Safety detection solutions

Contactless RFID safety switches

XCSRM miniature format

Single model (5-pin) and advanced model (8-pin)

ECOLAB Certified

Single model: standalone, high level coding

- Pre-cabled, pigtail, or connector
- Unique code, high-level coding conforming to EN/ISO 14119
- Automatic pairing process for the 2 additional devices
- 2 OSSD safety outputs (PNP)
- Point-to-point connection to a safety control unit
- Automatic start/restart without EDM

Category 4/PL = e, SIL3, SILCL3

XCSRM10L●●, XCSRM10●●M12 Unique pairing *(1)*	**XCSRM30L●●, XCSRM30●●M12** Two new pairings possible *(2)*

The switches are available with pre-cabled, M12 connector, and pigtail connection format.

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Single model: standalone, generic coding

- Pre-cabled, pigtail, or connector
- Low-level coding
- For point-to-point connections
- 2 OSSD safety outputs (PNP)
- Can dialog directly to switch without pairing

Category 4/PL = e, SIL3, SILCL3

XCSRML0L●●●, XCSRML0M12, XCSRML0L01M12,
Generic coded

The switches are available with pre-cabled, M12 connector, and pigtail connection format.

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Advanced model: daisy-chain and External Device Monitoring (EDM)

- 2 OSSD safety outputs (PNP) and 2 OSSD safety inputs
- External Device Monitoring (EDM)
- Unique or unlimited pairing available
- Up to 16 switches can be connected in series
- Automatic pairing process for the unlimited pairing model

Category 4/PL = e, SIL3, SILCL3

XCSRM13M12 and XCSRM13L01M12 Unique coded	**XCSRMU3M12 and XCSRMU3L01M12** Unlimited pairing possible

The switches are available with M12 connector and pigtail connection format.

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(1) The switch and actuator are supplied together, already factory-paired with a unique code.

(2) For these switches, the reader and actuator are supplied together, already factory-paired with a unique code. However, the reader can be re-paired (twice only) with a new (blank) actuator (see page 100). Once the new actuator has been paired, the previous actuator is no longer usable. A new blank actuator can only be paired once.

Safety detection solutions

Contactless RFID safety switches

XCSRM miniature format

Single model (5-pin) and advanced model (8-pin)

Type of contactless RFID switch			XCSRM10L●●, XCSRM10●●M12, XCSRM30L●●, XCSRM30●●M12, XCSRML0L●●●, XCSRML0M12, XCSRML0L01M12	XCSRM●3M12, XCSRM●3L●●M12
Environment				
Conforming to standards			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	
Product certifications			Tüv, cULus, FCC, IC, UKCA, ECOLAB	
Maximum safety level *(2)*			SIL3 conforming to IEC 61508, SILCL3 conforming to IEC 62061, and PL=e, category 4 conforming to EN/ISO 13849-1 *(1)*	
Ambient air temperature	For operation		-25…+70°C	
	For storage		-25…+70°C	
Vibration resistance	Conforming to EN/IEC 60068-2-6		± 1 mm amplitude (10 .. 55Hz), 5 min	
Shock resistance	Conforming to EN/IEC 60068-2-27		30 gn, impulse duration 11 ms, in all 3 axes	
Protection against electric shock	Conforming to EN/IEC 61140		Class III	
Degree of protection	Conforming to EN/IEC 60529		IP65, IP67 conforming to IEC 60529, conforming to DIN 40050	
	Conforming to DIN 40050		IP69K (except M12 connector and pigtail)	
Materials	Housing		Nylon (PK)	
	Cable		PVC	
Characteristics				
Rated impulse withstand voltage (U imp)	Conforming to EN/IEC 60947-5-2		1 kV	
Integrated output protection			Short Circuit protection conforming to EN/IEC 60947-5-3	
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		300 mA	
Maximum switching frequency			1 Hz	
Delay	Power-on		10 s, 15 s Max	
Maximum response time (on transponder entry into operating zone)			≤ 250 ms	
Risk time (on transponder exit from operating zone)			Tr < 55 ms , addition of 12 ms per switch in Daisy-Chain	
Probability of dangerous failure per hour PFH_D	Conforming to EN/ISO13849-1 and EN/IEC 62061		2.62×10^{-9} Per reader	
Tightening torque	M4 retaining screw	Switch	0.8 - 1.5 Nm	
		Actuator	0.8 - 1.2 Nm	
	M12 connectors		0.8 Nm	
Mission time (TM)			20 years	
RFID protocol			Low Frequency based on ISO/IEC 18000-2	
Functions				
Functions			Automatic start/restart without EDM Point-to-point connection to a safety control unit State (PNP) output to Non Safety control unit (PLC) LED indicators for status and diagnosis	Automatic start/restart with or without EDM Manual start/restart with or without EDM Series connection (daisy-chain) Point-to-point connection to a safety control unit Diagnostic output to Non Safety control unit (PLC) LED indicators for status and diagnosis

(1) With an appropriate, correctly connected safety control system for daisy-chain and single models.

