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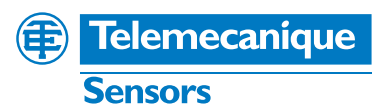
# Contactless RFID safety switches

## Preventa XCSR

### Catalogue



Simply easy!™





# Contactless RFID safety switches Preventa XCSR

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#### Standalone models

- Unique code, high-level coding conforming to ISO 14119
- 2 OSSD safety outputs
- Embedded EDM (external device monitoring)
- Manual or automatic start/restart depending on model
- Male 8-pin M12 connector
- IP 69K
- Numerous possible mounting configurations due to rotary transponder and symmetrical design
- Operation possible without safety control unit

#### Category 4/PL = e and SIL3

**XCSRC11AM12 and XCSRC11MM12**  
Unique pairing (1)



**XCSRC31AM12 and XCSRC31MM12**  
Two new pairings possible (2)



Page 4

#### Daisy-chain models for series connection

- Unique code, high-level coding conforming to ISO 14119
- Up to 20 switches can be connected in series without impacting the safety level
- 2 OSSD safety outputs
- 2 male 5-pin M12 connectors for direct series connection
- IP 69K
- Diagnosis of the whole chain of switches possible using the optional diagnostic module (see page 7)
- Numerous possible mounting configurations due to rotary transponder and symmetrical design

#### Category 4/PL = e and SIL3 (if combined with an appropriate Preventa XPS safety control unit category 4/PL = e - SIL3)

**XCSRC12M12**  
Unique pairing (1)



**XCSRC32M12**  
Two new pairings possible (2)



Page 5

#### Single models for point-to-point connections

- Unique code, high-level coding conforming to ISO 14119
- Point-to-point connection to a safety controller or safety PLC
- 2 OSSD safety outputs
- Male 5-pin M12 connector
- IP 69K
- Numerous possible mounting configurations due to rotary transponder and symmetrical design

#### Category 4/PL = e and SIL3 (if combined with an appropriate Preventa XPS safety control unit category 4/PL = e - SIL3)

**XCSRC10M12**  
Unique pairing (1)



**XCSRC30M12**  
Two new pairings possible (2)



Page 6

(1) The reader and transponder are supplied together, already paired in factory with a unique code.

(2) For these switches, the reader and transponder are supplied together, already paired in factory with a unique code. However, the reader can be re-paired (twice only) with a new (blank) transponder (see page 7). Once the new transponder has been paired, the previous transponder is no longer usable. A new, blank transponder can only be paired once.

Type of contactless RFID switch		Standalone XCSR $\bullet$ 1AM12 and XCSR $\bullet$ 1MM12	Daisy-chain XCSR $\bullet$ 12M12 and XCSR $\bullet$ 32M12	Single XCSR $\bullet$ 10M12 and XCSR $\bullet$ 30M12
<b>Environment</b>				
Conforming to standards		ISO 14119, EN/IEC 60947-5-2, EN/IEC 60947-5-3 UL 508 (1), CSA C22.2 SIL 3 (IEC 61508), SILCL 3 (IEC 62061), PL <sub>e</sub> -Cat.4 (EN ISO 13849-1)		
Product certifications		CE, cULus, TÜV, FCC, EAC, IC, RCM, E2, ECOLAB		
Maximum safety level (2)		SIL3 conforming to EN/IEC 61508, PL <sub>e</sub> =e, category 4 conforming to EN/ISO 13849-1		
Ambient air temperature	For operation	°C	-25...+70 °C (-13...+158 °F)	
	For storage	°C	-40...+85 °C (-40...+158 °F)	
Vibration resistance	Conforming to EN/IEC 60068-2-6		10 gn (10...150 Hz)	
Shock resistance	Conforming to EN/IEC 60068-2-27		30 gn, 11 ms	
Protection against electric shock	Conforming to EN/IEC 61140		Class III	
Degree of protection	Conforming to EN/IEC 60529		IP 65, IP 66, IP 67	
	Conforming to DIN 40050		IP 69K	
Materials		Thermoplastic housing (Valox™)		
<b>Characteristics</b>				
Rated operating characteristics (3)			U <sub>e</sub> : 24 V $\overline{\text{---}}$ , -20%...+10%, I <sub>e</sub> : $\overline{\text{---}}$ 60 mA (without load)	
Rated impulse withstand voltage (U <sub>imp</sub> )	Conforming to EN/IEC 60947-5-2	kV	0.8	
Integrated output protection			Short-circuit protection	
Connection	Conforming to EN/IEC 60947-5-2-A3 and EN/IEC 61076		M12 connector (A coding)	
Safety outputs 2 PNP NO OSSDs (output signal switching devices)	Maximum current	mA	400	200
Maximum switching frequency		Hz	0.5	
Delay	Power-on	s	< 5	
Typical response time (on transponder entry into operating zone)		ms	250 ms	120 ms + 50 ms per additional switch
Risk time (on transponder exit from operating zone)		ms	< 120 ms	< 120 ms + 18 ms per additional switch
Probability of dangerous failure per hour PFH <sub>d</sub>	Conforming to EN/ISO13849-1 and EN/IEC 62061		5 x 10 <sup>-10</sup>	
Tightening torque	M4 retaining screw		1.5 N.m (13 lb-in)	
	M12 connectors		1 N.m (8.85 lb-in)	
Mission time (TM)			20 years	
RFID protocol			Based on ISO 15693	
<b>Functions</b>				
Functions			- Operation possible without safety interface - Manual or automatic restart depending on model - External device monitoring (EDM)	- Integrated series connections - Connection to a safety interface (safety relay, for example) - Series diagnostic (with diagnostic module XCSR $\bullet$ D210MDB)
				- Point-to-point connection to a safety interface (safety controller or safety PLC, for example)

(1) The switch safety function has been assessed by TÜV Nord, not by UL.

