Safety detection solutions

Safety coded magnetic switches
XCSDMC compact rectangular
XCSDMP standard rectangular, XCSDMR cylindrical
Plastic

ECOLAB Certified

XCSDMC

Rectangular, compact: 51 x 16 x 7 (mm)

Pre-cabled connection	Connector on flying lead connection
	
Page 100	Page 101

XCSDMP

Rectangular, standard: 88 x 25 x 13 (mm)

Pre-cabled connection	Connector on flying lead connection
	
Page 100	Page 101

XCSDMR

Cylindrical, diameter: 30, length: 38.5 (mm)

Pre-cabled connection	Connector on flying lead connection
	
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Safety detection solutions

Safety coded magnetic switches
XCSDMC compact rectangular
XCSDMP standard rectangular, XCSDMR cylindrical
Plastic

Environment

Conformity to standards	Products	EN/IEC 60947-5-1, UL 508, CSA C22-2 no. 14
	Machine assemblies	EN/IEC 60204-1, EN/ISO 14119 (Low Level of Coding)
Product certifications		UL, CSA, EAC, ECOLAB
Maximum safety level *(1)*		PL=e, category 4 conforming to EN/ISO 13849-1 and SIL 3 conforming to EN/IEC 61508
Reliability data B_{10D}		50,000,000 (value given for a service life of 20 years, limited by mechanical or contact wear)
Ambient air temperature	For operation	-25…+85 °C
	For storage	-40…+85 °C
Vibration resistance		10 gn (10…150 Hz) conforming to EN/IEC 60068-2-6
Shock resistance		30 gn (11 ms) conforming to EN/IEC 60068-2-27
Sensitivity to magnetic fields		≥ 0.3 mT
Electric shock protection		Class II conforming to EN/IEC 61140
Degree of protection	Conforming to IEC 60529	IP 66 and IP 67 for coded magnetic switches with pre-cabled connection IP 67 for coded magnetic switches with connector on flying lead connection
Materials		Thermoplastic case (PBT) PVC cable (ROHS)

Contact block characteristics

Rated operational characteristics			Ue: 24 V ⎓, Ie: 100 mA max.
Rated insulation voltage (Ui)			Ui: 100 V ⎓
Rated impulse withstand voltage (U imp)			2.5 kV conforming to EN/IEC 60947-5-1
Resistance across terminals		Contact with LED	57 Ω
		Contact without LED	10 Ω
Protection (of the fuse for the safety control unit protection)			External cartridge fuse: 500 mA gG (gl) (use a UL-recognized Type CC fuse in the United States). Optionally, in series with each switch contact to avoid damage to the internal protection in case of misuse.
Connection	XCSDMC	2-contact model	Pre-cabled, 4 x 0.25 mm², length: 2, 5 or 10 m depending on model or 4-pin male M8 connector on 0.15 m flying lead
	XCSDMP	2-contact model	Pre-cabled, 4 x 0.25 mm², length: 2, 5 or 10 m depending on model or 4-pin male M12 connector on 0.15 m flying lead
		3-contact model	Pre-cabled, 6 x 0.25 mm², length: 2, 5 or 10 m depending on model or 8-pin male M12 connector on 0.15 m flying lead
	XCSDMR	2-contact model	Pre-cabled, 4 x 0.25 mm², length: 2, 5 or 10 m depending on model or 4-pin male M12 connector on 0.15 m flying lead
Contact material			Rhodium
Electrical durability			1.2 million operating cycles
Switching capacity		Contact with LED	5…100 mA
		Contact without LED	0.1…100 mA
Insulation resistance			1000 MΩ
Maximum breaking capacity		Contact with LED	3 VA
		Contact without LED	10 VA
Maximum switching frequency			150 Hz

(1) Using an appropriate and correctly connected safety control unit.

