 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.

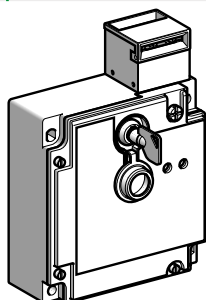
## Safety detection solutions

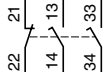
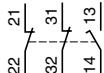
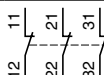
### Guard switches

Metal, turret head <sup>(1)</sup>, types XCS A, XCS B, XCS C and XCS E

1 or 2 cable entries M20 x 1.5 <sup>(2)</sup>

Type of switch	With interlocking, locking by solenoid
----------------	--



Type of interlocking	<b>Locking on de-energisation and unlocking on energisation of solenoid (3).</b> 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: <b>XCS E5312</b> becomes <b>XCS E5512</b> ..							
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 (4) (50/60 Hz on ~)		~ or --- 220/240 V (4) (50/60 Hz on ~)		
Type of contact on solenoid	N/C + N/O	2 N/C	N/C + N/O	N/C + N/O	2 N/C	N/C + N/O	2 N/C	
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 (5)		<b>XCS E5312</b> ⊖	—	—	—	—	<b>XCS E5342</b> ⊖	—
3-pole N/C + N/C + N/O (N/O staggered) slow break (5)		<b>XCS E7312</b> ⊖	<b>XCS E73127</b> ⊖	—	<b>XCS E7332</b> ⊖	<b>XCS E73327</b> ⊖	<b>XCS E7342</b> ⊖	<b>XCS E73427</b> ⊖
3-pole N/C + N/C + N/C slow break (5)		<b>XCS E8312</b> ⊖ (6)	<b>XCS E83127</b> ⊖ (6)	<b>XCS E8322</b> ⊖ (6)	—	—	—	—
Weight (kg)	1.140	1.140	1.140	1.140	1.140		1.140	

<b>Solenoid characteristics</b>							
Load factor	100%						
Rated operational voltage	$\sim$ or $\overline{\text{---}}$ 24 V	$\sim$ or $\overline{\text{---}}$ 24 V	$\sim$ or $\overline{\text{---}}$ 48 V	$\sim$ or $\overline{\text{---}}$ 110/120 V	$\sim$ or $\overline{\text{---}}$ 220/240 V		
Voltage limits	- 20%, + 10% of the rated operational voltage (including ripple on $\overline{\text{---}}$ ) conforming to IEC/EN 60947-1						
Service life	20 000 hours						
Consumption	Inrush: 10 VA. Sealed: 10 VA						

<b>LED indicator characteristics</b>		
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	$\sim$ or $\overline{\text{---}}$ 24/48 V	$\sim$ 110/240 V
Voltage limits	$\sim$ or $\overline{\text{---}}$ 20...52 V (including ripple)	$\sim$ 95...264 V (including ripple)
Service life	100 000 hours	100 000 hours
Protection against overvoltages	Yes	Yes

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

<sup>(2)</sup> 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**.

<sup>(3)</sup> 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.

<sup>(4)</sup> For use on  $\overline{\text{---}}$  110/120 V or  $\overline{\text{---}}$  220/240 V, remove the LED indicator module.

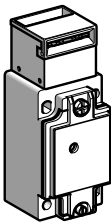
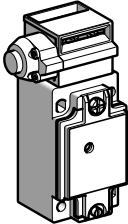
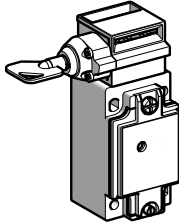
<sup>(5)</sup> Schematic diagrams shown represent the contact states whilst the actuator is inserted in the head of the switch.

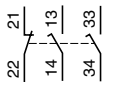
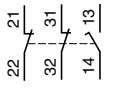
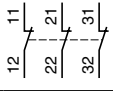
<sup>(6)</sup> Switches supplied with a single green LED.

Other versions: please consult your Regional Sales Office.

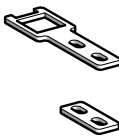

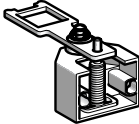
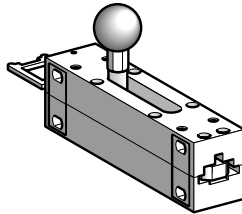
Safety detection solutions

Guard switches  
Metal, turret head (1), types XCS A, XCS B,  
XCS C and XCS E  
Cable entries tapped for n° 13 (Pg 13.5) cable gland

Type of switch	Without locking of actuator	With locking of actuator, manual unlocking (2)
		 

LED indication on opening of N/C contacts	Without	1 orange LED ≈ 24/48 V	1 orange LED ≈ 110/240 V	Without	1 orange LED ≈ 24/48 V	Without	1 orange LED ≈ 24/48 V
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	Body: zamak. Head: zamak. Safety screws: 5-lobe torque. Protective plate: steel.

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.

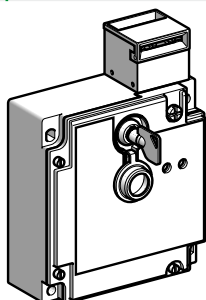
## Safety detection solutions

### 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	With interlocking, locking by solenoid
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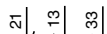
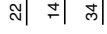
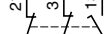
Type of interlocking	<b>Locking on de-energisation and unlocking on energisation of solenoid (2).</b> To order a guard switch with locking on energisation and unlocking on de-energisation of the solenoid, replace the 2nd number (3) by 5 in the references shown below. Example: <b>XCS E5311</b> becomes <b>XCS E5511</b> .							
----------------------	---	--	--	--	--	--	--	--

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) (50/60 Hz on ~)		~ or --- 220/240 V (3) (50/60 Hz on ~)	
----------------------------	----------------------------------	--	----------------------------------	--	---	--	---	--

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 (⊖ N/C contact with positive opening operation)

<b>3-pole</b> <b>N/C + N/O + N/O</b> (2 N/O staggered) slow break (4)		<b>XCS E5311</b>	—	<b>XCS E5321</b>	—	<b>XCS E5331</b>	—	<b>XCS E5341</b>	—
<b>3-pole</b> <b>N/C + N/C + N/O</b> (N/O staggered) slow break (4)		<b>XCS E7311</b>	<b>XCS E73117</b>	<b>XCS E7321</b>	<b>XCS E73217</b>	<b>XCS E7331</b>	<b>XCS E73317</b>	<b>XCS E7341</b>	<b>XCS E73417</b>
<b>3-pole</b> <b>N/C + N/C + N/C</b> slow break (4)		<b>XCS E8311</b>	<b>XCS E83117</b>	—	—	<b>XCS E8331</b>	<b>XCS E83317</b>	—	<b>XCS E83417</b>
<b>Weight (kg)</b>		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.