(2) With an appropriate, correctly connected safety control system for Daisy-chain and Single models.

(3) Use a safety extra-low voltage (SELV) or protected extra-low voltage (PELV) power supply.

**Type**

Standalone contactless RFID safety switches



Certified

Connection via M12 connector



**References**

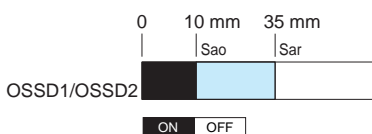
Composition	Functions	Unique pairing	Two new pairings possible	Weight kg
<ul style="list-style-type: none"> <li>■ Reader</li> <li>■ Multiposition sensor transponder</li> <li>■ Transponder and reader factory paired</li> <li>■ 4 blanking plugs</li> <li>■ Quick Start Guide</li> <li>■ EU declaration of conformity</li> </ul>	EDM, automatic restart	XCSRC11AM12	XCSRC31AM12	0.100
	EDM, monitored manual restart (1)	XCSRC11MM12	XCSRC31MM12	0.100

**Detection characteristics (2)**

Typical operating sensing distance (for detection of transponder presence)	15 mm
Assured operating sensing distance	Sao: 10 mm
Typical release sensing distance (for detection of transponder absence)	18 mm
Assured release distance	Sar: 35 mm
Repeat accuracy	≤ 10% x Sr
Hysteresis	3% x Sr ≤ H ≤ 20% x Sr (Sr: real sensing distance)

**State of outputs**

Output states shown are with the dedicated transponder positioned in front of the reader.

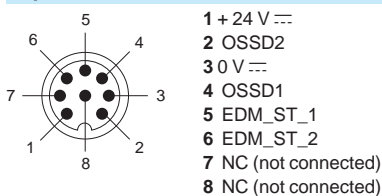


- Outputs closed
- Outputs opened
- Transient state

Sao: Assured operating sensing distance  
Sar: Assured release distance  
Conforming to EN/IEC 60947-5-3

**Connections**

**8-pin M12 connector**



(1) The start command is effective after the operator has pressed and released the start button.  
(2) These values are given for a face-to-face mounting configuration of the reader and transponder on a non-magnetic support, without misalignment between the transponder and the reader, and at an ambient temperature between +20 and +25 °C.

Type

Daisy-chain contactless RFID safety switches



Certified

Connection via M12 connectors



### References

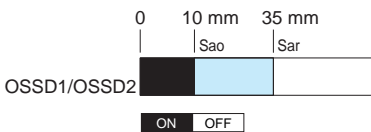
Composition	Unique pairing	Two new pairings possible	Weight kg
<ul style="list-style-type: none"> <li>■ Reader</li> <li>■ Multiposition sensor transponder</li> <li>■ Transponder and reader factory paired</li> <li>■ 4 blanking plugs</li> <li>■ Quick Start Guide</li> <li>■ EU declaration of conformity</li> </ul>	XCSR12M12	XCSR32M12	0.100

### Detection characteristics (1)

Typical operating sensing distance (for detection of transponder presence)	15 mm
Assured operating sensing distance	Sao: 10 mm
Typical release sensing distance (for detection of transponder absence)	18 mm
Assured release distance	Sar: 35 mm
Repeat accuracy	≤ 10% x Sr
Hysteresis	3% x Sr ≤ H ≤ 20% x Sr (Sr: real sensing distance)

### State of outputs

Output states shown are with the dedicated transponder positioned in front of the reader.



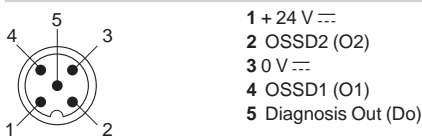
- Outputs closed
- Outputs opened
- Transient state

Sao: Assured operating sensing distance  
Sar: Assured release distance  
Conforming to EN/IEC 60947-5-3

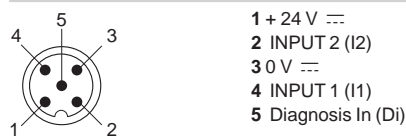
### Connections

2 x 5-pin M12 connectors

Output connector



Input connector



(1) These values are given for a face-to-face mounting configuration of the reader and transponder on a non-magnetic support, without misalignment between the transponder and the reader, and at an ambient temperature between +20 and +25 °C.

# Safety detection solutions

Contactless RFID safety switches

Preventa XCSR

**Type**

Single contactless RFID safety switches



Certified

Connection via M12 connector



**References**

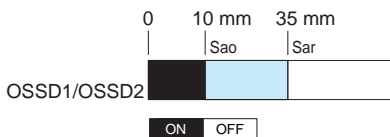
Composition	Unique pairing	Two new pairings possible	Weight kg
<ul style="list-style-type: none"> <li>■ Reader</li> <li>■ Multiposition sensor transponder</li> <li>■ Transponder and reader factory paired</li> <li>■ 4 blanking plugs</li> <li>■ Quick Start Guide</li> <li>■ EU declaration of conformity</li> </ul>	XCSRC10M12	XCSRC30M12	0.100

**Detection characteristics (1)**

Typical operating sensing distance (for detection of transponder presence)	15 mm
Assured operating sensing distance	Sao: 10 mm
Typical release sensing distance (for detection of transponder absence)	18 mm
Assured release distance	Sar: 35 mm
Repeat accuracy	≤ 10% x Sr
Hysteresis	3% x Sr ≤ H ≤ 20% x Sr (Sr: real sensing distance)

**State of outputs**

Output states shown are with the dedicated transponder positioned in front of the reader.