ECOLAB Certified

Safety detection solutions

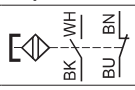
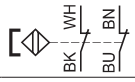
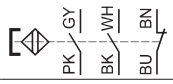
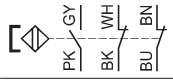
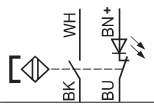
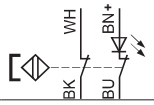
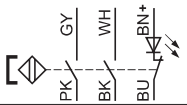
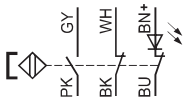
Coded magnetic safety switches

XCSDMC compact rectangular
XCSDMP standard rectangular, XCSDMR cylindrical
Plastic, pre-cabled

Type of switch	Rectangular		Cylindrical
	Compact 51 x 16 x 7	Standard 88 x 25 x 13	Diameter 30 Length 38.5
			

References of switches *(1)* ⚠ should be used in conjunction with safety control units (see page 106)

Contact states shown are with the magnet positioned in front of the switch

2-pole 1 NC + 1 NO (staggered)		**XCSDMC5902**	**XCSDMP5902**	**XCSDMR5902**
2-pole 2 NC *(2)* (staggered)		**XCSDMC7902**	**XCSDMP7902**	**XCSDMR7902**
3-pole 1 NC + 2 NO (1 NO staggered)		–	**XCSDMP5002**	–
3-pole 2 NC + 1 NO *(2)* (1 NC staggered)		–	**XCSDMP7002**	–
2-pole 1 NC + 1 NO (staggered)		**XCSDMC5912**	**XCSDMP5912**	**XCSDMR5912**
2-pole 2 NC *(2)* (staggered)		**XCSDMC7912**	–	**XCSDMR7912**
3-pole 1 NC + 2 NO (1 NO staggered)		–	**XCSDMP5012**	–
3-pole 2 NC + 1 NO *(2)* (1 NC staggered)		–	**XCSDMP7012**	–
Weight (kg)		0.101	0.180	0.146

(1) The references of ***XCSDM●*** *switches comprise a coded magnet (XCSZ●1) and a magnetic switch (XCSZ●●). Example: XCSDMP5012 comprises XCSZP1 (magnet) + XCSZP5012 (switch). Only the coded magnets are available as spare parts (see on page 102).*
Switch pre-cabled with 2 m long cable. For other cable lengths, replace the last number of the reference ***(2)*** *with* ***5*** *for a 5 m long cable or with* ***10*** *for a 10 m long cable.*
Example: rectangular, compact switch with 1 NC + 1 NO contacts and 10 m cable becomes ***XCSDMC59010****.*
(2) To be associated with a safety control unit which allows 2 NC contact monitoring (for example XPSUAF●, XPSUS●, XPSUDN●, etc.).

Complementary characteristics not shown under general characteristics (page 99)

Operating zone	Sao: 5 mm Sar: 15 mm	Sao: 8 mm Sar: 20 mm	Sao: 8 mm Sar: 20 mm
Approach directions	3 directions	3 directions	1 direction

Accessories

See page 102

Dimensions:
page 104

Safety detection solutions

Coded magnetic safety switches
XCSDMC compact rectangular
XCSDMP standard rectangular, XCSDMR cylindrical
Plastic, connector on flying lead

Type of switch	Rectangular		Cylindrical
	Compact 51 x 16 x 7	Standard 88 x 25 x 13	Diameter 30 Length 38.5
	M8 connector	**M12 connector**	**M12 connector**
			

References of switches *(1)* ⚠ should be used in conjunction with safety control units (see page 106)

Contact states shown are with the magnet positioned in front of the switch

2-pole 1 NC + 1 NO (staggered)	**XCSDMC590L01M8**	**XCSDMP590L01M12**	**XCSDMR590L01M12**
2-pole 2 NC *(2)* (staggered)	**XCSDMC790L01M8**	**XCSDMP790L01M12**	**XCSDMR790L01M12**
3-pole 1 NC + 2 NO (1 NO staggered)	–	**XCSDMP500L01M12**	–
3-pole 2 NC + 1 NO *(2)* (1 NC staggered)	–	**XCSDMP700L01M12**	–
2-pole 1 NC + 1 NO (staggered)	**XCSDMC591L01M8**	**XCSDMP591L01M12**	**XCSDMR591L01M12**
2-pole 2 NC *(2)* (staggered)	**XCSDMC791L01M8**	**XCSDMP791L01M12**	**XCSDMR791L01M12**
3-pole 1 NC + 2 NO (NO staggered)	–	**XCSDMP501L01M12**	–
3-pole 2 NC + 1 NO *(2)* (NC staggered)	–	**XCSDMP701L01M12**	–
Weight (kg)	0.101	0.180	0.146

*(1) The references of **XCSDM●** switches comprise a coded magnet (XCSZ●1) and a magnetic switch (XCSZ●●). Only the coded magnets are available as spare parts (see on page 102).*
Example: XCSDMC590L01M8 comprises XCSZC1 (magnet) + XCSZC590L01M8 (switch).

