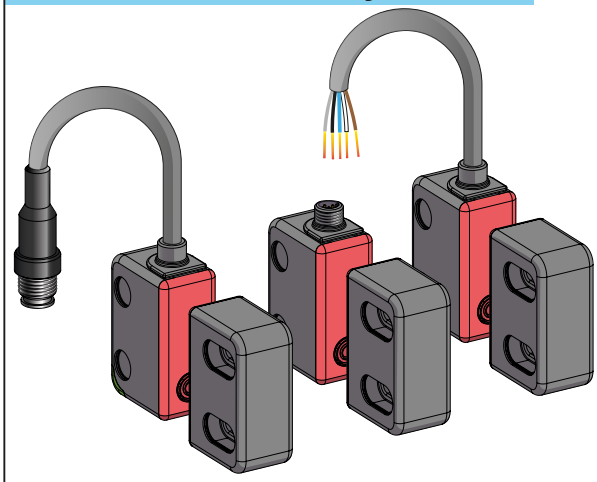
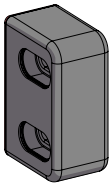
Contactless RFID Safety Switches





XCSRK1BL:
Generic coded
XCSRK1BU:
Unlimited Pairing

XCSRML●●●●: Generic Coded (Generic Pairing without teaching-in)
XCSRM3●●●●: 3 times pairing (Pairing of new tags by teaching-in, 3 times)
XCSRMU●●●●: Unlimited pairing (pairing of new tags by teaching-in, unlimited times)
XCSRM1●●●●: Unique pairing

Note: you can download the complete User Manual in different languages from our website at: **www.telemecaniquesensors.com**

https://qr.tesensors.com/XCS017

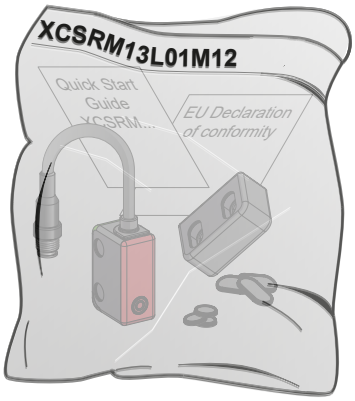
Scan the code to access this Instruction Sheet and all product information in different languages or you can visit our website at:

www.telemecaniquesensors.com

We welcome your comments about this document. You can reach us through the customer support page on our local website:
https://tesensors.com/global/en/support/technical-support

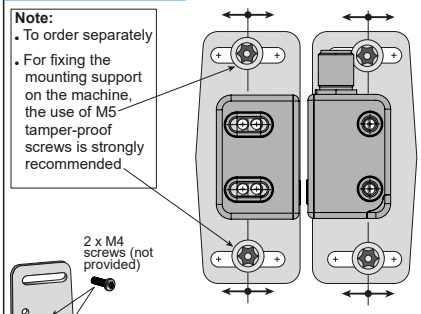
The XCSRM is to be integrated into the safety chain for the monitoring of mobile guards (swivelling, sliding or removable). The safe state is ensured when its two redundant safety outputs (OSSDs) are switched at the OFF state (guard door opened or safety switch in error mode). RFID technology with high coded level can avoid guard door tampering according to ISO 14119.

Package Content *(Example)*



Accessories

Note:
- To order separately
- For fixing the mounting support on the machine, the use of M5 tamper-proof screws is strongly recommended