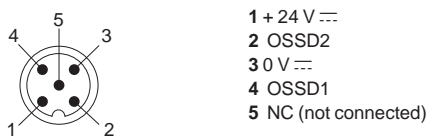


- Outputs closed
- Outputs opened
- Transient state

Sao: Assured operating sensing distance  
Sar: Assured release distance  
Conforming to EN/IEC 60947-5-3

**Connections**

**5-pin M12 connector**



(1) These values are given for a face-to-face mounting configuration of the reader and transponder on a non-magnetic support, without misalignment between the transponder and the reader, and at an ambient temperature between +20 and +25 °C.



# Safety detection solutions

## Accessories for Preventa XCSR contactless RFID safety switches

XCS\_616\_CPSC16004



XCSR210MDB

XCS\_616\_CPSC16004



XCSR2A3

XCS\_616\_CPSC16005



XCSRZE

XCS\_616\_CPSC16016



XCSRZSRC1



XCSRZSTK1

### Diagnostic module for Daisy-chain RFID safety switches

The **XCSR210MDB** module interprets the diagnostic data from the whole chain of switches and makes this information available into Modbus registers. There are two RJ45 Modbus communication connectors available for connecting external peripheral devices (such as an HMI terminal, for example).

Main characteristics of the diagnostic function:

- It provides the state of all the **XCSR** M12 switches monitored by the safety chain.
- It identifies which protection devices are opened or closed.
- It helps to prevent from a restart of the machine if the chain has been unintentionally or deliberately tampered with; if an error has been detected on any of the safety switches; or if any of the wiring becomes disconnected.
- It detects if the loopback device **XCSRZE** is not connected and helps to prevent from a new start until the loopback device has been reconnected and a new power cycle completed.

Description	For RFID safety switches	Reference	Weight kg
<ul style="list-style-type: none"> <li>■ Modbus RTU</li> <li>■ 2 RJ45 outputs</li> <li>■ 2 LEDs</li> <li>■ 1 volt-free contact representative of the state of the chain</li> </ul>	XCSRC12M12, XCSRC32M12	<b>XCSR210MDB</b>	0.100

### Loopback device for Daisy-chain RFID safety switches

Description	For RFID safety switches	Reference	Weight kg
<b>M12 connector</b>	XCSRC12M12, XCSRC32M12	<b>XCSRZE</b>	0.020

### Blank transponder for new pairing

Composition	For RFID safety switches	Reference	Weight kg
<ul style="list-style-type: none"> <li>■ Blank transponder</li> <li>■ 2 blanking plugs</li> </ul>	XCSRC30M12, XCSRC31AM12, XCSRC31MM12, XCSRC32M12	<b>XCSR2A3</b>	0.020

### Mounting accessories

Description	For use with	Reference	Weight kg
<b>Mounting supports</b> (supplied with 2 one-way screws, Ø 4 x 12 mm, for mounting the safety switch on the support)	Reader	<b>XCSRZSRC1</b>	0.150
	Transponder	<b>XCSRZSTK1</b>	0.050

Description	Length mm	Reference	Weight kg
<b>One-way screws for mounting Ø 4 mm safety switches</b> (pack of 10 screws)	14	<b>XCSZ71</b>	0.020
	35	<b>XCSZ72</b>	0.020

# Safety detection solutions

Accessories for Preventa XCSR  
contactless RFID safety switches

Characteristics			
Cable type		XZCP29P12L●● XZCP29P12L●●	XZCR1111064D●● XZCP11V12L●● XZCP11V12L●●
Connection type		Screw threaded (metal clamping ring)	
Number of contacts		8	5
Degree of protection		IP 65, IP 67, and IP 69K (with clamping ring correctly tightened)	
Ambient air temperature	Operation	°C	25...+ 70°C (- 13°F... 158°F)
	Storage	°C	40...+ 85°C (- 40°F... 158°F)
Connection	Conforming to EN/IEC 60947-5-2	PUR cable, Ø 6.4 mm, wire c.s.a.: 8 x 0.34 mm <sup>2</sup>	PUR cable, Ø 5 mm, wire c.s.a.: 5 x 0.34 mm <sup>2</sup>
Nominal current		A	2
Insulation resistance		Ω	> 10 <sup>9</sup>
Contact resistance		mΩ	≤ 5