Safety detection solutions

Contactless RFID safety switches

XCSRM miniature format

Single model, 5-pin connector

Type	**Single miniature contactless RFID safety switches**		
Connection	**M12 connector**	**Pre-cabled (5 wires)**	**Pigtail M12 connector**

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References

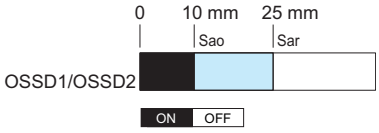
Composition		Unique pairing	Two new pairings possible	Generic coded	Weight (kg)
■ Switch ■ Actuator ■ Actuator and switch factory paired ■ 6 blanking plugs ■ Quick Start Guide ■ EU and UKCA declaration of conformity	2 m cable	**XCSRM10L02**	**XCSRM30L02**	**XCSRML0L02**	0.150
	5m cable	**XCSRM10L05**	**XCSRM30L05**	**XCSRML0L05**	0.309
	10 m cable	**XCSRM10L10**	**XCSRM30L10**	**XCSRML0L10**	0.562
	M12 connector	**XCSRM10M12**	**XCSRM30M12**	**XCSRML0M12**	0.044
	Pigtail M12 connector	**XCSRM10L01M12**	**XCSRM30L01M12**	**XCSRML0L01M12**	0.056

Detection characteristics *(2)*

Typical operating sensing distance (for detection of transponder presence)	12
Assured operating sensing distance	10
Assured release distance	25
Repeat accuracy	≤1.2%
Hysteresis	< 20%

Output states

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

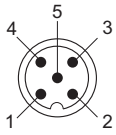


Outputs closed
Outputs open
Transient state

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

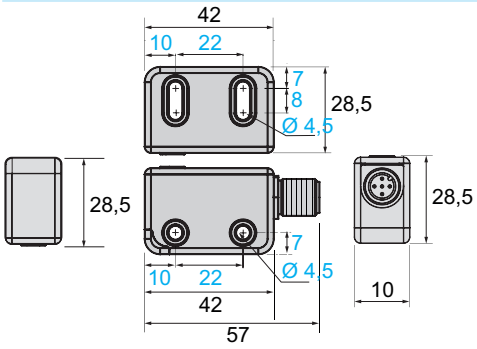
Connections

5-pin M12 connector



1 + 24 V ⎓
2 OSSD1 Safety output
3 0 V ⎓
4 OSSD2 Safety output
5 Status

Dimensions



(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.

Safety detection solutions

Contactless RFID safety switches

XCSRM miniature format

Advanced model, 8-pin connector

Type	**Advanced miniature contactless RFID safety switches**	
Connection	**M12 connector**	**Pigtail, 8-pin M12 connector,**

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References

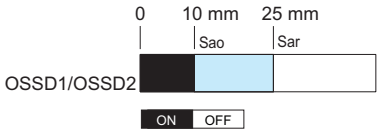
Composition	Unique pairing	Unlimited pairings	Generic coded	Weight (kg)
■ Factory-paired switch and actuator ■ 6 blanking plugs ■ Quick Start Guide ■ EU and UKCA declaration of conformity	**XCSRM13M12**	**XCSRMU3M12**	**XCSRML3M12**	0.044
	XCSRM13L01M12	**XCSRMU3L01M12**	**XCSRML3L01M12**	0.056

Detection characteristics *(2)*

Typical operating sensing distance (for detection of transponder presence)	12
Assured operating sensing distance	10
Assured release distance	25
Repeat accuracy	≤1.2%
Hysteresis	< 20%