(2) To be associated with a safety control unit which allows 2 NC contacts monitoring (for example XPSUAF●, XPSUS●, XPSUDN●, etc.)

Complementary characteristics not shown under general characteristics (page 99)

Operating zone	Sao: 5 mm Sar: 15 mm	Sao: 8 mm Sar: 20 mm	Sao: 8 mm Sar: 20 mm
Approach directions	3 directions	3 directions	1 direction

Accessories

See page 102

Dimensions:
page 104

Safety detection solutions
Coded magnetic safety switches
XCSDMC compact rectangular
XCSDMP standard rectangular, XCSDMR cylindrical
Accessories

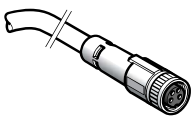
Accessories

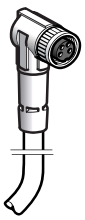
Accessories for coded magnetic switches	XCSDMC●●●2 XCSDMC●●●L	XCSDMP●●●2 XCSDMP●●●L	XCSDMR●●●2 XCSDMR●●●L
Fixing clamp	–		**XSZB130**
Weight (kg)	–		0.080
Additional coded magnet	**XCSZC1**	**XCSZP1**	**XCSZR1**
Weight (kg)	0.009	0.050	0.018
Non-magnetic shims	**XCSZCC** (lot of 2)	**XCSZCP** (lot of 2)	**XCSZCR**
Weight (kg)	0.008	0.012	0.002

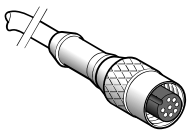
Pre-wired female connectors for connector version switches
Pre-wired connector characteristics

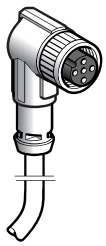
Pre-wired connector type		XZCP0941L●, XZCP1041L●	XZCP29P11L●	XZCP1141L●, XZCP1241L●
Type of connection		Screw thread (metal clamping ring)	Screw thread (metal clamping ring)	Screw thread (metal clamping ring)
Number of contacts		4	8	4
Degree of protection		IP 67 (with clamping ring correctly tightened)		
Ambient air temperature	Static	-35…+90 °C	-35…+90 °C	-35…+90 °C
	Dynamic	-5…+90 °C	-5…+90 °C	-5…+90 °C
Cabling		Ø 5.2 mm cable, wire c.s.a.: 4 x 0.34 mm²	Ø 5.2 mm cable, wire c.s.a.: 8 x 0.25 mm²	Ø 5.2 mm cable, wire c.s.a.: 4 x 0.34 mm²
LED signaling		–	–	–
Nominal voltage		60 V ∼, 75 V ⎓	30 V ∼, 36 V ⎓	250 V ∼, 300 V ⎓
Nominal current		4 A	2 A	4 A
Insulation resistance		> 10^9 Ω	> 10^9 Ω	> 10^9 Ω
Contact resistance		⩽ 5 mΩ	⩽ 5 mΩ	⩽ 5 mΩ

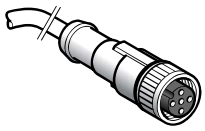
References of pre-wired connectors (For connection to flying lead models)

503627

XZCP0941L●

503626

XZCP1041L●

534640

XZCP29P11L●

503630

XZCP1241L●

563352

XZCP1141L●

Type of connector	Number of pins	For use with	Type	Cable length m	Reference	Weight kg
Female, M8	4	XCSDMC●9●	Straight	2	**XZCP0941L2**	0.080
				5	**XZCP0941L5**	0.180
				10	**XZCP0941L10**	0.360
			Elbowed	2	**XZCP1041L2**	0.080
				5	**XZCP1041L5**	0.180
				10	**XZCP1041L10**	0.360
Female, M12	8	XCSDMP●0●	Straight	2	**XZCP29P11L2**	0.100
				5	**XZCP29P11L5**	0.290
				10	**XZCP29P11L10**	0.470
Female, M12	4	XCSDMP●9●/ XCSDMR●9●	Straight	2	**XZCP1141L2**	0.090
				5	**XZCP1141L5**	0.190
				10	**XZCP1141L10**	0.370
			Elbowed	2	**XZCP1241L2**	0.090
				5	**XZCP1241L5**	0.190
				10	**XZCP1241L10**	0.370