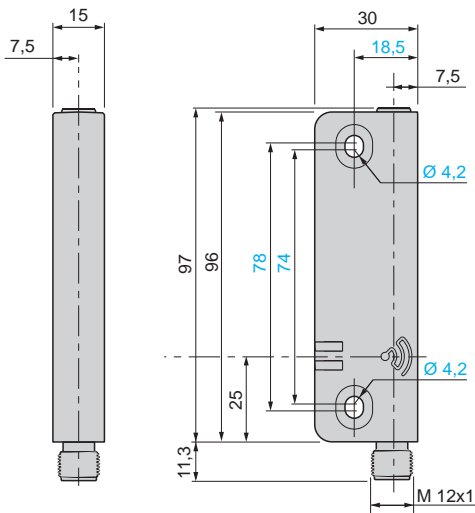
References		Description	Pins	For use with	Type	Length m	Reference	Weight kg
<b>Pre-wired connectors for Standalone RFID safety switches</b>								
 F19_ACC_CPFJR16052 XZCP29P12L●●	Pre-wired connectors with female M12 connector (A coding)	XCSRC11AM12, XCSRC31AM12, XCSRC11MM12, XCSRC31MM12	8	Straight	2	XZCP29P12L2	0.010	
					5	XZCP29P12L5	0.250	
					10	XZCP29P12L10	0.500	
					20	XZCP29P12L20	1.000	
 F19_ACC_CPFJR16053 XZCP29P12L●●				Elbowed	2	XZCP53P12L2	0.010	
					5	XZCP53P12L5	0.250	
					10	XZCP53P12L10	0.500	
					20	XZCP53P12L20	1.000	
<b>Jumper cables for Daisy-chain RFID safety switches</b>								
 F19_ACC_CPFJR16056 XZCR1111064D●●	Jumper cables with 2 female M12 connectors (A coding)	XCSRC12M12, XCSRC32M12	5	Straight	0.3	XZCR1111064D03	0.060	
					3	XZCR1111064D3	0.180	
					5	XZCR1111064D5	0.300	
					10	XZCR1111064D10	0.600	
					25	XZCR1111064D25	1.500	
<b>Pre-wired connectors for Daisy-chain and Single RFID safety switches (1)</b>								
 F19_ACC_CPFJR16049 XZCP11V12L●●	Pre-wired connectors with female M12 connector (A coding)	XCSRC10M12, XCSRC30M12, XCSRC12M12, XCSRC32M12	5	Straight	2	XZCP11V12L2	0.010	
					5	XZCP11V12L5	0.250	
					10	XZCP11V12L10	0.500	
					20	XZCP11V12L20	1.000	
 F19_ACC_CPFJR16050 XZCP11V12L●●				Elbowed	2	XZCP12V12L2	0.010	
					5	XZCP12V12L5	0.250	
					10	XZCP12V12L10	0.500	
					20	XZCP12V12L20	1.000	

(1) For connecting the last switch in the chain (XCSRC12M12 or XCSRC32M12) to the safety control unit.

#### Safety switches

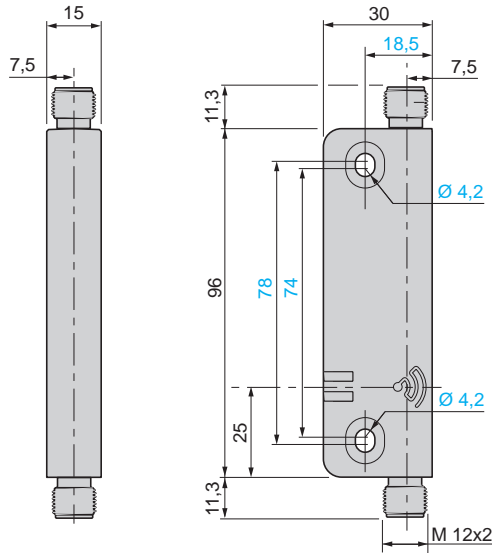
##### Reader with connection via M12 connector

XCSRC●0M12, XCSRC●1AM12, and XCSRC●1MM12



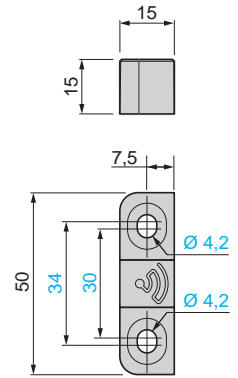
##### Reader with connection via 2 x M12 connectors