XCSRZSTK1

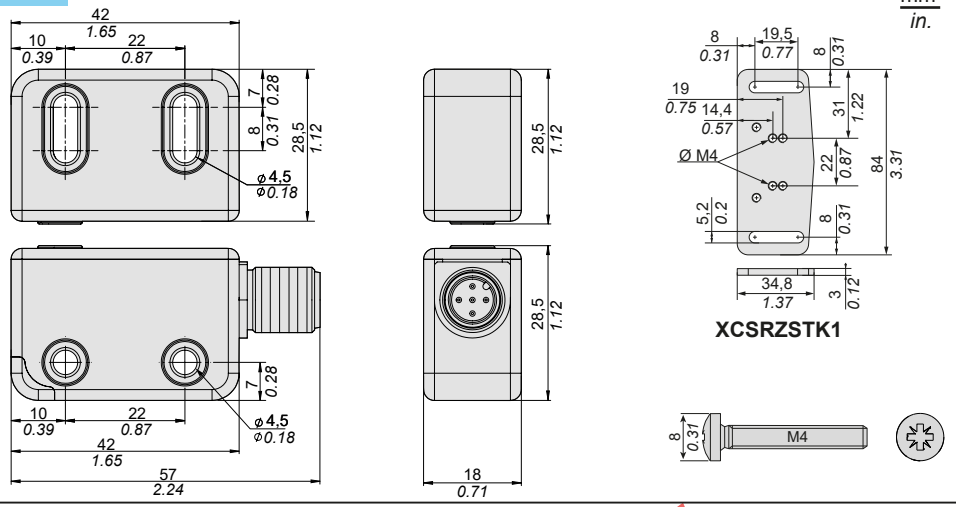
WARNING

UNINTENDED EQUIPMENT ACTION
- This equipment must only be installed and serviced by qualified personnel.
- Read, understand, and follow the instruction below and the complete XCSRM User Manual before installing the XCSRM Safety RFID switch.
- Do not tamper with or make alterations on the unit.
- Comply with the wiring and mounting instructions.
- Check the connections and fastening during maintenance operations.
- Disconnect all power before servicing equipments.
- The proper functioning of the XCSRM Safety RFID switch and its operating line must be checked on a regular basis based on the level of security required by the application (e.g. number of operations, using frequency).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

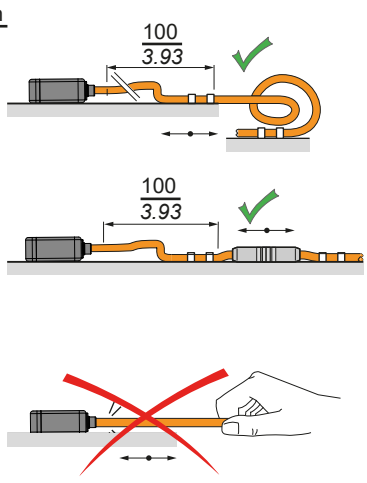
These devices have been designed to be in compliance with the standards currently in effect: EN IEC 60947-5-2, EN IEC 60947-5-3, EN ISO 13849-1, IEC 61508, EN IEC 62061, EN ISO 14119, UL 508, CSA C22.2 N°14.
These devices can achieve up to Category **4 / PL=e (EN ISO 13849-1) / SIL3 (IEC 61508) / SILCL3 (IEC 62061)** (if combined with an appropriate Safety Control Unit PL=e / SIL 3 for Single and Daisy-chain models).

Dimensions



XCSRZSTK1

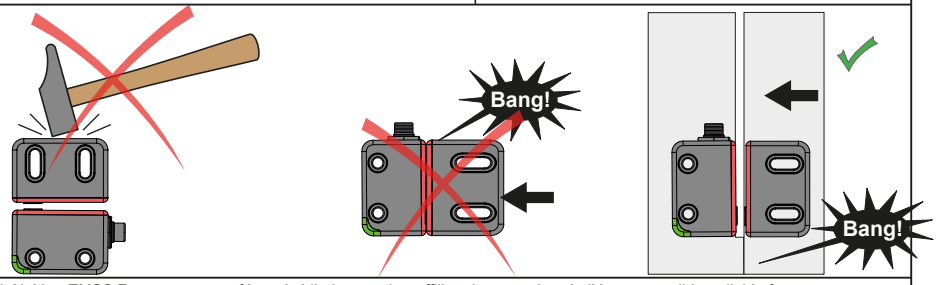
Cable connection procedures



NOTICE

INOPERABLE EQUIPMENT
- Do not use safety switch as a mechanical stop.
- Do not adjust the position of switches using a hammer or other tool likely to exceed the device's shock and vibration tolerances.

Failure to follow these instructions can result in equipment damage.



Face to Face Mounting

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

The XCSRM RFID switch must always be mounted and used with respect to the assured sensing distances **Sao** and **Sar**:

- When the guard is closed, the maximum distance between the switch and the actuator must be Sao.
- When the guard is being opened and up to Sar, the protected machinery shall not present any risk of danger.