Dimensions: page 105

Safety detection solutions

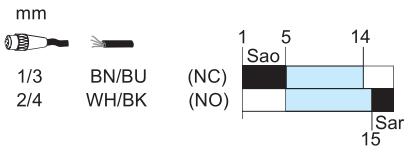
Coded magnetic safety switches

XCSDMC compact rectangular

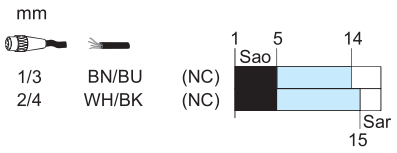
XCSDMP standard rectangular, XCSDMR cylindrical

Function diagrams with magnet present

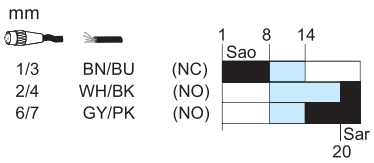
XCSDMC59●●



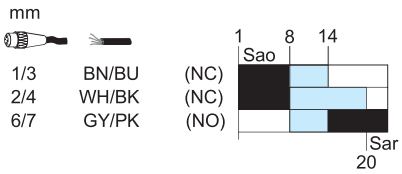
XCSDMC79●●



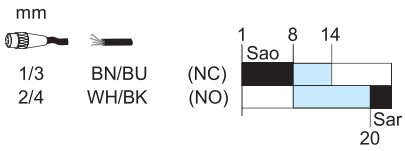
XCSDMP50●●



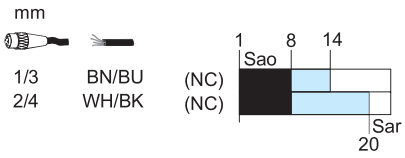
XCSDMP70●●



XCSDMR59●●/XCSDMP59●●



XCSDMR79●●/CS DMP79●●



Contact closed

Contact open

Transient state

Sao: assured operating distance.
Sar: assured release distance.
Conforming to EN/IEC 60947-5-3

References:
page 100

Safety detection solutions
Coded magnetic safety switches
XCSDMC compact rectangular
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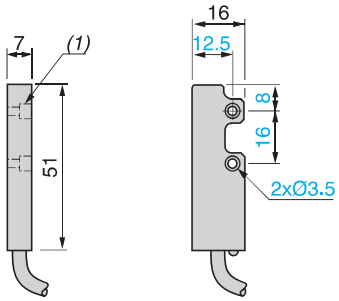
Plastic

Coded magnetic switches

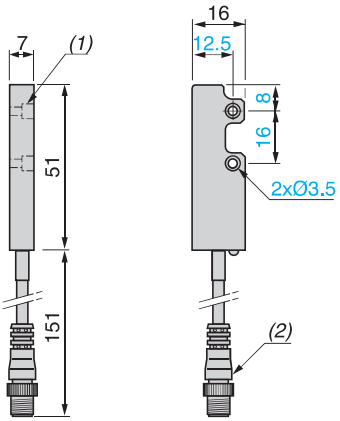
XCSDMC

Pre-cabled connection



(1) Counterbored: Ø 6 x 3.5 mm.

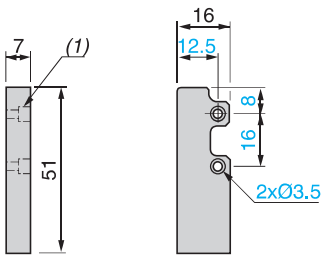
Connector on flying lead connection



(1) Counterbored: Ø 6 x 3.5 mm.
(2) M8 4-pin connector.

Coded magnet for XCSDMC

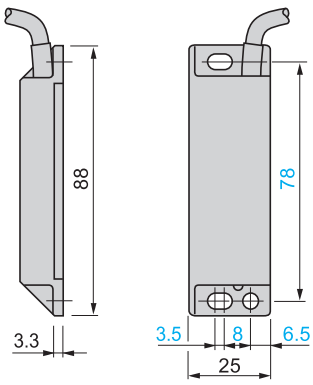
XCSZC1



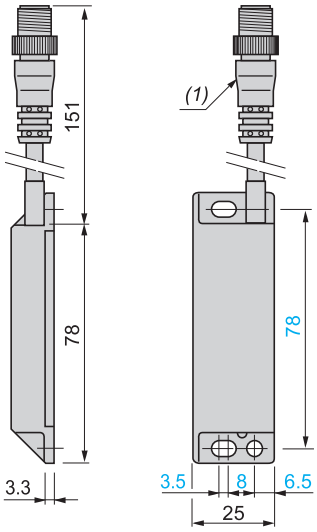
(1) Counterbored: Ø 6 x 3.5 mm.