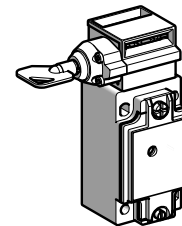
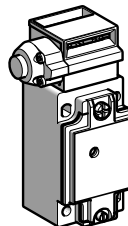
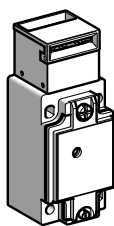
## Safety detection solutions

Guard switches

Metal, turret head <sup>(1)</sup>, types XCS A, XCS B, XCS C and XCS E

Cable entries tapped 1/2" NPT

Type of switch	Without locking of actuator	With locking of actuator, manual unlocking <sup>(2)</sup>
----------------	-----------------------------	---



LED indication on opening of N/C contacts	Without	1 orange LED ~ 24/48 V	1 orange LED ~ 110/240 V	Without	1 orange LED ~ 24/48 V	1 orange LED ~ 110/240 V	Without
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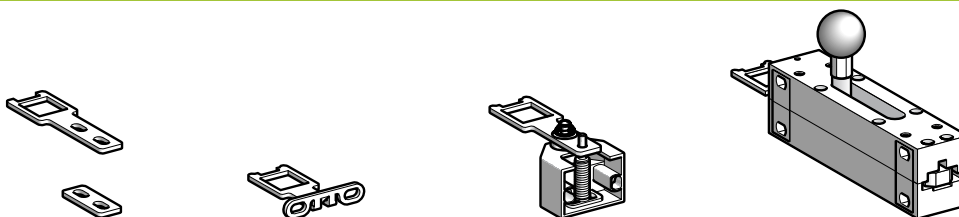
### References of switches without actuator (⊖ N/C contact with positive opening operation)

3-pole N/C + N/O + N/O (2 N/O staggered) slow break (3)		XCS A503 ⊖	—	XCS A523 ⊖	XCS B503 ⊖	—	—	—
3-pole N/C + N/C + N/O (N/O staggered) slow break (3)		XCS A703 ⊖	XCS A713 ⊖	XCS A723 ⊖	XCS B703 ⊖	XCS B713 ⊖	XCS B723 ⊖	XCS C703 ⊖
3-pole N/C + N/C + N/C slow break (3)		XCS A803 ⊖	—	—	XCS B803 ⊖	—	—	XCS C803 ⊖
Weight (kg)		0.440	0.440	0.440	0.475	0.475	0.475	0.480

### Complementary characteristics not shown under General characteristics (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	≥ 20 N
Cable entry	XCS A, XCS B, XCS C: 1 cable entry XCS E: 2 cable entries Entries tapped for 1/2" NPT (USAS B2-1) conduit
Materials	Body: zamak. Head: zamak. Safety screws: 5-lobe torque. Protective plate: steel.

### 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

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

<sup>(2)</sup> Unlocking by pushbutton for XCS B●●● and by key operated lock for XCS C●●●.

<sup>(3)</sup> 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.



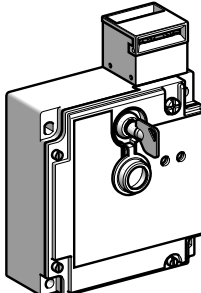
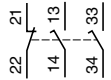
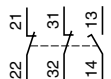
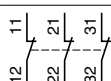
## Safety detection solutions

### Guard switches

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

Cable entries tapped 1/2" NPT

3

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 5 in the references shown below. Example: <b>XCS E5313</b> becomes <b>XCS E5513</b> .			
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 c 110/120 V (3) (50/60 Hz on ~)	
Type of contact on solenoid	N/C + N/O	2 N/C	N/C + N/O	2 N/C
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 (4)		<b>XCS E5313</b> ⊖	<b>XCS E5333</b> ⊖	—
3-pole N/C + N/C + N/O (N/O staggered) slow break (4)		<b>XCS E7313</b> ⊖	<b>XCS E73137</b> ⊖	<b>XCS E7333</b> ⊖
3-pole N/C + N/C + N/C slow break (4)		<b>XCS E8313</b> ⊖ (5)	—	—
Weight (kg)	1.140			
Solenoid 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  $\text{---}$  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.

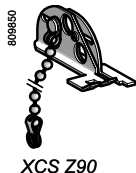
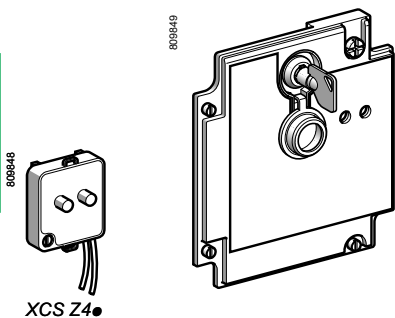
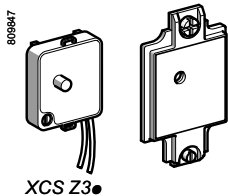
Other versions: please consult your Regional Sales Office.