Output states

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



Outputs closed

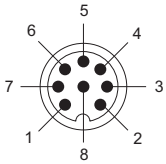
Outputs open

Transient state

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

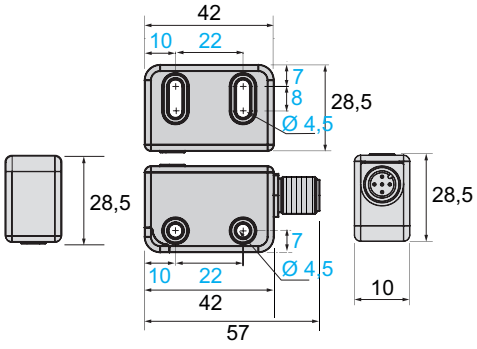
Connections

8-pin M12 connector



1 + 24 V ⎓
2 Safety input 1 for daisy-chain
3 0 V ⎓
4 OSSD1 Safety output
5 Status
6 Safety input 2 for daisy-chain
7 OSSD2 Safety output
8 EDM/Restart/Serial

Dimensions



(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.

Safety detection solutions

Contactless RFID safety switches

Accessories for XCSRM miniature format

XCSRK1BU

XCSRK1BL

XCSRZY●

XCSRZSTK1

XZCP11V12L●

XZCP12V12L●

XZCR1511064D●

XZCP29P12L●

XZCP53P12L●

XZCR2829P11D●

XZCC12FDM50B

XZCC12FCM50B

XZCC12FDM80B

XZCC12FCM80B

Actuators

Description	Used with	Reference	Weight (kg)
Actuator, Unlimited pairing	XCSRMU●●●●, XCSRM3●●●●	**XCSRK1BU**	0.19
Actuator, Generic coded	XCSRML●●●●	**XCSRK1BL**	0.19

Splitter connectors

Description	Poles	Used with	Reference	Weight (kg)
Splitter M12 connector, Female-Male-Female (Y connector)	8-8-5, 1st switch in daisy chain	XCSRM●3●●●	**XCSRZY1**	0.026
	8-5-5, other switches in daisy chain		**XCSRZY2**	0.026

Mounting accessories

Description	Used with	Reference	Weight (kg)
Mounting supports	Switch and actuator	**XCSRZSTK1**	0.050

Cables

Description	Connector type	Length (m)	Reference	Weight (kg)
PUR pre-wired cables, 5 pins, for single XCSRM•0••• and advanced XCSRM•3••• *(1)* models				
PUR cable with pre-wired connectors XZCP	M12, female, straight, 5 pins	2	**XZCP11V12L2**	0.100
		5	**XZCP11V12L5**	0.250
		10	**XZCP11V12L10**	0.500
		20	**XZCP11V12L20**	1.000
	M12, female, elbowed, 5 pins	2	**XZCP12V12L2**	0.100
		5	**XZCP12V12L5**	0.250
		10	**XZCP12V12L10**	0.500
		20	**XZCP12V12L20**	1.000

	Male	Female			
PUR jumper cable, 5 pins, for Y connectors (XCSRM•3••• in daisy-chain connection)					
Jumper cable XZ	M12, straight, 5 pins	M12, straight, 5 pins	1	**XZCR1511064D1**	0,08
			2	**XZCR1511064D2**	0,13
			5	**XZCR1511064D5**	0,325
			10	**XZCR1511064D10**	0,325

PUR pre-wired cables, 8 pins, for XCSRM•3••• standalone, EDM connection				
Pre wired connectors XZ	M12, female, straight, 8 pins	2	**XZCP29P12L2**	0,100
		5	**XZCP29P12L5**	0.250
		10	**XZCP29P12L10**	0.500
		20	**XZCP29P12L20**	1.000
	M12, female, elbowed, 8 pins	2	**XZCP53P12L2**	0.100
		5	**XZCP53P12L5**	0.250
		10	**XZCP53P12L10**	0.500
		20	**XZCP53P12L20**	1.000

	Male	Female		
PUR jumper cable, 8 pins, for XCSRM•3••• in daisy-chain connection				
PUR jumper cable	M12, 8-pin, straight	M12, 8-pin, straight	**XZCR2829P11D2**	0.109
			XZCR2829P11D5	0.265
			XZCR2829P11D10	0.520
			XZCR2829P11D20	1.025

Cables glands

Description	Connector type	Nb of pins	Used with	Reference	Weight (kg)
M12 cable gland Pg 7, female Screw terminal and metal clamping ring	Straight	5	XCSRM•0•••	**XZCC12FDM50B**	0,020
	Elbowed 90°			**XZCC12FCM50B**	0,020
M12 cable gland, female Screw terminal and metal clamping ring	Straight	8	XCSRM•3•••	**XZCC12FDM80B**	0,020
	Elbowed 90°			**XZCC12FCM80B**	0,020