XCSDMP

Pre-cabled connection



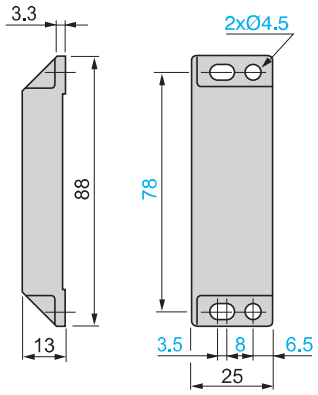
Connector on flying lead connection



(1) M12 4 or 6-pin connector.

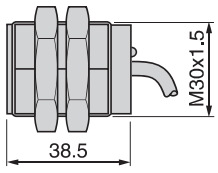
Coded magnet for XCSDMP

XCSZP1

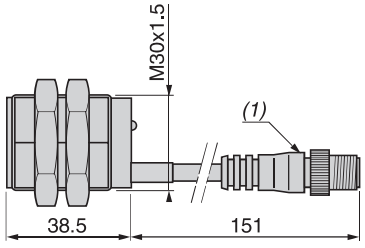


XCSDMR

Pre-cabled connection



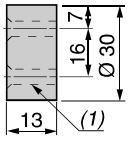
Connector on flying lead connection



(1) M12 4-pin connector.

Coded magnet for XCSDMR

XCSZR1



(1) 2 x Ø 4.3, countersunk: Ø 7.5 at 45°.

References:
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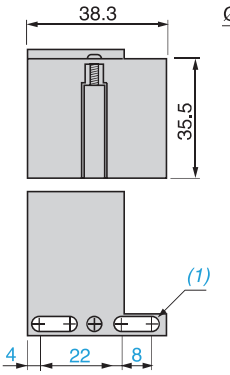
Safety detection solutions
Coded magnetic safety switches
XCSDMC compact rectangular
XCSDMP standard rectangular, XCSDMR cylindrical
Plastic