# Safety detection solutions

## Guard switches

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



### Separate components

Description	For use with	Supply voltage	Reference	Weight kg
1 orange LED indicator module with cover, seal and 2 fixing screws	XCS A	~ or 24/48 V	XCS Z31	0.040
	XCS B			
	XCS C	~ 110/240 V	XCS Z32	0.040
1 orange LED + 1 green LED indicator module with cover + lock (1), seal and 4 fixing screws (2 keys included for lock)	XCS E73●●	~ or 24/48 V	XCS Z43	0.175

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

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

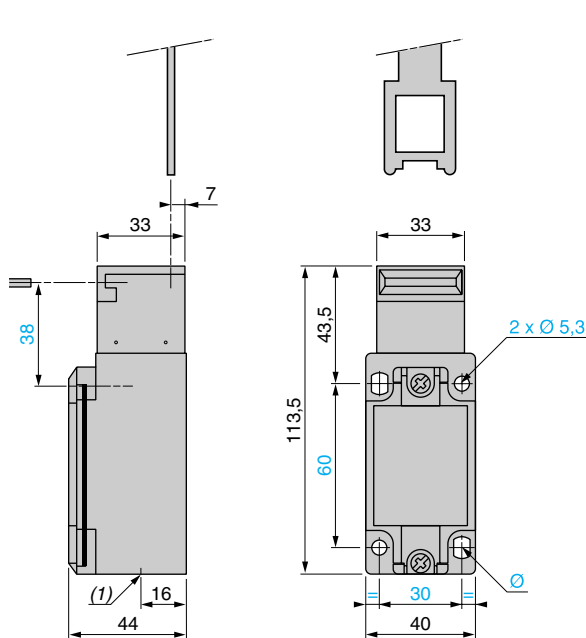
Description	For use with	Unit reference	Weight kg
1/2" NPT conduit adaptor (Sold in lots of 5)	XCS A, XCS B, XCS C, XCS E	DE9 RA2012	0.048
M20 x 1.5 adaptor (Sold in lots of 5)	XCS A, XCS B, XCS C, XCS E	DE9 RA13520	0.010

#### Dimensions

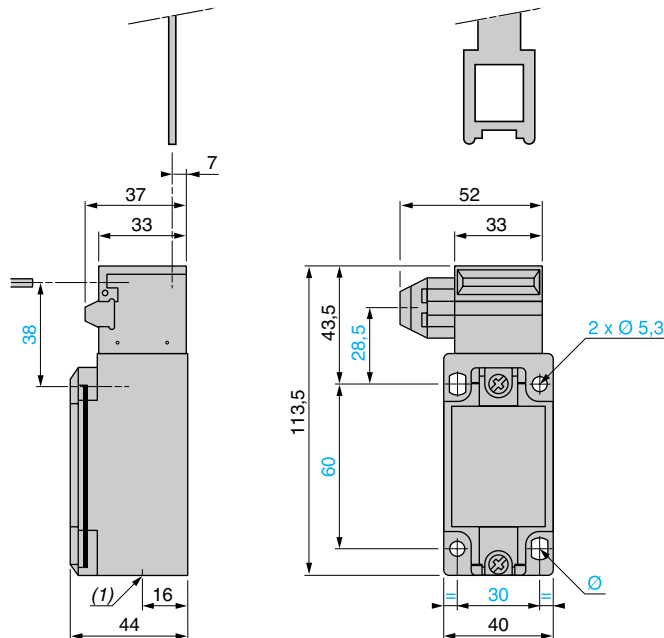
##### Guard switches

XCS A...

XCS B..., XCS C...



(1) 1 tapped entry for cable gland  
Ø: 2 elongated holes Ø 5.3 x 7.3



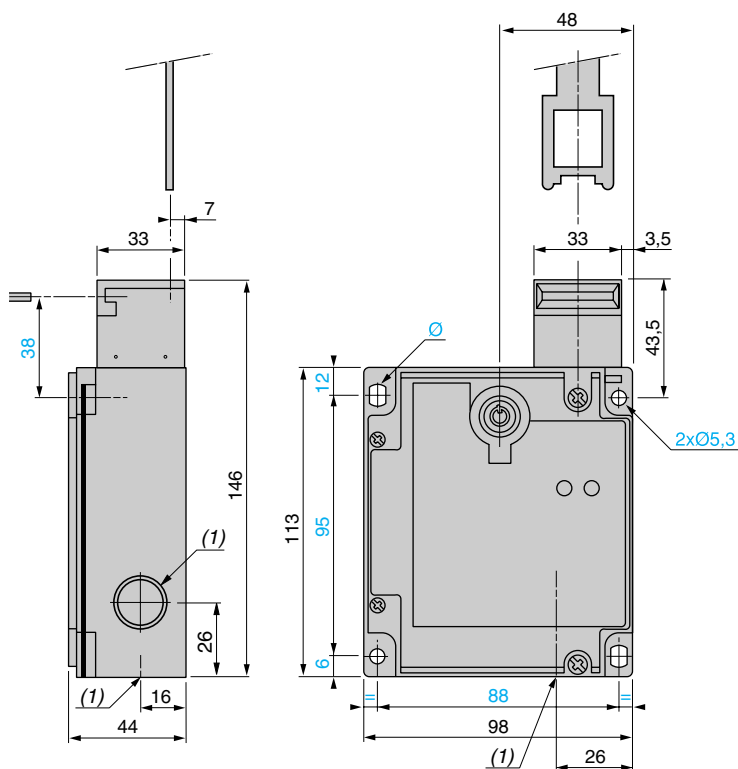
(1) 1 tapped entry for cable gland  
Ø: 2 elongated holes Ø 5.3 x 7.3

##### Guard switches

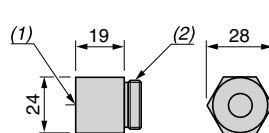
XCS E...