XCSRC●2M12



##### Transponder

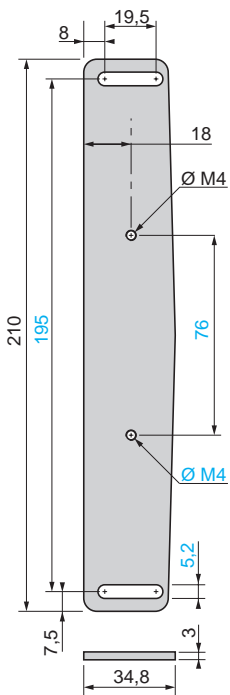
XCSRK2A3



#### Accessories

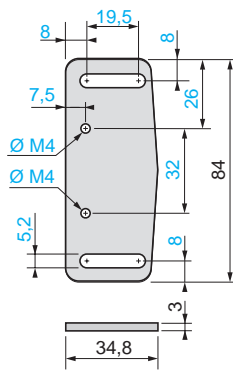
##### Mounting support for reader

XCSRZSRC1



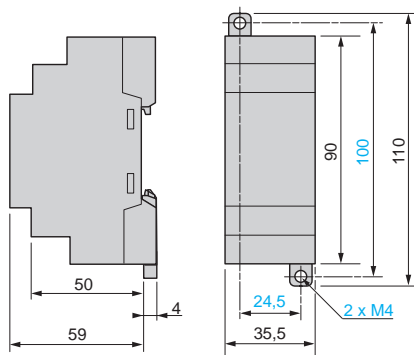
##### Mounting support for transponder

XCSRZSTK1



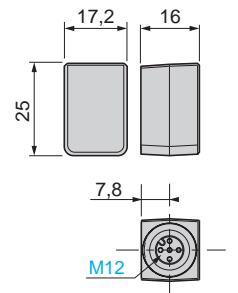
##### Diagnostic module

XCSR210MDB



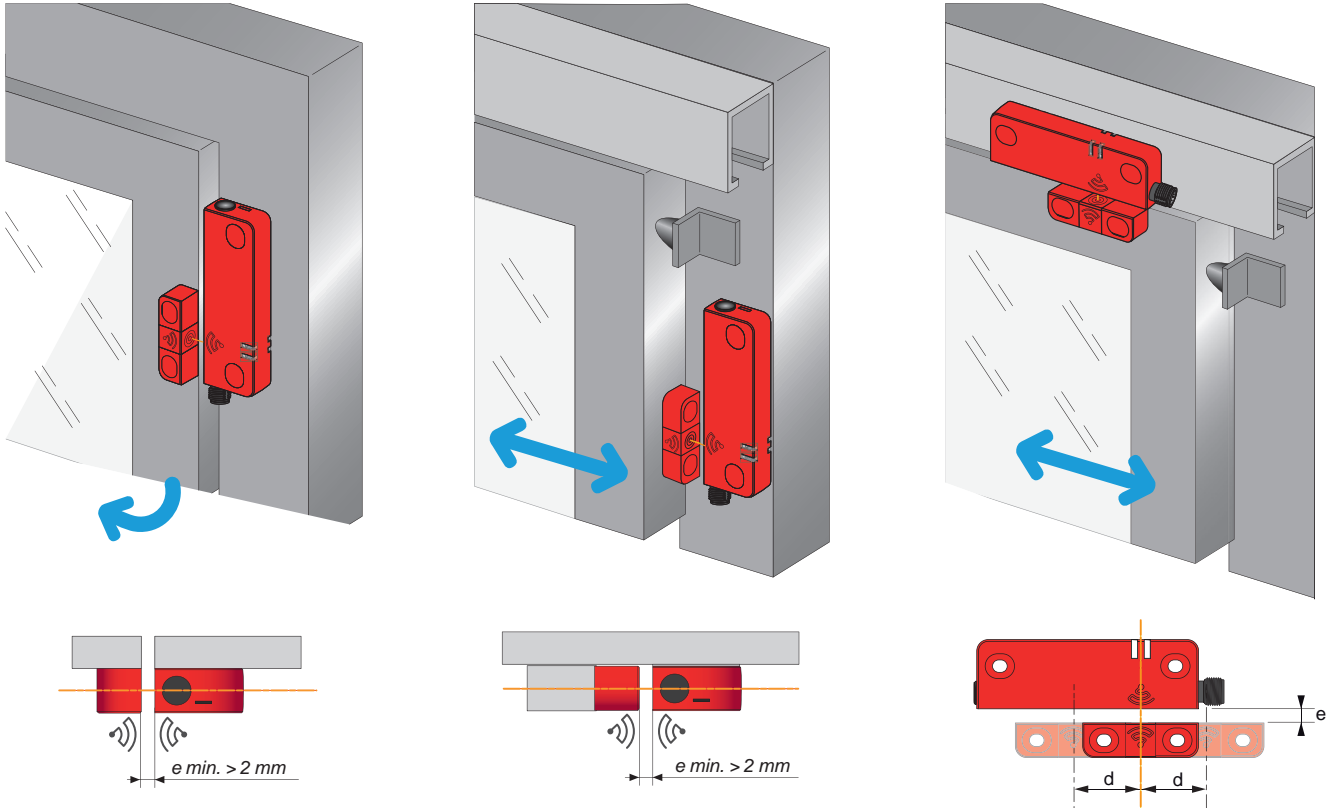
##### Loopback device

XCSRZE



#### Mounting

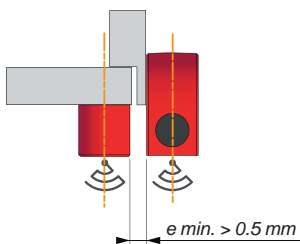
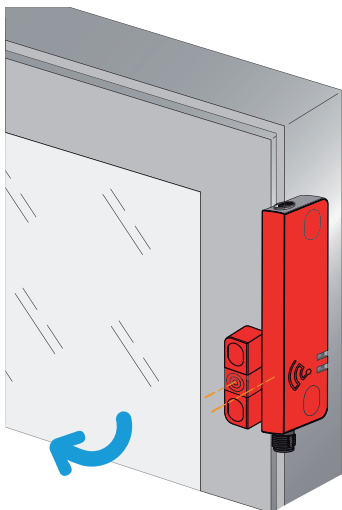
Examples of face-to-face mounting configurations (recommended)



*e*: minimum recommended mounting distance between reader and transponder

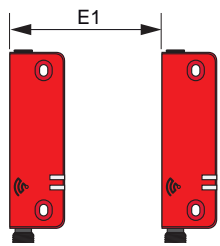
*e* min. > 2 mm  
*d*: detection limit

#### Example of side-by-side mounting



*e*: minimum recommended mounting distance between reader and transponder

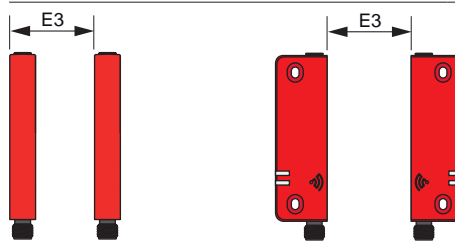
#### Minimum mounting distances between safety switches



