Safety System Products

X2 series

Multi-function safety relay 2 safety functions

Your advantages

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Monitoring of up to two different safety functions: • Potential-free signals
• OSSD signals
• Two-hand function

Function: • 2 x Manual or automatic reset
• 2 x EDM (External Device Monitoring)

Safety contacts safety function 1: • 2 x No contact DC13, 4A

Signal contacts safety function 1: • 1 x Opener 24 VDC/1 A

Safety contacts safety function 2: • 2 x Semiconductor output DC-13: 24 V / 2A

Signal contacts safety function 2: • 1 x Semiconductor output 24 VDC / 100mA

General data

Type designation	Series X2
Interference immunity	to EMC Directive
Item number	1019457
Item number (old)	SP-K-70-001-03
Mounting	standard DIN rail to EN 60715
Terminal designations	EN 60947-1
PFHD semi-conductor output	≤ 2.66 x 10□⁹ / h
PFDavg semi-conductor output	≤ 2.42 x 10□⁵
PFHD relay output	≤ 1.25 x 10□⁸ / h
PFDavg relay output	≤ 5.3 x 10□⁵
DC	high
Service life TM (EN ISO 13849-1)	20 Years

Safety data

Category (EN ISO 13849-1:2015)	Cat. 4

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SIL (acc. IEC 62061)	suitable for applications in SIL 3
Approvals	IEC/EN 60204-1, EN 60947-5-1; EN ISO 13849-1, IEC/EN 62061, IEC 61508
CCF (ISO 13849-1)	> 65 points

Environmental conditions	
Ambient temperature	–25 °C ... +60 °C (non condensing) °C
Max. storage temperature	–40 °C ... +85 °C (non condensing) °C
Resistance to shock	30 g/11 ms
Resistance to vibrationsto EN 60068-2-6	10 ... 55 Hz, Amplitude 0.35 mm
Altitude	max. 2,000 m
Contamination level	2

Electrical data	
Rated operating voltage Ue	24 VDC / 24 VAC –20%/+20% V
Frequency range	50 Hz/60 Hz
Power Supply	SELV-Netzteil network as per DIN EN 60950; safety transformer as per DIN EN 61558-2-6 (AC); mains power supply must harmonise with device safety (characteristic/melting property) so that triggering is assured.
Power consuption	3.6 W (+ load of the safety outputs)
Protection of the operating voltage	we recommend a circuit breaker type Z (max. 16 A) or a fine fuse (max. 15 A. delayed action)
UL Rating of external fuse:	max. 16 A, only use fuses in accordance with UL 248 series
Isolation parameters acc. to IEC 60664-1	
Rated insulation voltage Ui	
- safety contacts	250 V
Safety outputs	50 V
Rated impulse withstand voltage Uimp	
- safety contacts 13-14, 23-24	6 kV
-Safety outputs	0.8 kV

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Overvoltage category	III
Pick-up delay	< 150 ms
Dropout delay emergency-stop	< 10 ms
Dropout delay power failure	< 10 ms
Bridging voltage drop	typ. 5 ms
Standby after power switched on [s]	< 1,5 s
Terminal blocks	
Single-wire (rigid) or fine-wire (flexible)	0.2 ... 2.5 mm²
Fine-wired with wire sleeve	0.25 ... 2.5 mm²
	0.5 Nm
Control current circuits/inputs	
Inputs S12, S22	24 VDC/8 mA
Inputs X2, X3, X7	24 VDC/8 mA
Clock outputs S11, S21	> 20 VDC, 10 mA per output
Cable length	1500 m with 1.5 mm²; 2500 m with 2.5 mm²
Conduction resistance	max. 40 Ω
Relay outputs	
Switching capacity of the safety contacts	contacts 13-14, 23-24, 33-34: max. 250 V, 6 A ohms. min. 10 VDC / 10 mA (Derating see 2.5)
Fuse rating of the safety contacts	external (Ik = 1000 A) acc. to EN 60947-5-1 Safety fuse 10 A quick blow. 6 A slow blow
Utilisation category to EN 60947-5-1	AC-15: 230 V / 4 A DC-13: 24 V / 4 A
Fuse rating for the auxiliary contact	41-42: 24 VDC / 1 A
Safety contact values	safety fuse 2.5 A quick blow, 2 A slow blow
Electrical service life (nominal load)	see 2.5 (operating manual) Years
mechanical lifespan	10 million switching cycles
Max. switching cycles / minute	20
Inductive consumers	provision is to be made for suitable protective wiring for suppression
Semi-conductor outputs	
Switching capacity of the safety outputs Q	Qt1, Qt2: max. 2 A
Voltage drop	< 0.5 V
residual current	< 1 mA