M20 x 1.5 adaptor  
DE9 RA13520

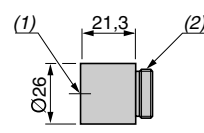
1/2" NPT conduit adaptor  
DE9 RA2012



(1) 1 tapped entry for cable gland  
Ø: 2 elongated holes Ø 5.3 x 7.3



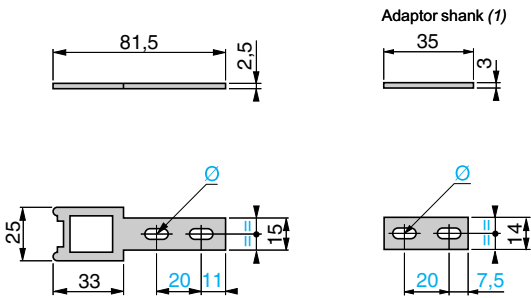
(1) M20 x 1.5 tapped entry  
(2) Pg 13.5 threaded shank



(1) Tapped entry for 1/2" NPT conduit  
(2) M20 x 1.5 threaded shank

Dimensions (continued)

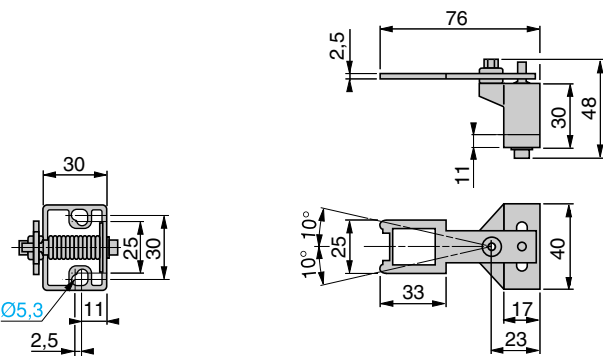
XCS Z01



(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

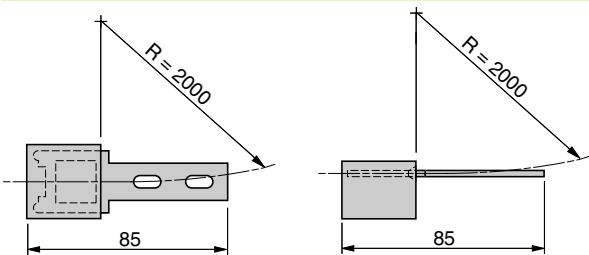
XCS Z03



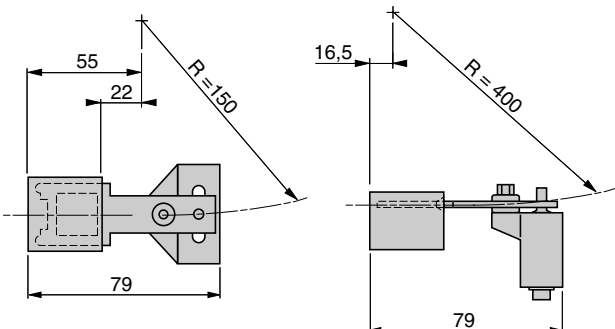
Fixing axis % related to actuator.

Operating radius required for actuator

XCS Z01

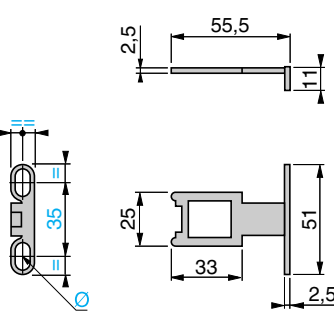


XCS Z03



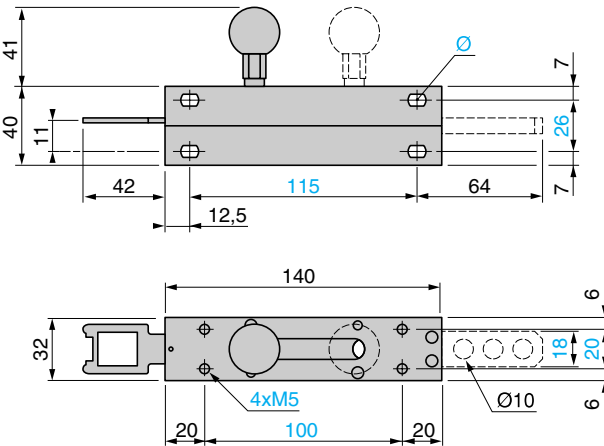
R = minimum radius

XCS Z02



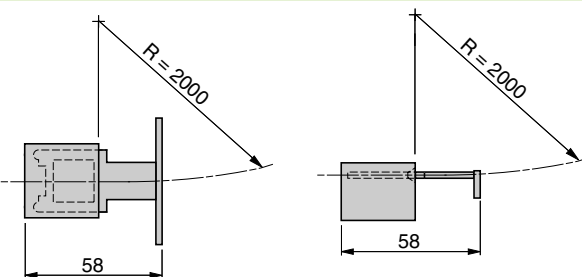
Ø: 2 elongated holes Ø 5.3 x 10

XCS Z05



Ø: 4 elongated holes Ø 5.3 x 7.3

XCS Z02



## Setting-up

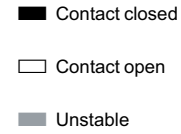
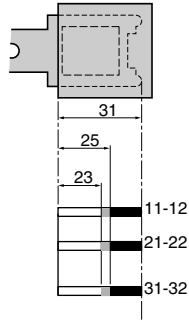
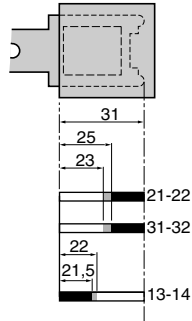
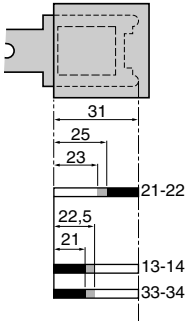
### Functional diagrams

#### XCS ●5●●●

#### XCS ●7●●●

#### XCS ●8●●●

#### Contact operation

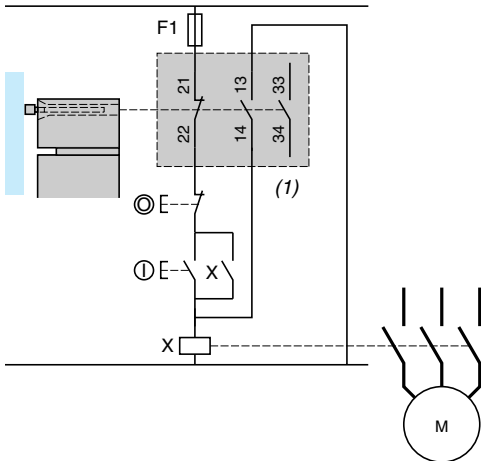


## Schemes

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

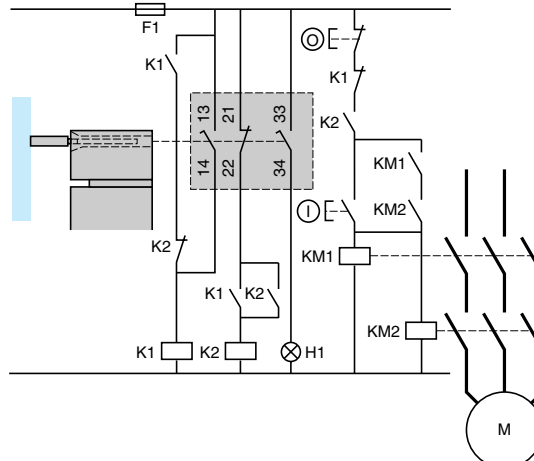
Example with 3-pole N/C + N/O + N/O contact and protection fuse to prevent shunting of the N/C contact, either by cable damage or by tampering.



