Tippkemper®

ISO 9001:2008

MATRIX elektronik ag

Original Operating Manual

GARDIX Safety Relay GX-SR2/3

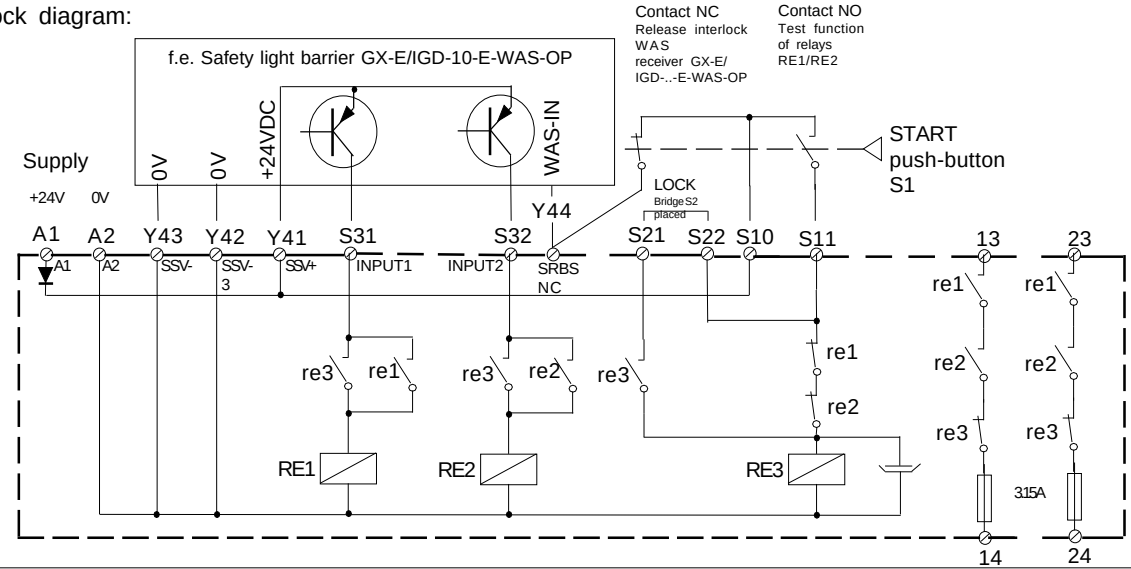
CE 0340

- For safety related interruption of machines and systems
- For applications in safety related circuits at IEC/EN 60204-1
- Redundant output circuits
- Only for 2-channel E-STOP
- Applicable with saftey light barriers Gardix ESPW GX-E/IGS/IGN-IGD, type 2 or 4 according to IEC/EN 61496 and with Gardix fail-safe inductive sensors ISS/ISN/ISD-10B-GD, PDF-M at EN 60947-5-3
- SILCL 3, Pl e, category 4