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Max. fuse rating of the safety outputs	refer to „Operating voltage“
Test impulse to Q1, Q2	< 1 ms (negativ), < 100 µs (positive)
Switching capacity of signaling outputs	semiconductor outputs Y1: 24 VDC/100 mA
Fuse rating of the signalling outputs	internal electronic trip, tripping current > 100 mA
Utilisation category accroding to IEC 60947-5-1	DC-13: 24 V / 2A

Mechanical data

Housing material	glass-fibre reinforced thermoplastic. ventilated

Dimensions

Height	98 mm
Width	22,5 mm
Length	115 mm

LED diagnostics

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Diagnose function

6.1 LED indications

LED	Function	Display type
RUN	Ready for operation	Continuously lit
	Not a valid appication	Flashes
In 1/2	Input S12 and S22 closed	Continuously lit
	Time window for synchronicity exceeded	Flashes quickly
	1-channel opening	Flashes slowly
In 3/4	Input S32 and S42 closed	Continuously lit
	Time window for synchronicity exceeded	Flashes quickly
	1-channel opening	Flashes slowly
Out 1	Safety output application 1 ON	Continuously lit
	Safety outputs waiting for start (input X2)	Flashes slowly
	Feedback circuit not closed (input X3)	Flashes slowly
Out 2	Safety outputs application 2 ON	Continuously lit
	No release signal on input X7	Flashes quickly
	Safety outputs waiting for start (input X4)	Flashes slowly
	Feedback circuit not closed (input X5)	Flashes slowly

Single flashing of all LEDs with mains on

*[1]) Troubleshooting

Before a new function can be programmed, the old programming has to be deleted via the setting "C".

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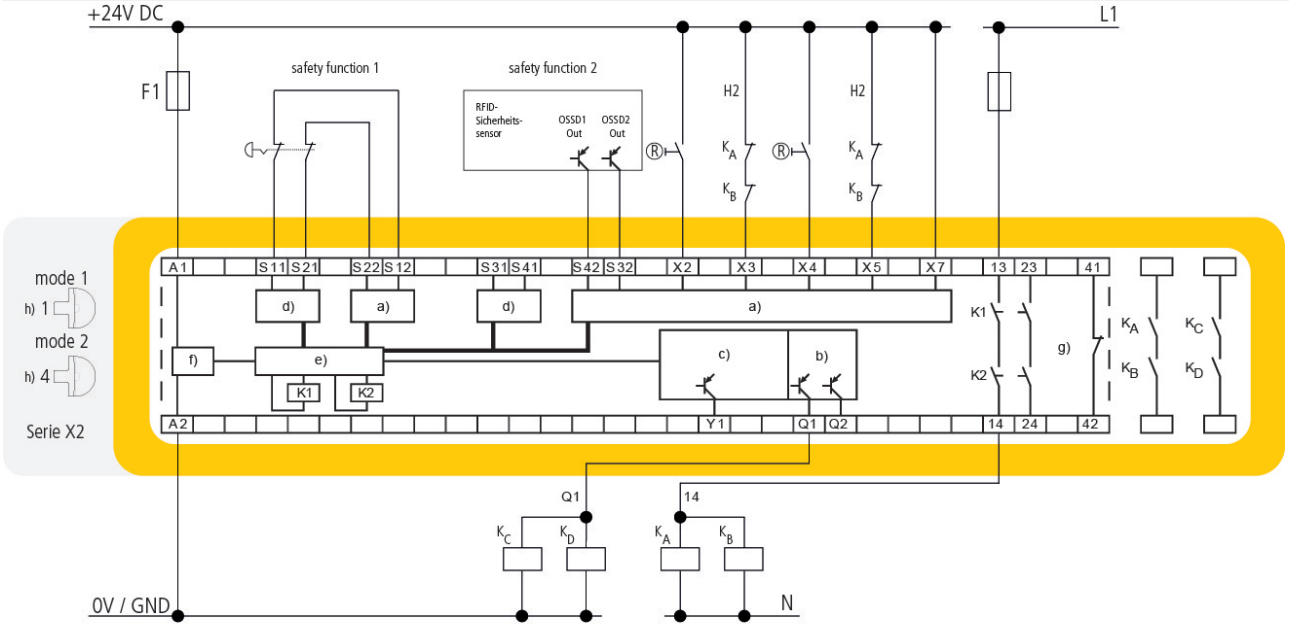
Electrical drawings

Connection example 1



Legend

a) Safety inputs
b) Safety function 2
c) Signallig outputs
d) Clock outputs
e) Processing
f) Power supply
g) Safety function 1
h) Rotary knob for programming

Downloads

- SISTEMA - Data V 4.1
- Operating Manual
- Certificate
- CAD Data
- EPLAN-Data

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