(1) Signalling contact

### 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.

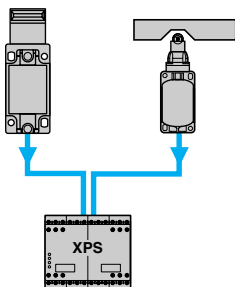


H1: "actuator not inserted" indicator

### Wiring to category 4 conforming to EN 954-1/ISO 13849-1. 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)

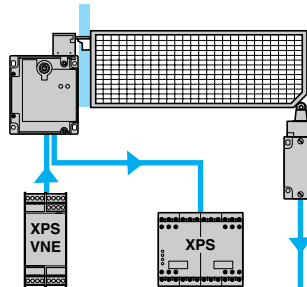
#### Method for machines with quick rundown time (low inertia)

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.

#### Method for machines with long rundown time (high inertia)



Interlocking device for actuator fitted on guard and zero speed detection.

# 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

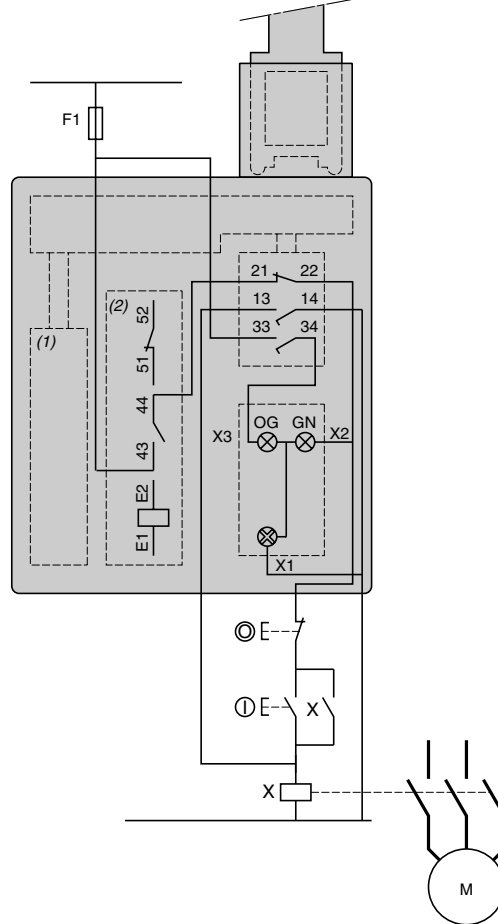
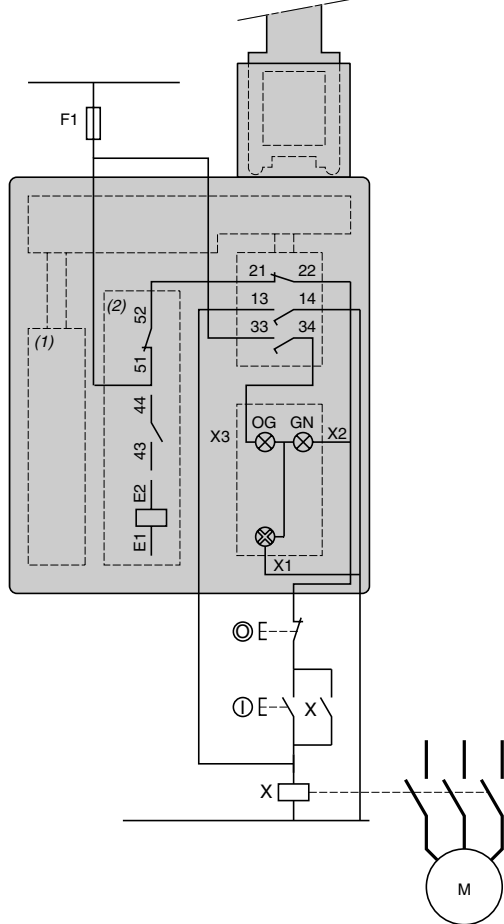
Wiring examples with protection fuse to prevent shunting of the N/C contact, either by cable damage or by tampering.

#### Locking on de-energisation, N/C + N/O + N/O

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

XCS E53●●

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**

(1) Solenoid

(2) Auxiliary contact

E1-E2: Solenoid supply

51-52: Solenoid signalling contact

13-14: Safety contact, available for redundancy

33-X1: LED (orange): actuator withdrawn

43-X1: LED (green): actuator inserted and locked

**21-44: Safety pre-wiring obligatory**

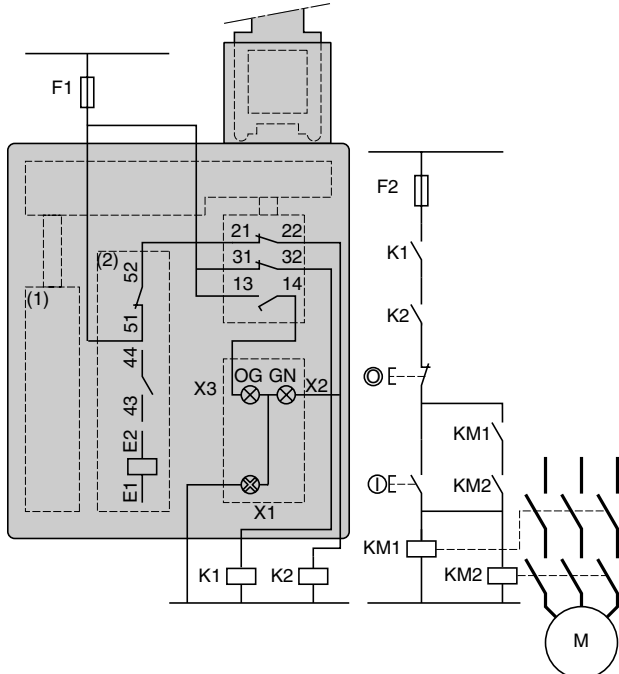
**Note:** These schemes are given as examples only, the designer must refer relevant safety standards for guidance.