$E1 \text{ min.} = 45 \text{ mm}$



$E2 \text{ min.} = 150 \text{ mm}$

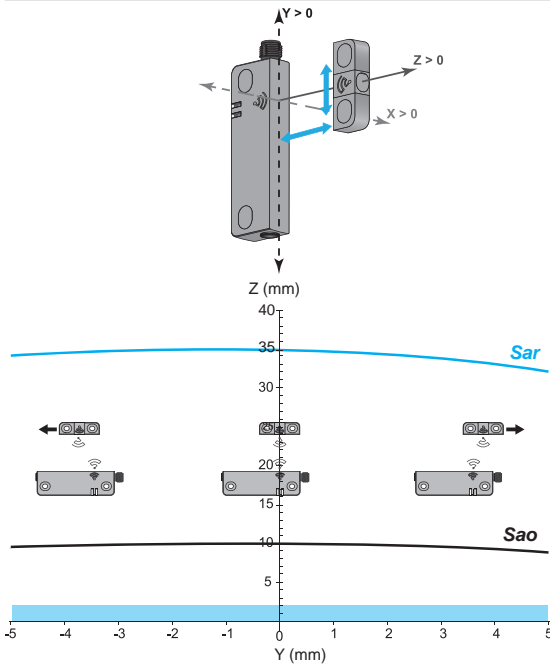


$E3 \text{ min.} = 65 \text{ mm}$

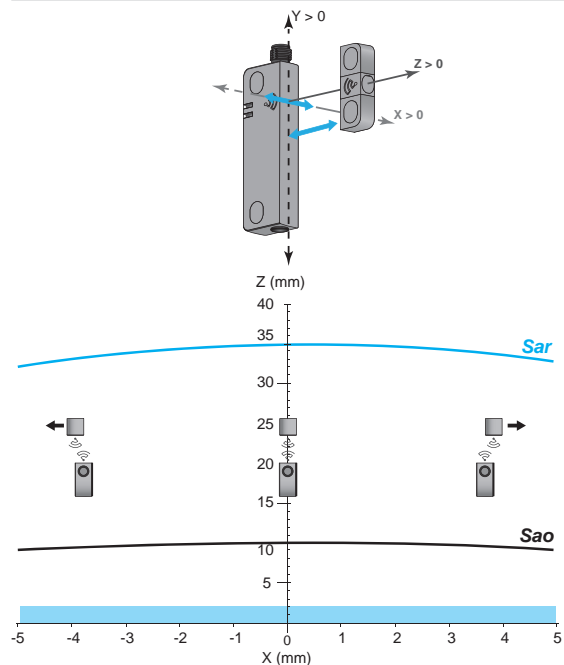
#### Detection curves

##### Face-to-face mounting (recommended configuration)

Sao and Sar sensing distances along Y axis as a function of Z  
Longitudinal misalignment for X = 0

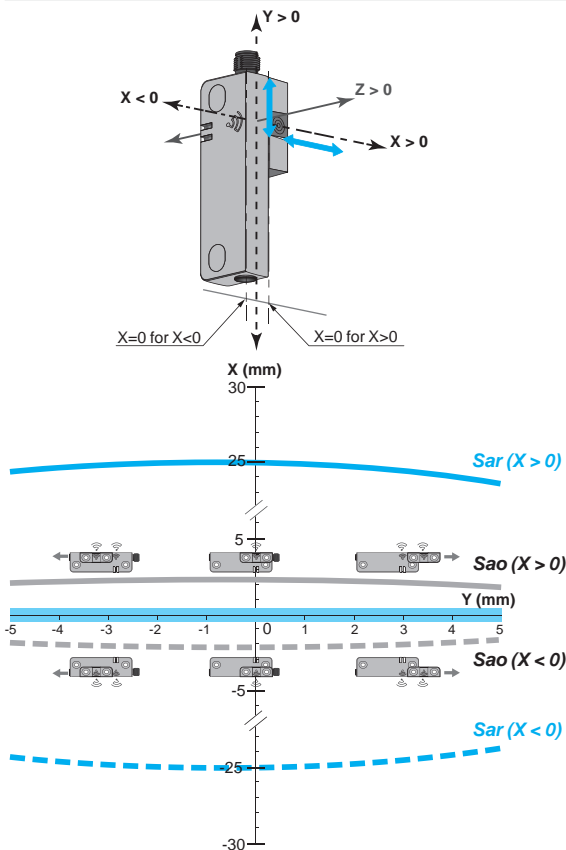


Sao and Sar sensing distances along X axis as a function of Z  
Transverse misalignment for Y = 0

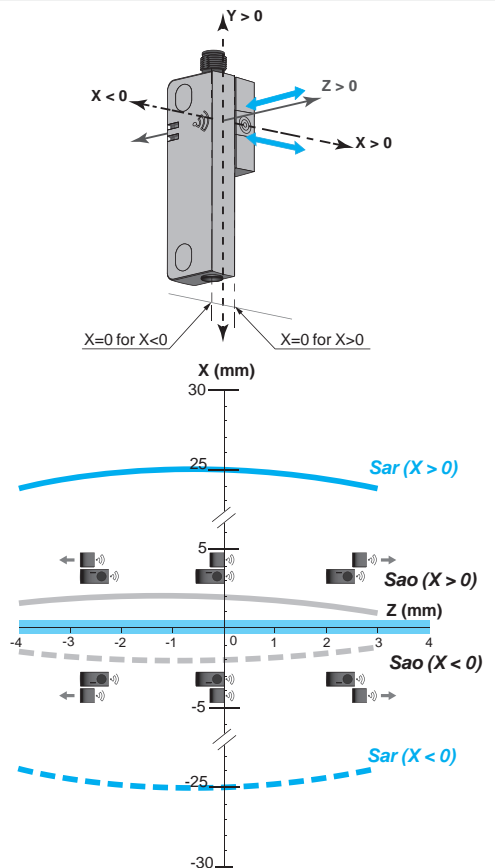


##### Side-by-side mounting

Sao and Sar sensing distances along Y axis as a function of X  
Longitudinal misalignment for Z = 0



Sao and Sar sensing distances along Z axis as a function of X  
Transverse misalignment for Y = 0