(1) With XCSRM•3•••, only for the connection between a safety control unit and the last XCSRM•3••• switch of a daisy chain

Safety detection solutions

Contactless RFID safety switches

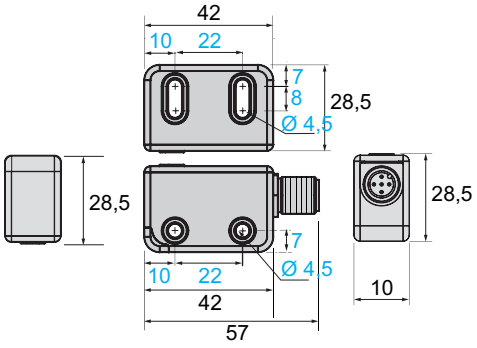
XCSRM miniature format

Single and advanced models, accessories

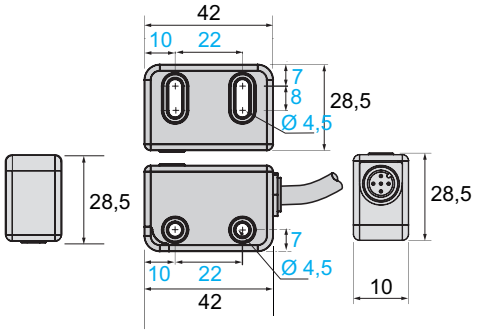
Safety switches

Switch with M12 connector

XCSRM1●M12



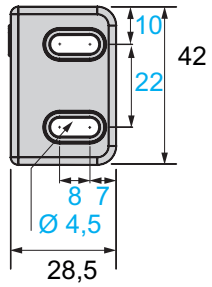
Switch with pigtail connector or pre-cabled