**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

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

XCS E73●●



(1) Solenoid

(2) Auxiliary contact

E1-E2: Solenoid supply

43-44: Solenoid signalling contact

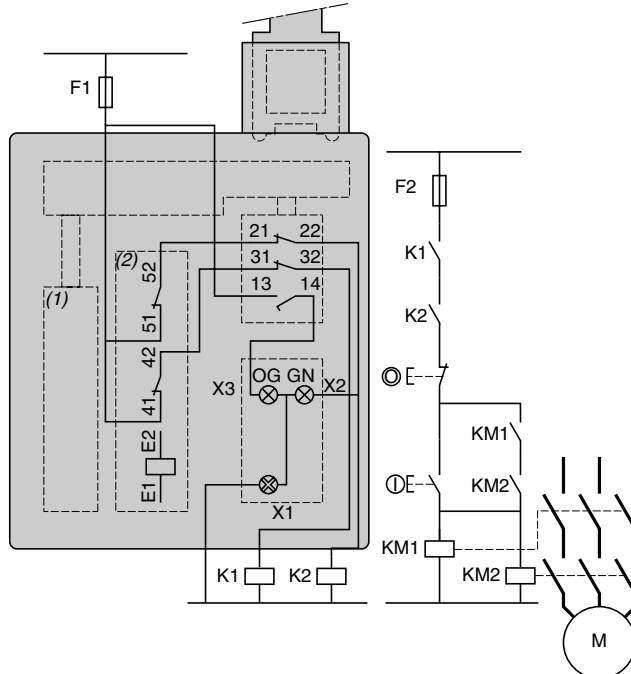
21-22 and 31-32: Safety contacts, available for redundancy

13-X1: LED (orange): actuator withdrawn

51-X1: LED (green): actuator inserted and locked

**21-52: Safety pre-wiring obligatory****Locking on de-energisation, N/C + N/C + N/O**

XCS E73●●7



(1) Solenoid

(2) Auxiliary contact

E1-E2: Solenoid supply

41-42 and 51-52: Solenoid signalling contacts

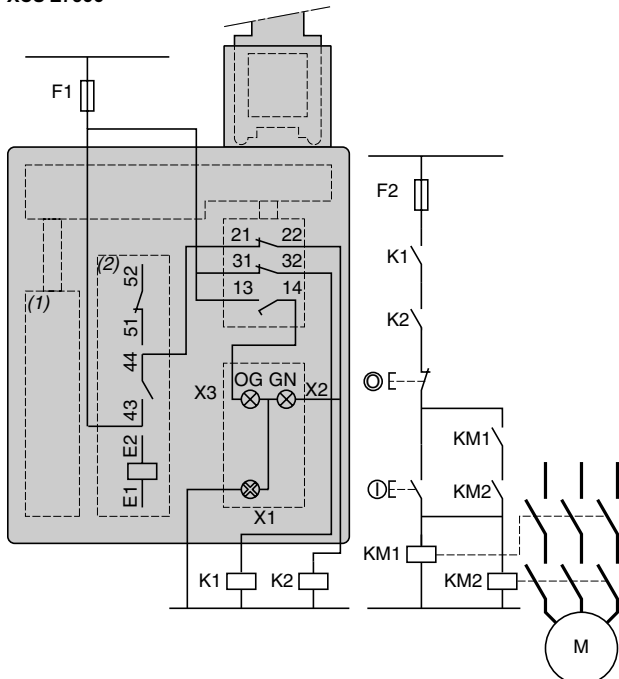
21-22 and 31-32: Safety contacts, available for redundancy

13-X1: LED (orange): actuator withdrawn

51-X1: LED (green): actuator inserted and locked

**21-52 and 42-31: Safety pre-wiring obligatory****Locking on energisation, N/C + N/C + N/O**

XCS E75●●



(1) Solenoid

(2) Auxiliary contact

E1-E2: Solenoid supply

51-52: Solenoid signalling contact

21-22 and 31-32: Safety contacts, available for redundancy

13-X1: LED (orange): actuator withdrawn

43-X1: LED (green): actuator inserted and locked

**21-44: Safety pre-wiring obligatory**

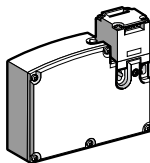
## Safety detection solutions

### Guard switches

Plastic, turret head <sup>(1)</sup>, types XCS PA,  
XCS TA and XCS TE

1 or 2 cable entries M16 x 1.5 <sup>(2)</sup>

Type of switch	With interlocking, locking by solenoid
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Type of interlocking	<b>Locking on de-energisation and unlocking on energisation of solenoid <sup>(3)</sup>.</b> 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 TE5312 becomes XCS TE5512.
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Supply voltage of solenoid	~ or --- 24 V (50/60 Hz on ~)
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### References of switches without actuator (⊖ N/C contact with positive opening operation)

2-pole N/C + N/O <sup>(4)</sup> break before make slow break		XCS TE5312	⊖
2-pole N/C + N/C <sup>(4)</sup> slow break		XCS TE7312	⊖

Weight (kg)	0.360
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### Solenoid characteristics

Load factor	100 %
Rated operational voltage	~ or --- 24 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	10 VA max.

### References of actuators and guard retaining device



Description	Straight actuator	Actuator with wide fixing <sup>(5)</sup>	Pivoting actuator	Right-angled actuator	Guard retaining device <sup>(6)</sup>
For guard switches XCS PA, TA, TE	XCS Z11	XCS Z12	XCS Z13	XCS Z14	XCS Z21
Weight (kg)	0.015	0.015	0.012	0.085	0.025

- (1) Head adjustable in 90° steps throughout 360°. Blanking plug for operating head slot included with switch.  
 (2) For cable entries tapped for n° 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.