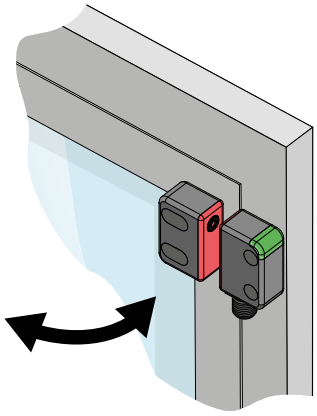
UNINTENDED EQUIPMENT OPERATION

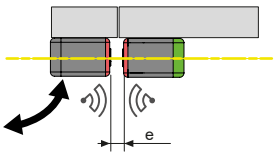
The switch and actuator must be installed in their definitive operational conditions (e.g. door closed) before operating the power-up.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Correct Mounting Configuration

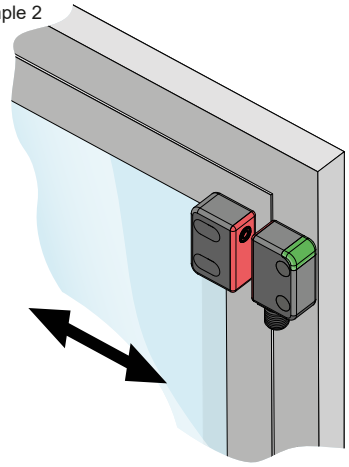
Example 1

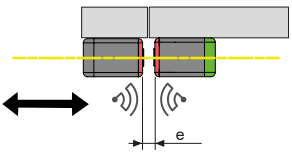




2 mm < e < 10 mm
0.07 in < e < 0.39 in

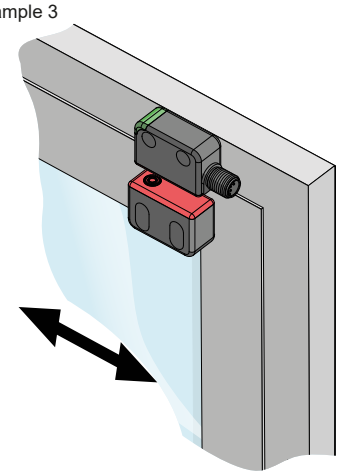
Example 2

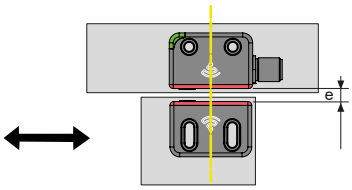




2 mm < e < 10 mm
0.07 in < e < 0.39 in

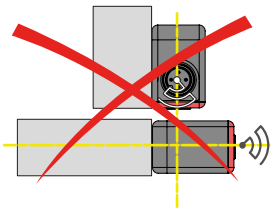
Example 3

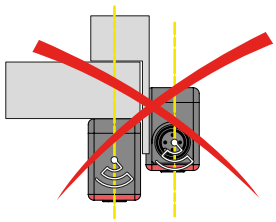




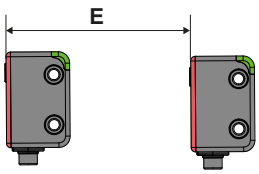
2 mm < e < 10 mm
0.07 in < e < 0.39 in

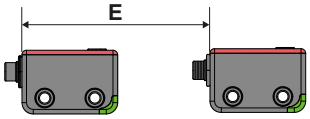
Wrong Mounting Configuration

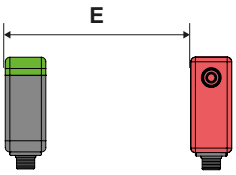


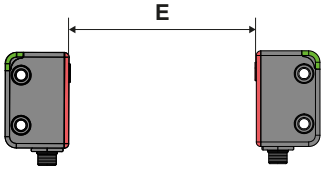


Minimum mounting clearances between safety switches