Accessories

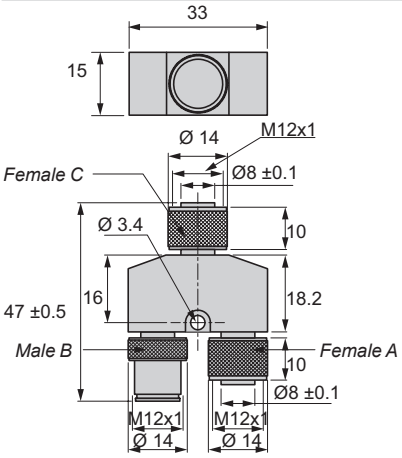
Actuators

XCSRK1BU, XCSRK1BL



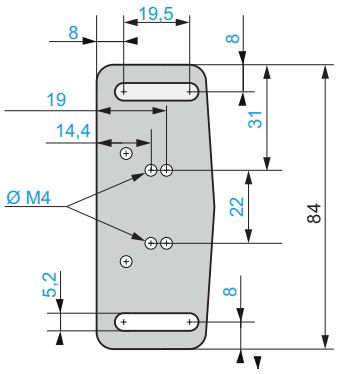
Splitter connector

XCSRZY1, XCSRZY2



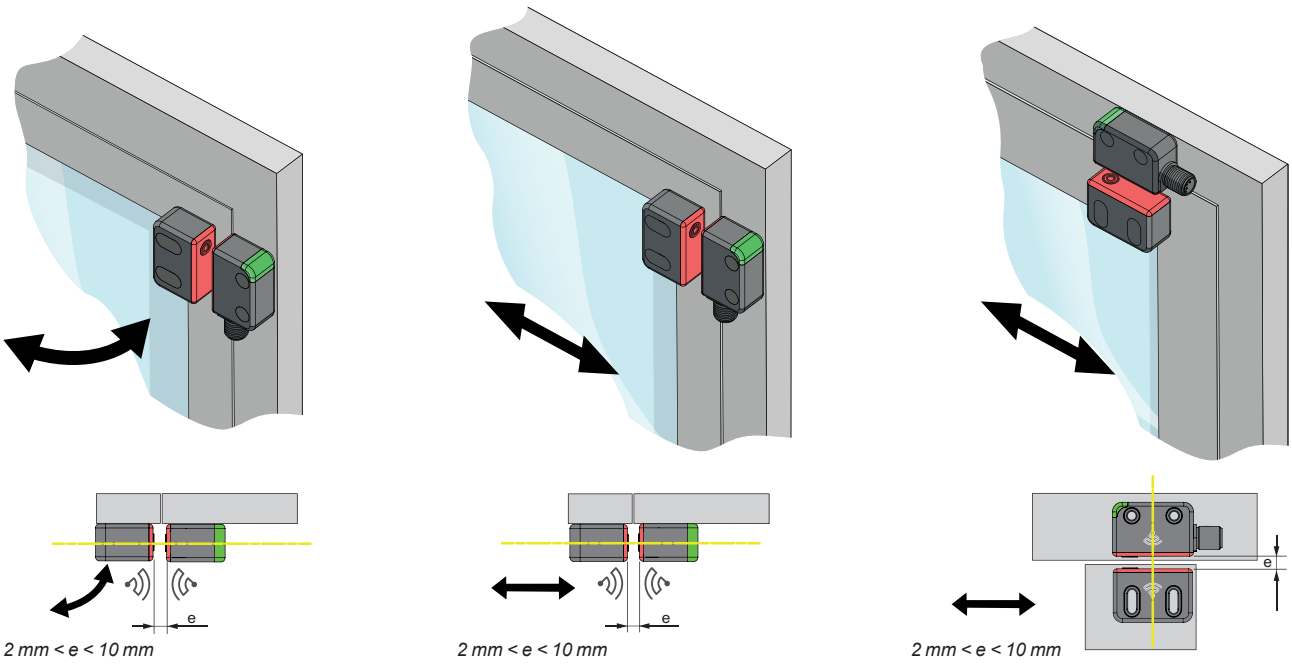
Mounting support for switch and actuator

XCSRZSTK1



Mounting

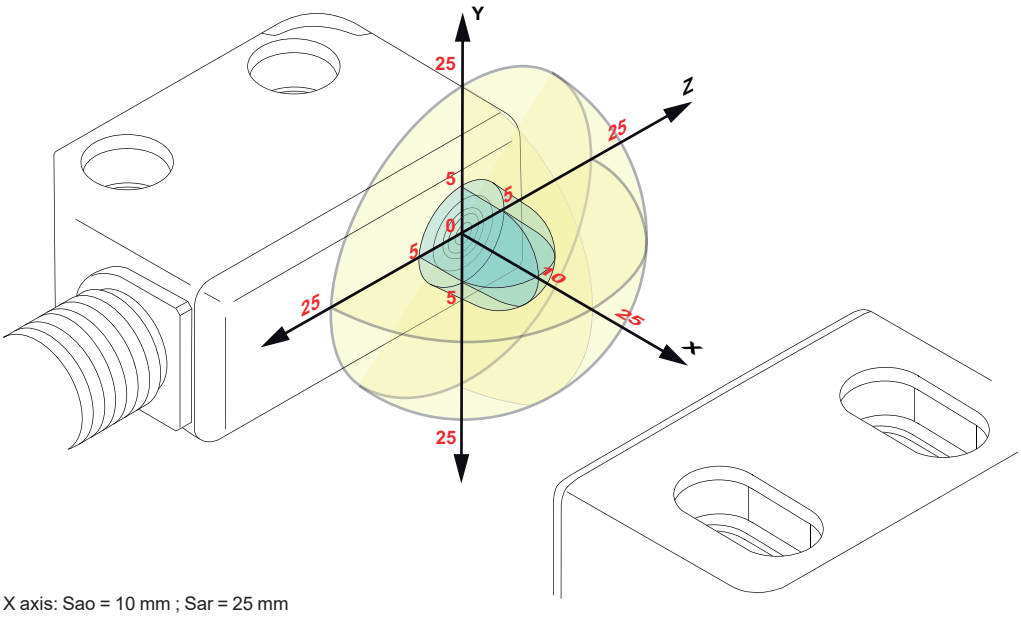
Examples of face-to-face mounting configurations (recommended)