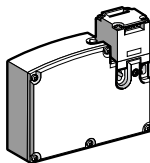
## Safety detection solutions

### Guard switches

Plastic, turret head (1), types XCS PA,  
XCS TA and XCS TE

Cable entries tapped for n° 11 (Pg 11) cable gland

Type of switch	With interlocking, locking by solenoid
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Type of interlocking	<b>Locking on de-energisation and unlocking on energisation of solenoid (2).</b> 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 TE5311 becomes XCS TE5511.		
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Supply voltage of solenoid	$\sim$ or $\text{---}$ 24 V (50/60 Hz on $\sim$ )	$\sim$ or $\text{---}$ 120 V (50/60 Hz on $\sim$ )	$\sim$ or $\text{---}$ 230 V (50/60 Hz on $\sim$ )
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#### References of switches without actuator (N/C contact with positive opening operation)

<b>2-pole N/C + N/O (3)</b> break before make slow break		XCS TE5311 ⊖	XCS TE5331 ⊕	XCS TE5341 ⊖
<b>2-pole N/O + N/C (3)</b> make before break slow break		XCS TE6311 ⊕	—	—
<b>2-pole N/C + N/C (3)</b> slow break		XCS TE7311 ⊕	XCS TE7331 ⊕	XCS TE7341 ⊕
Weight (kg)	0.360	0.360	0.360	0.360

#### Solenoid characteristics

Load factor	100 %
Rated operational voltage	$\sim$ or $\text{---}$ 24 V $\sim$ or $\text{---}$ 120 V $\sim$ or $\text{---}$ 230 V
Voltage limits	- 20%, + 10% of the rated operational voltage (including ripple on $\text{---}$ ) 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.

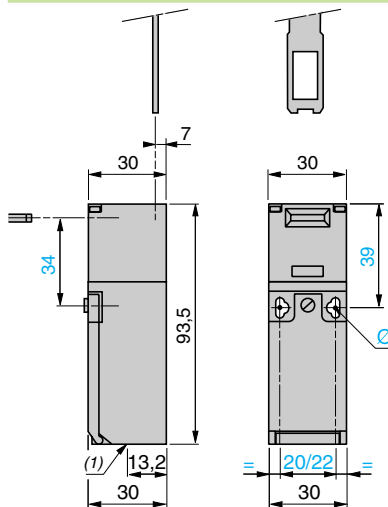
(4) Only for use with guard switches XCS PA and XCS TA (without the actuator centering device XCS Z200), used in conjunction with actuators XCS Z12, XCS Z13 or XCS Z15.

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

Other versions: please consult your Regional Sales Office.

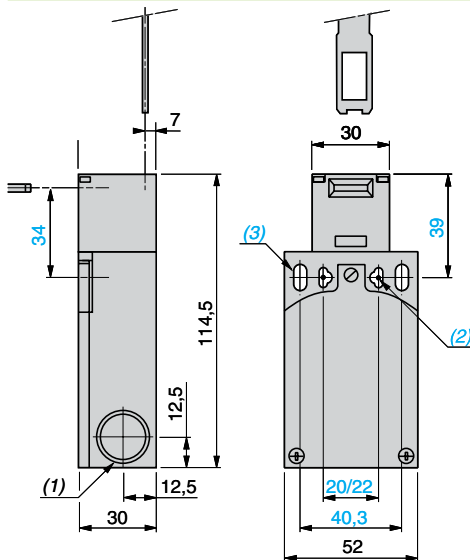
#### Dimensions

XCS PA●91, XCS PA●92



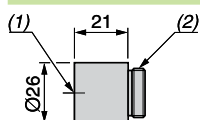
(1) 1 tapped entry for cable gland  
Ø: 2 elongated holes Ø 4.3 x 8.3 on 22 centres, 2 holes Ø 4.3 on 20 centres

XCS TA●9●



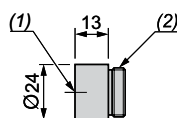
(1) 2 tapped entries for cable gland or 1/2" NPT conduit adaptor  
(2) 2 elongated holes Ø 4.3 x 8.3 on 22 centres, 2 holes Ø 4.3 on 20 centres  
(3) 2 elongated holes Ø 5.3 x 13.3

1/2" NPT conduit adaptor  
DE9 RA1012



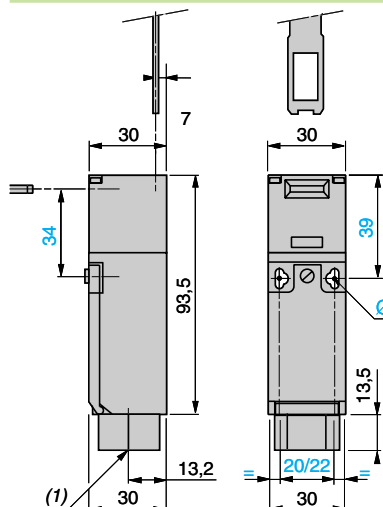
(1) Tapped entry for 1/2" NPT conduit  
(2) Pg 11 threaded shank

M16 x 1.5 adaptor  
DE9 RA1016



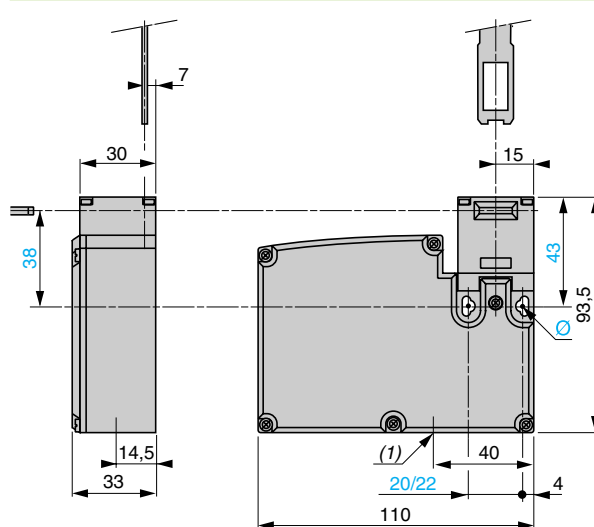
(1) M16 x 1.5 tapped entry  
(2) Pg 11 threaded shank