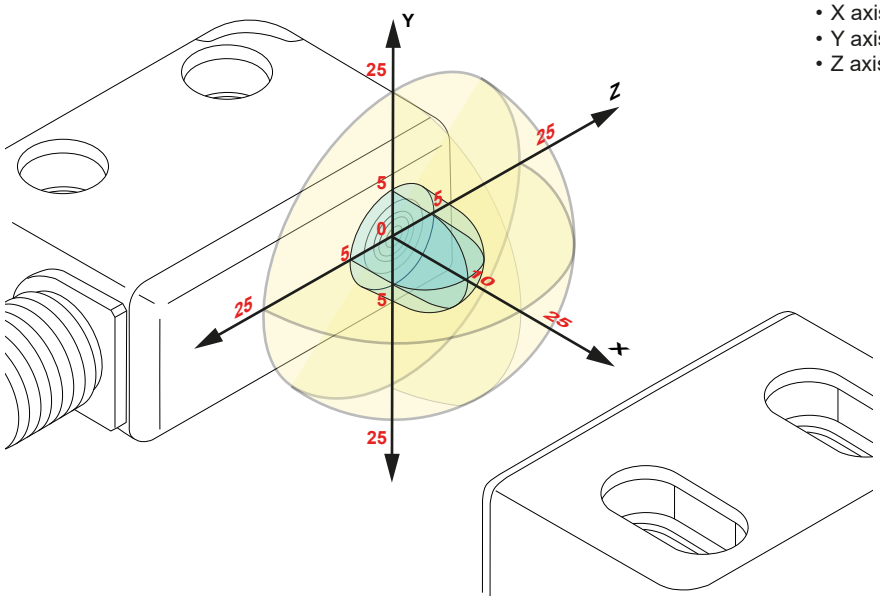




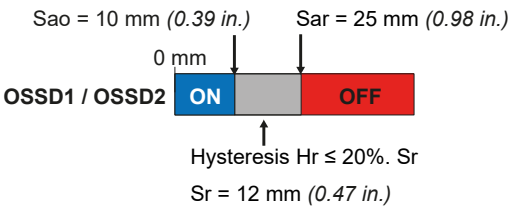
$E_{min.}$ = 150 mm / *5.91 in*

Activation distances

The following figure shows the activation distances in function of the three axis (X, Y, Z):



- X axis: Sao = 10 mm *(0.39 in.)*; Sar = 25 mm *(0.98 in.)*
- Y axis: Sao = 5 mm *(0.19 in.)*; Sar = 25 mm *(0.98 in.)*
- Z axis: Sao = 5 mm *(0.19 in.)*; Sar = 25 mm *(0.98 in.)*

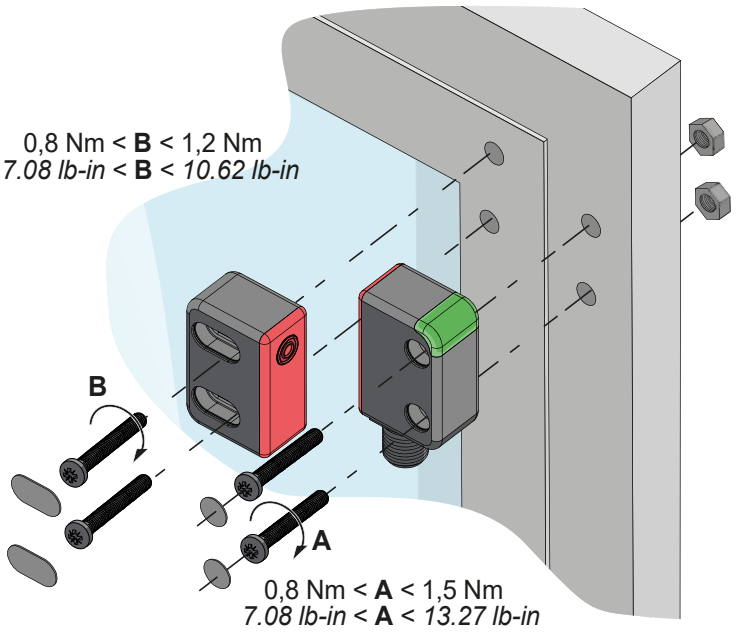


e *= Recommended minimum mounting distance between switch and actuator.*

Sr *= Real switch-ON sensing distance*
Sao *= assured operating distance*
Sar *= assured release distance.*

Sao, Sar, Hr values above are given without misalignment between the switch and the actuator	*: Transient state*	*1 mm = 0.039 in.*

Mounting and Tightening torque



NOTICE

RISK OF MATERIAL DAMAGE

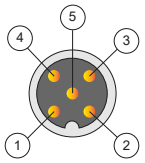
• M4 size screw with head ø 8 mm (*ø 0.31 in*) are mandatory in all mounting cases.

Failure to follow these instructions can result in equipment damage.