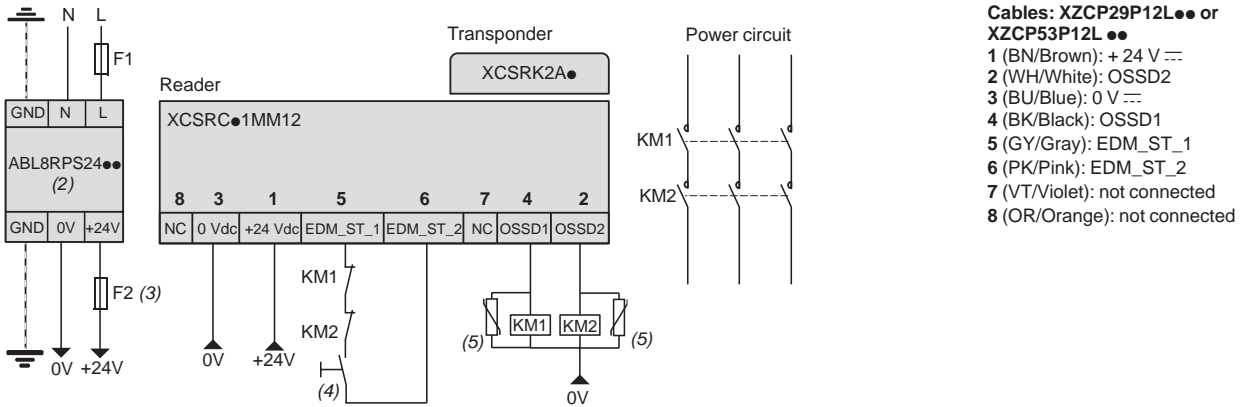
Sao: Assured operating sensing distance

Sar: Assured release distance

: e: minimum recommended mounting distance between reader and transponder

#### Standalone contactless RFID safety switches: XCSRC11AM12, XCSRC11MM12, XCSRC31AM12, and XCSRC31MM12

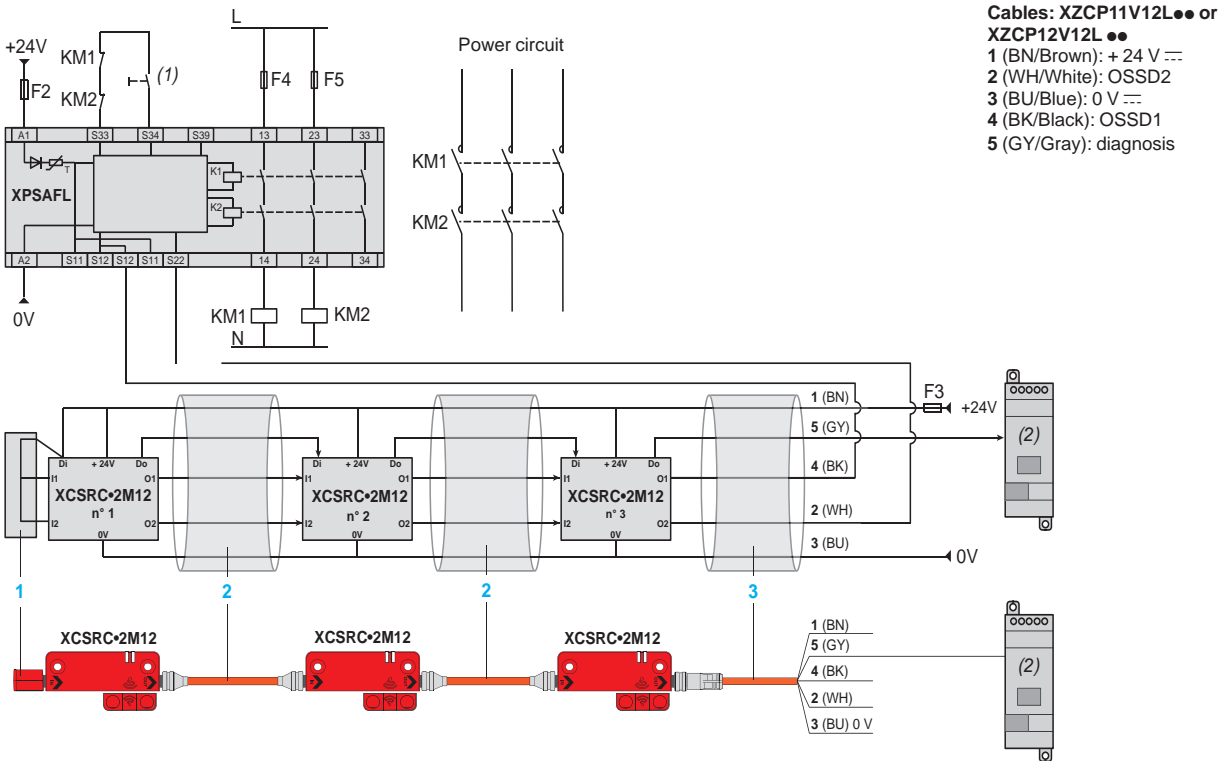
Example of Category 4/PL = e/SIL 3 connection, with monitored start (1) and monitoring loop for contactors (EDM)



- (1) The restart command is effective after the operator has pressed and released the restart button. See Note (4).
- (2) Schneider Electric product. The power supply must meet the requirements of standard IEC 60204-1 relating to safety extra-low voltage (SELV) or protected extra-low voltage (PELV) power supplies.
- (3) 1 A max.
- (4) Restart button.
- (5) The use of arc suppressors is recommended for KM1 and KM2.