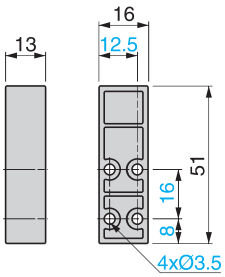
Accessories

Fixing clamp
XSZB130

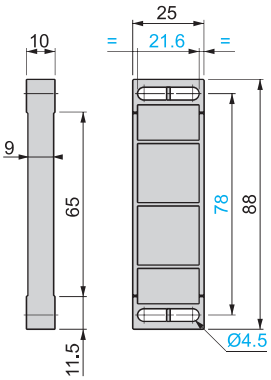


(1) 2 elongated holes Ø 4 x 8

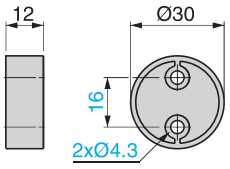
Non-magnetic shims
XCSZCC



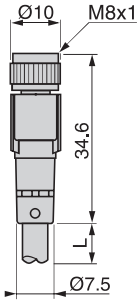
XCSZCP



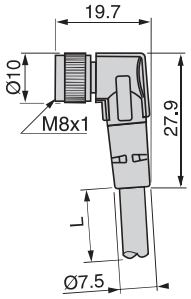
XCSZCR



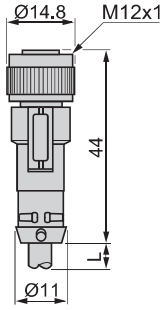
Pre-wired connectors
XZCP0941L●



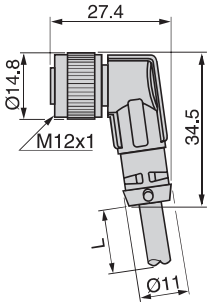
XZCP1041L●



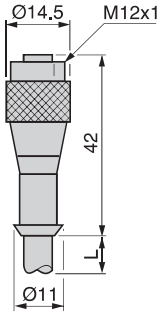
XZCP1141L●



XZCP1241L●

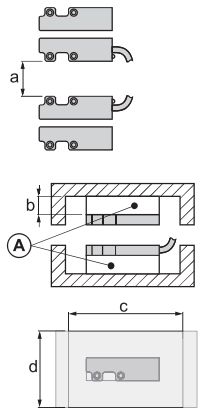


XZCP29P11L●

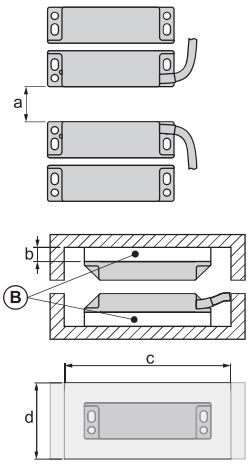


Mounting

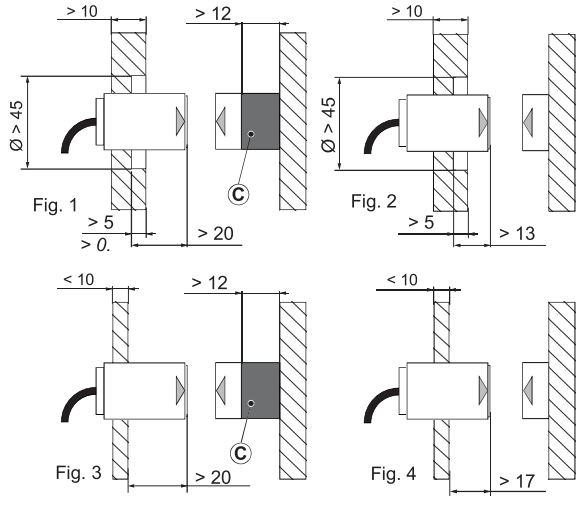
XCSDMC

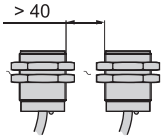


XCSDMP



XCSDMR





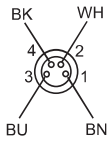
XCS *(mm)*	a ≥	b ≥	c x d ≥
DMC	40	13	81 x 55
DMP	100	10	118 x 55

Non-magnetic shims	
A	XCSZCC *(x2)*
B	XCSZCP *(x2)*
C	XCSZCR *(x1)*

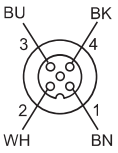
Safety detection solutions
Coded magnetic safety switches
XCSDMC compact rectangular
XCSDMP standard rectangular, XCSDMR cylindrical