Electrical Connections of RFID Safety Switches

Single model **XCSRML0●●●●, XCSRM10●●●●**

M12, 5-pin

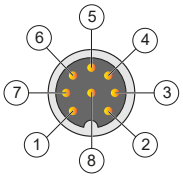


Pin Number	Connection designation	Description	Wire color
1	+24 Vdc	24 Vdc power supply	Brown
2	OSSD1	Safety output OSSD channel 1	White
3	0 Vdc	0 Vdc power supply	Blue
4	OSSD2	Safety output OSSD channel 2	Black
5	Status	Sensor status output (non safety PNP)	Grey

Cable - 5 wires

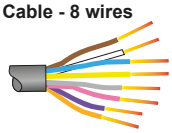
Daisy-chain EDM model **XCSRML3●●●●, XCSRMU3●●●●, XCSRM13●●●●**

M12, 8-pin



Pin Number	Connection designation	Description	Wire color
1	+24 Vdc	24 Vdc power supply	Brown
2	Input1	Safety input for daisy-chain channel 1	White
3	0 Vdc	0 Vdc power supply	Blue
4	OSSD1	Safety output OSSD channel 1	Yellow
5	Status	Signal output/diagnostic output	Grey
6	Input2	Safety input for daisy-chain channel 2	Pink
7	OSSD2	Safety output OSSD channel 2	Violet
8	EDM/Restart/ Serial	EDM K1 K2 feedback / Restart / Daisy-chain loop input	Orange

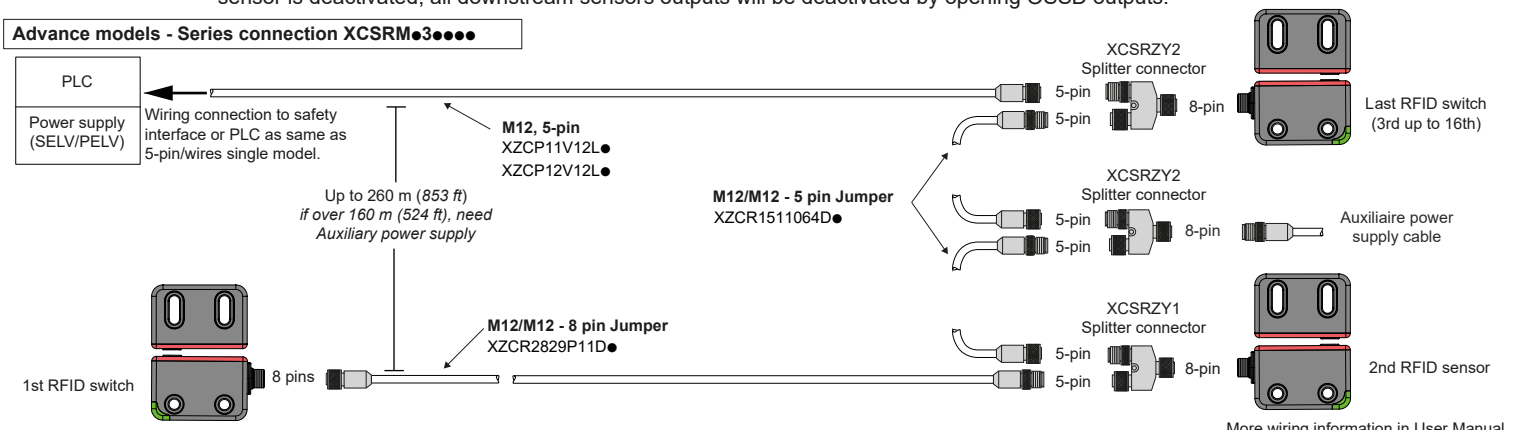
Cable - 8 wires



Daisy chain

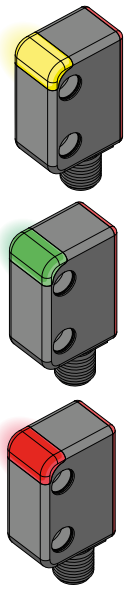
Maximum up to 16 switches can be connected in series. The device can only operate in Automatic without EDM mode. If one or more sensor is deactivated, all downstream sensors outputs will be deactivated by opening OSSD outputs.

Advance models - Series connection XCSRM●3●●●●



More wiring information in User Manual.