#### Daisy-chain contactless RFID safety switches: XCSRC12M12 and XCSRC32M12

Example of Category 4/PL = e/SIL 3 series connection

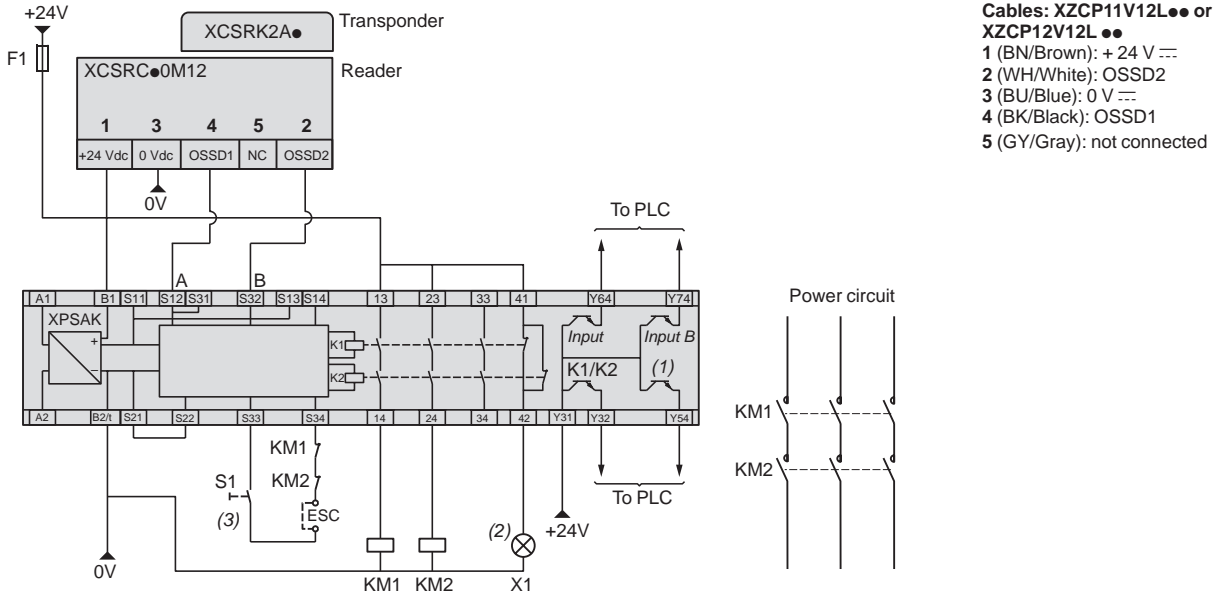


- 1 Loopback device XCSRZE (see page 7)
- 2 Jumper cables XZCR1111064D●● (see page 8)
- 3 Pre-wired connectors XZCP11V12L●● or XZCP12V12L●● (see page 8)

- (1) Start button
- (2) Diagnostic module XCSR210MDB (optional, see page 7)

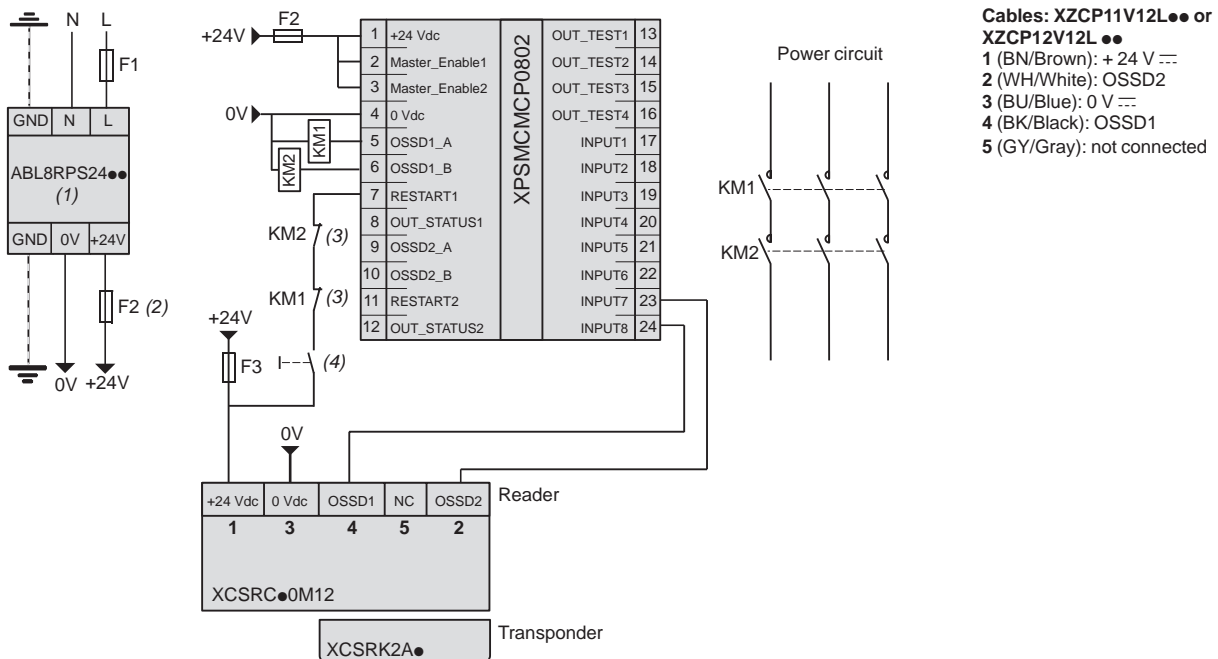
#### Single contactless RFID safety switches: XCSR10M12 and XCSR30M12

Example of Category 4/PL = e/SIL 3 connection to a safety relay XPSAK●●



- (1) Operating status of internal electronic fuse
- (2) XCSR safety switch indicator light disabled
- (3) Start button
- ESC: External start conditions

#### Example of Category 4/PL = e/SIL 3 connection to a safety controller XPSMCMCP0802



- (1) Schneider Electric product. The power supply must meet the requirements of standard IEC 60204-1 relating to safety extra-low voltage (SELV) or protected extra-low voltage (PELV) power supplies.
- (2) 1 A max.
- (3) Monitoring of contactors (EDM: external device monitoring).
- (4) Restart button.

# Contactless RFID safety switches

## Preventa XCSR

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XCSRC10M12	6
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XCSRC30M12	6
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XCSRC31MM12	4
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XCSRZSRC1	7
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