Schemes

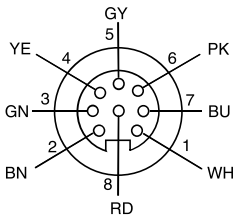
M8 pre-wired connector
XZCP0941L●



M12 pre-wired connector
XZCP1141L●, XZCP1241L●



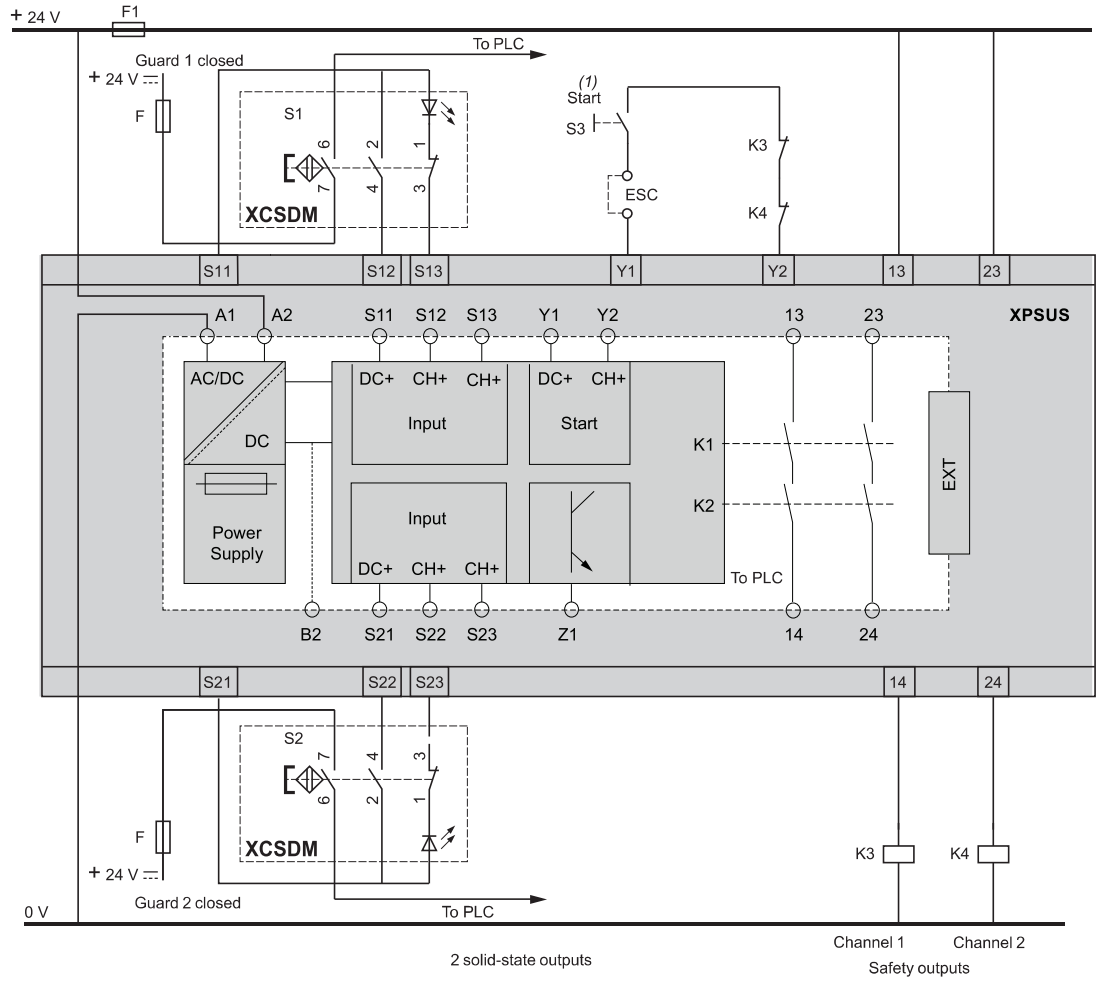
XZCP29P11L●



XCSDM●5●●● with XPSUS●

Wiring to PL=e, category 4 conforming to EN/ISO 13849-1 and SIL 3 conforming to EN/IEC 61508. Example with 3-pole 1 NC + 2 NO (1 NO staggered) contact.

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



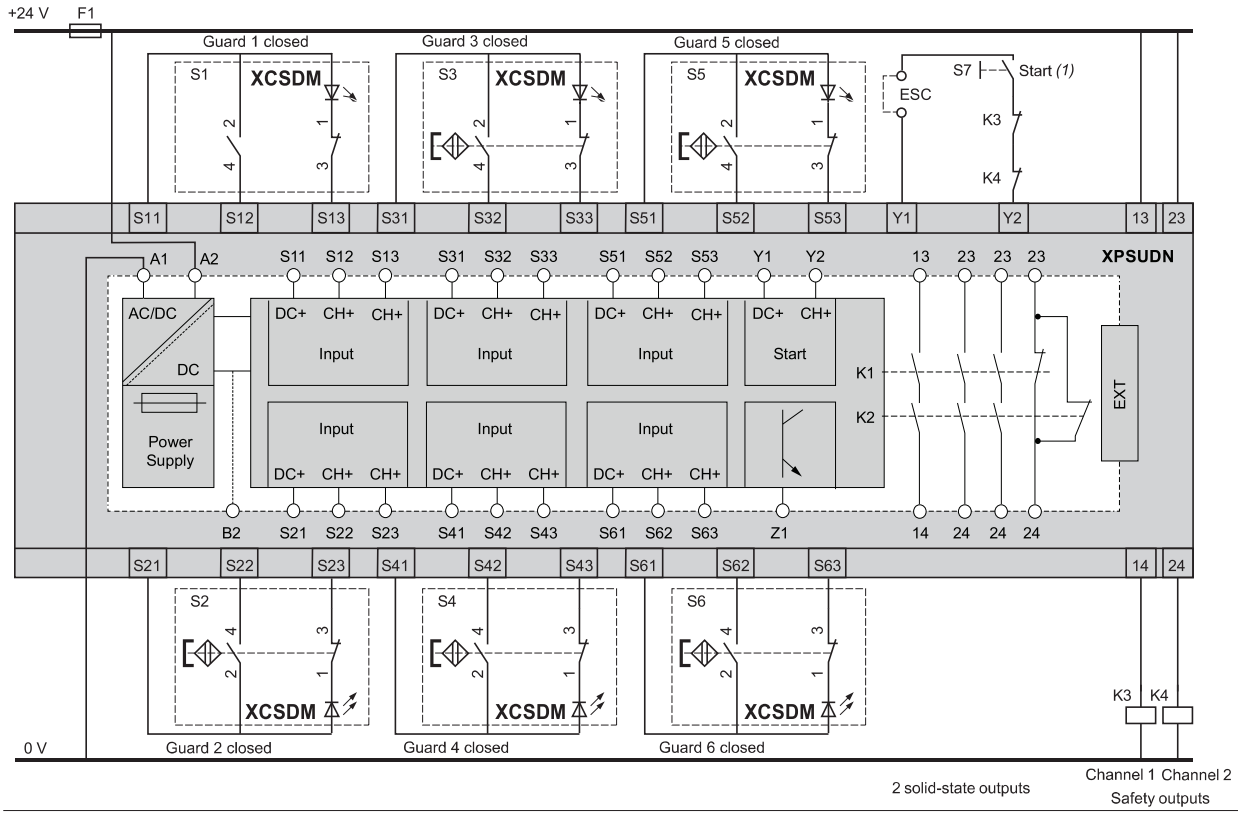
(1) The start function is configured by means of the XPSUAF start function selector.