Operating and output States, LED meaning



CONFIGURED MODE (POWER UP)	LED COLOR	BLINKING
Single sensor with EDM in AUTO mode	Yellow	2
Single sensor without EDM in AUTO mode	Yellow	3
Single sensor in MANUAL mode	Yellow	4
First sensor of serial connection	Yellow	5
Sensor of serial connection	Yellow	6

SENSOR STATUS (NORMAL OPERATION)	LED COLOR	MEANING
Break	Red	OSSD outputs LOW
Guard	Green	OSSD outputs HIGH
Restart	Yellow	Waiting for Restart
Guard / Input Off	Green / Red - Blinking	One or more sensors in the chain is in BREAK state
Programming	Blinking Green	Actuator programming (TEACH-IN)
Config	Blinking Yellow	Configuration type
Fail	Blinking Red	Error condition

ERROR (DIAGNOSTIC)	LED COLOR	BLINKING	ACTION TO TAKE	
OSSD outputs error	Red	1	Check OSSD connections (4, 7)	
Safety input incongruency	Red	2	Check sensor series connections (Input 2, 6 / OSSD 4, 7)	
EDM error	Red	3	Check EDM connections (8)	
Overvoltage detected	Red	4	Check connections / Send product to TMSS	
Internal error	Red	5	Send product to TMSS	
Automatic pairing procedure counter overflow or Wrong transponder (actuator)	Red	6	XCSRM3●●●●, XCSRM1●●●●: Replace the sensor.	XCSRMU●●●●: Maximum number of automatic pairing procedures reached. Use wiring procedure.
Incorrect wire Configuration	Red	7	Check connections	
Antenna overvoltage detected	Red	10	Send product to TMSS	

Wiring diagram

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- The external KM1 and KM2 contactors must have force-guided contacts.
- The XCSR RFID Safety Switches must be connected using both safety outputs.

Failure to follow these instructions will result in death, serious injury or equipment damage.

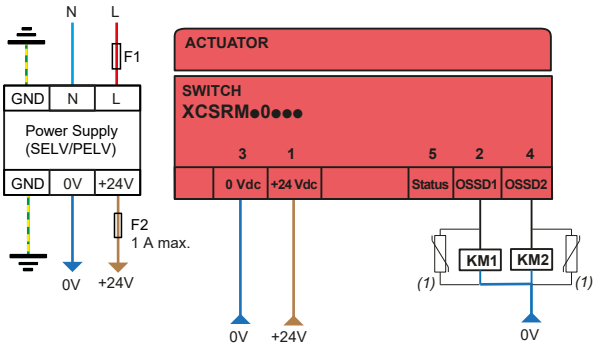
⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- The XCSRM RFID Safety switches must be powered by a dedicated safety extra low voltage (SELV) or a protected extra low voltage (PELV).
- The XCSRM RFID Safety switches operate directly from a 24 Vdc power supply. The power supply must meet the requirements of IEC 60204-1.

Failure to follow these instructions can result in death, serious injury or equipment damage.

Single model



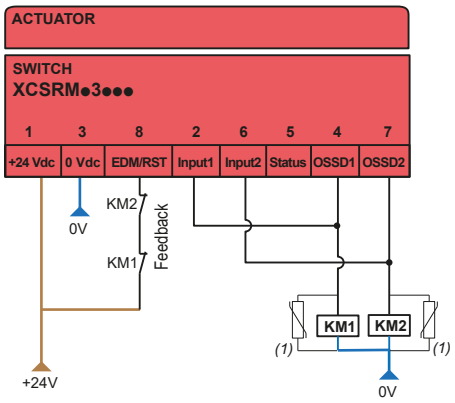
1	+24 Vdc	BN
2	OSSD1	WH
3	0 Vdc	BU
4	OSSD2	BK
5	Status	GY

BN = Brown
WH = White
BU = Blue
BK = Black
GY = Grey

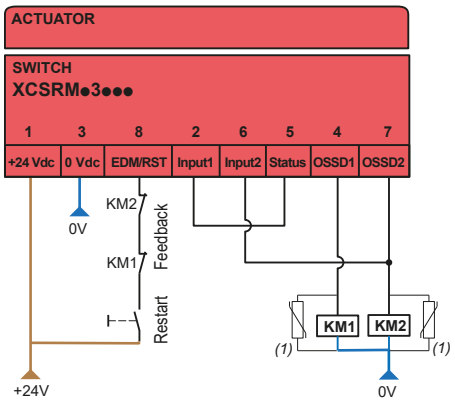
(1) : Use of arc suppressors for KM1 & KM2 is recommended