XCS PA●93



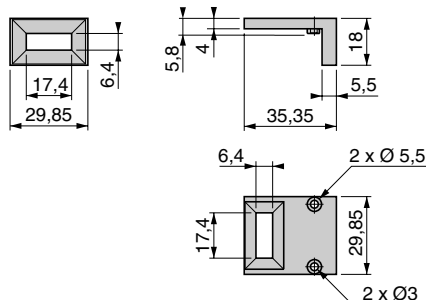
(1) 1 tapped entry for 1/2" NPT conduit  
Ø: 2 elongated holes Ø 4.3 x 8.3 on 22 centres, 2 holes Ø 4.3 on 20 centres

XCS TE●●●●



(1) 1 tapped entry for cable gland or 1/2" NPT conduit adaptor  
Ø: 2 elongated holes Ø 4.3 x 8.3 on 22 centres, 2 holes Ø 4.3 on 20 centres

Actuator centering device  
XCS Z200

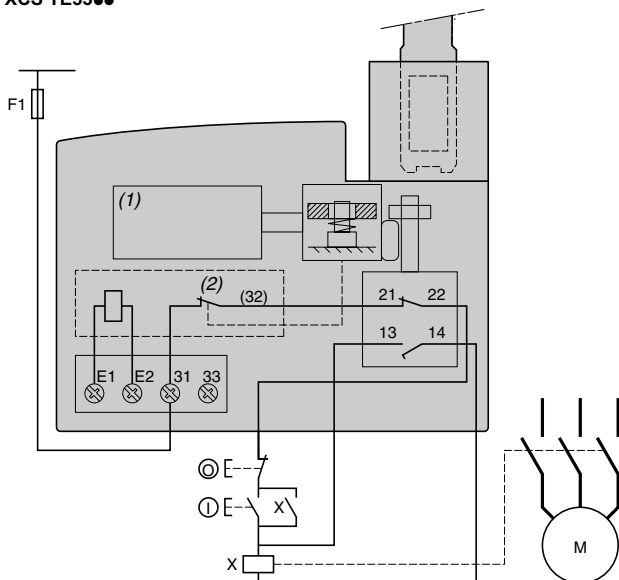


## Schemes (continued)

## 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●●

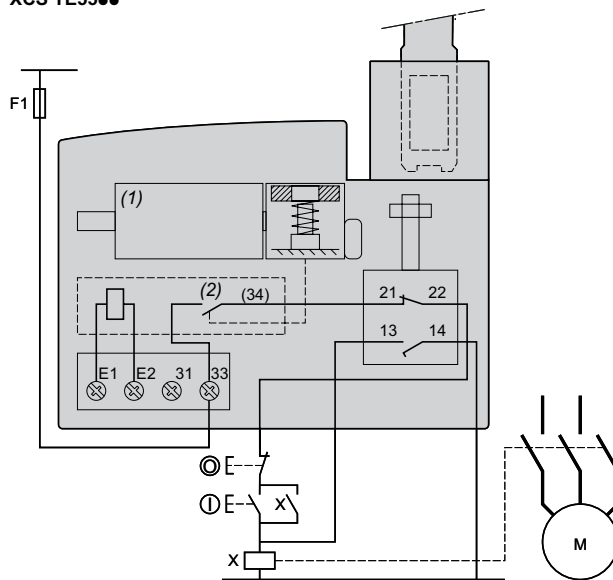
(1) Solenoid

(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

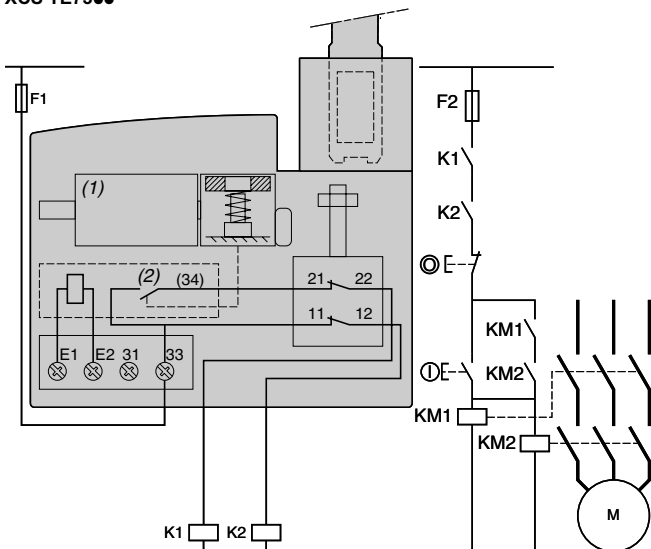
E1-E2: Solenoid supply

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●●

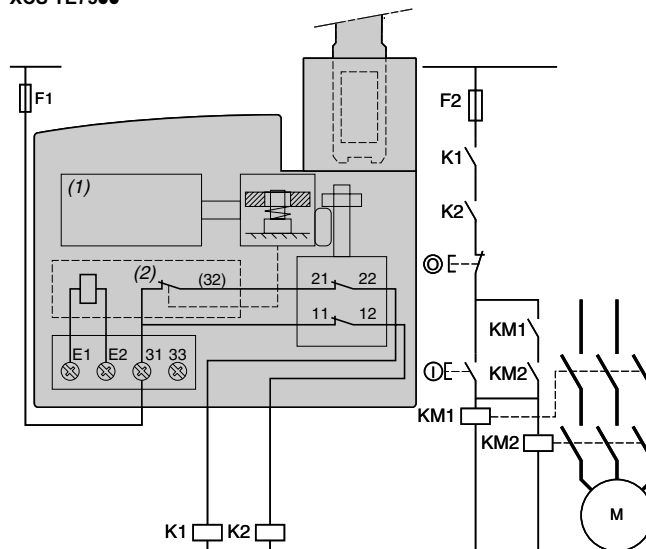
(1) Solenoid

(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