ESC: External start conditions.

References:
page 100

XCSDM●59●● with XPSUDN●

Wiring to PL=e, category 4 conforming to EN/ISO 13849-1 and SIL 3 conforming to EN/IEC 61508. Example with 2-pole 1 NC + 1 NO (staggered) contact.

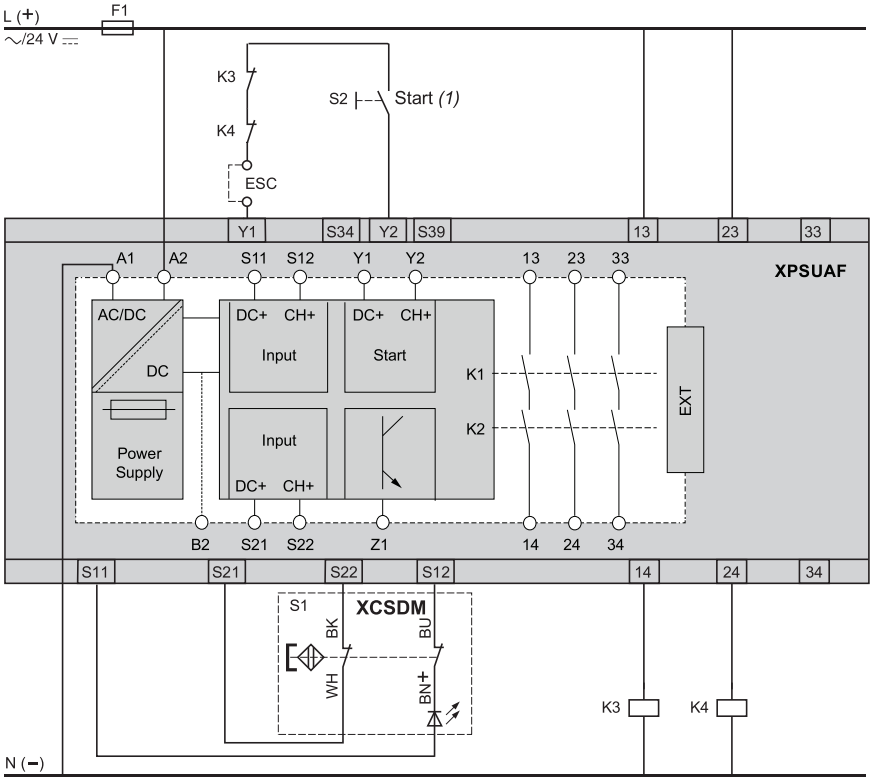


(1) The start function is configured by means of the XPSUAF start function selector.

ESC: External start conditions.

XCSDM●79●● with XPSUAF

Wiring up to PL=e, category 4 conforming to EN/ISO 13849-1 and SIL 3 conforming to EN/IEC 61508. Example with 2-pole 2 NC contact



(1) The start function is configured by means of the XPSUAF start function selector.

ESC: External start conditions.