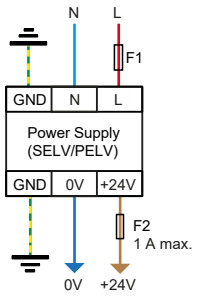
Advance model - Standalone

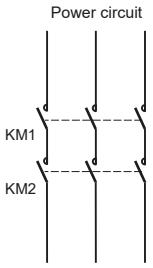
AUTOMATIC MODE with EDM



MANUAL MODE with EDM (RESTART BUTTON)

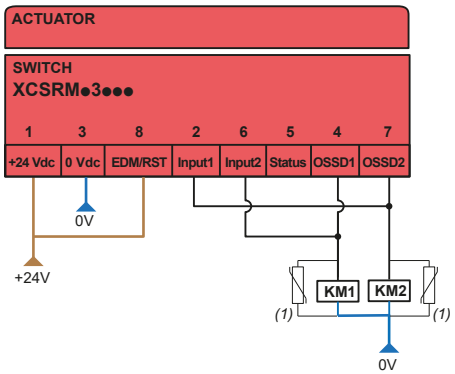




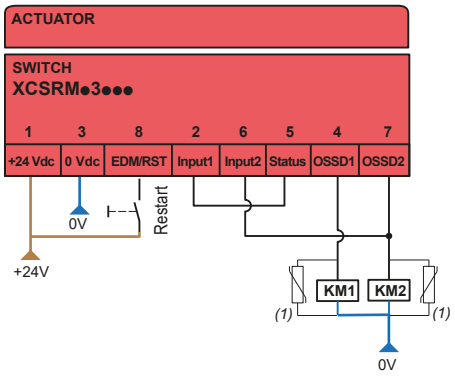


1	+24 Vdc	BN
2	Input1	WH
3	0 Vdc	BU
4	OSSD1	YE
5	Status	GY
6	Input2	PK
7	OSSD2	PU
8	EDM/Restart/Serial	OR

AUTOMATIC MODE without EDM



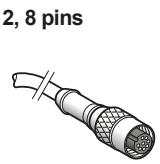
MANUAL MODE without EDM (RESTART BUTTON)



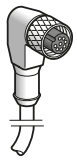
(1) : Use of arc suppressors for KM1 & KM2 is recommended

Pre-Wired Cables

M12, 8 pins



XZCP29P12L2
XZCP29P12L5
XZCP29P12L10
XZCP29P12L20



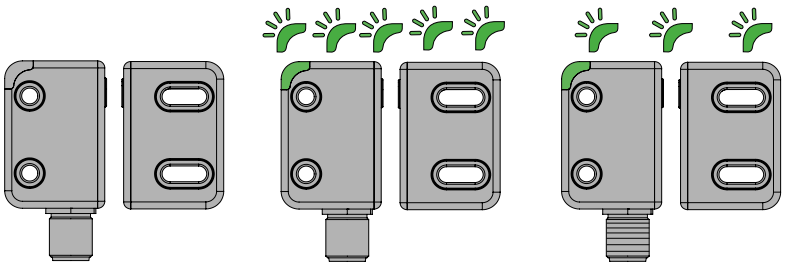
XZCP53P12L2
XZCP53P12L5
XZCP53P12L10
XZCP53P12L20

New Actuator Automatic Pairing Process

Available for both 3-times pairing and unlimited pairing version.

This process can be used to pair two additional new actuators.
When maximum pairing number is reached, Red LED will blink 6 times as error:

- For 3-times single version, please replace switch.
- For unlimited advanced version please follow Wiring Pairing process in User Guide.



STEP 1	STEP 2	STEP 3
Place the actuator in front of switch within 2 mm *(0.078 in)*, before powering up RFID switch	Power on the switch. The switch indicates that it is ready to pair by blinking green rapidly.	Restart the switch in operational mode once it is flashing slowly, indicating that pairing is ready.

Manufacturer:
TMSS France
Tour Eqho - 2 avenue Gambetta
92400 Courbevoie
France

UK Representative:
Yageo TMSS UK Limited
2 North Park Road
Harrogate, HG1 5PA
United Kingdom