2 mm < e < 10 mm *2 mm < e < 10 mm* *2 mm < e < 10 mm*

e: minimum recommended mounting distance between actuator and switch

Curves

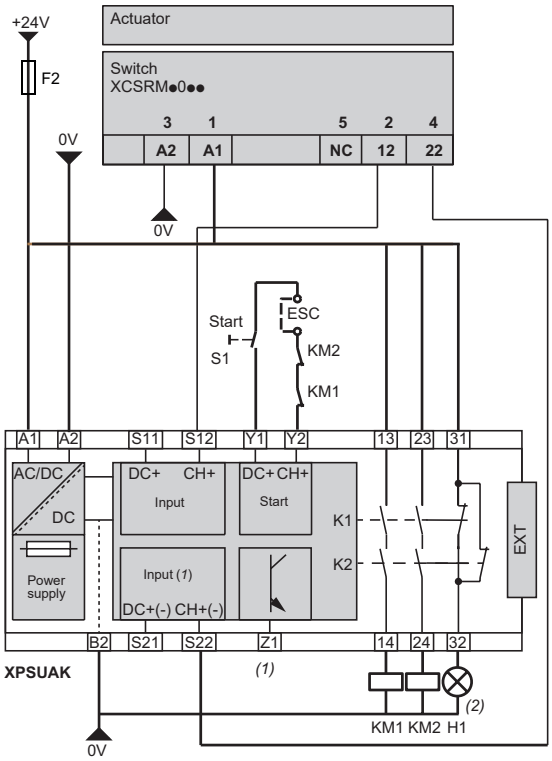


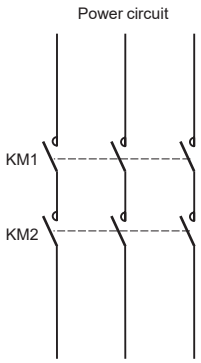
X axis: Sao = 10 mm ; Sar = 25 mm
Y axis: Sao = 5 mm ; Sar = 25 mm
Z axis: Sao = 5 mm ; Sar = 25 mm

Schemes
Note: these schemes are given as examples only, the designer should refer to the relevant safety standards for guidance.

Single Model - Connecting with a XPSUAK module

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



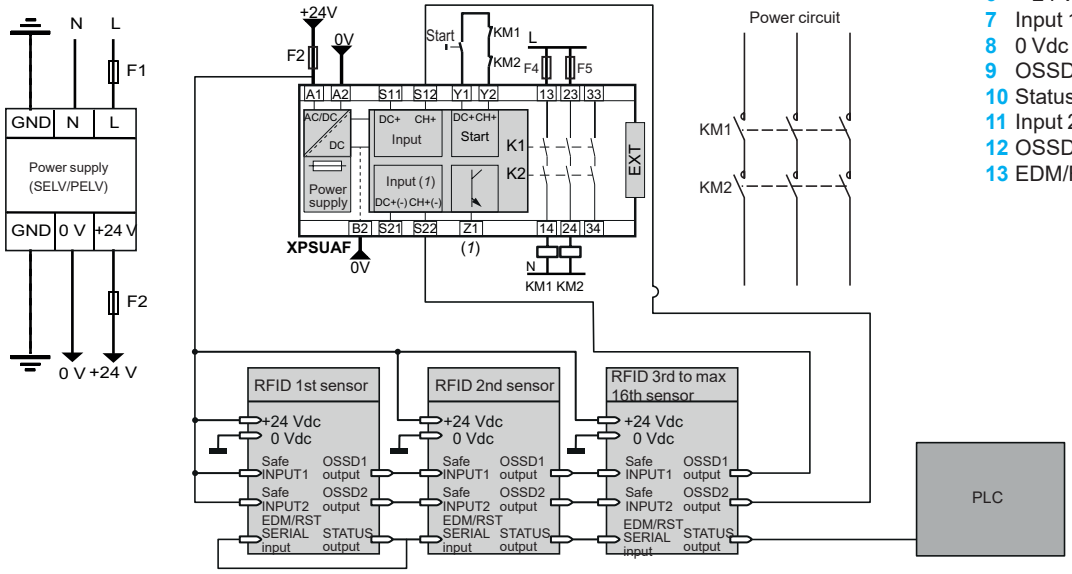


1 + 24 Vdc
2 12
3 0 Vdc
4 22
5 Status

(1) Pulsed output for diagnostics
(2) XCSRM RFID safety switch indicator light deactivated

Advanced model - Series Connecting with a XPSUAF module

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



6 + 24 Vdc (BN) Brown
7 Input 1 (WH) White
8 0 Vdc (BU) Blue
9 OSSD 1 (YE) Yellow
10 Status (GY) Grey
11 Input 2 (PK) Pink
12 OSSD 2 (PU) Purple
13 EDM/Restart/Serial (OR) Orange

(1) Pulsed output for diagnostic