DGUV Test ET 13091 Sicherheit geprüft tested safety

Technical Data \ Type	GX-SR2/3-24VDC	GX-SR2/3-12VDC
Safety Integrity Level, according to IEC/EN 62061	SILCL 3	
Performance Level (PL), according to EN 13849-1	PL e	
Saftey category, according to EN ISO 13849-1	4	
MTTFd, according to EN ISO 13849-1	>30 (94= Years (HIGH), at 15'000 cycles/year	
PFHd, according to IEC/EN 62061	<= 3 x 10^{-8}, at 15'000 cycles/year	
Supply voltage	24VDC +-15%	12VDC +-15%
Current consumption (own consumption)	ca. 200mA	ca. 300mA
Maximum power dissipation	5.6W	4.5W
Safety outputs	2 x safety contacts combinations, forcibly guided	
Utilization category, according to IEC/EN 60947-5-1	AC-15, DC-13	
Overvoltage category	III	
Maximum load 250VAC	max. 750VA / 3A (3.15A blowout fuse, slow)	
Maximum load 30VDC	max. 90W / 3A (3.15A blowout fuse, slow)	
Power factor	cos φ 0.7 - 0.8	
Conditional short-circuit current	1kA, according to IEC/EN6047-5-1	
Switch-on delay	appr. 400ms	
Release time	<=50ms	
Electrical endurance	1 x 10^6 cycles at 24VDC/1A	
Mechanical endurance	appr. 10 x 10^6 cycles	
Ambient working temperature range T_{amb}	0°C < T_{amb} < +60°C	
Storage temperature range	-10°C ... +70°C	
Place of installation	in control cabinet, minimum IP54	
Housing, plastic	PC/ABS, for snap-on mounting at DIN rail EN 50022	
Enclosure rating, housing	IP 40, according to IEC/EN 60529	
Enclosure rating, terminals	IP 10, according to IEC/EN 60529	
Vibration and shock resistance	10 to 55Hz, 10 cycles, 3 axis. Shock: 30g/11ms	
Air an creeping distance	DIN VDE 0110 part 1, 04/97	
Pollution degree, according to EN 60668-1	2	
Rated insulation voltage	4kV	
Weight	ca. 420g	
Wiring length	max. 100m (min.AWG24(0.2mm²) to max.2.5mm²)	
Inputs	2 x PNP-function	
START-contact	for 1 x contact NO	
LED indication	2xLED input channels 1+2, 1xLED supply voltage 1xLED safety outs locked	

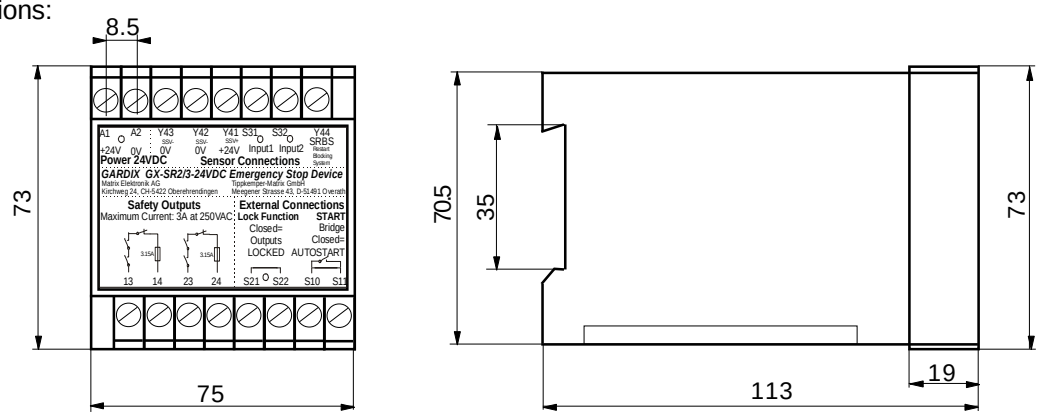
Block diagram:



Function: The safety relay provides a safety-related interruption of a safety circuit. If one or both input is open or disconnected, the relay is safe switched-OFF. When the supply voltage is connected and both input circuits are closed, the relay is ready for start. (Power-LED shows red). After closing and reopening the Start circuit, both relay RE1/RE2 are switched-On and relay RE3 switched-OFF and the safe output circuits 13-14 and 23-24 are switched-ON. (LED's channel 1/2 shows green. If one or both input circuits S31/S32 are interrupted, both relay RE1/RE2 are open and both output circuits 13-14/23-24 are interrupted. Always before restarting, both relay RE1/RE2 will be checked by RE3 if they are open.

GX-SR2-3-IEC_e11.2015-08-18/HB

Dimensions:



Terminal screwing:	For wires or tinsel conductors with end splices.
Wire cross-section:	min. AWG24 (0.2mm²) with max. 4 conductors/terminal max. 1.5mm² with max. 2 conductors/terminal max. 2.5mm² with 1 conductor/terminal
Stripping length:	9mm

Operating manual / EC-Declaration of conformity (short form):

OPERATING MODES:
Only for 2 channel safety-related interruption applications.

Timing:
The relay can only be activated when both inputs are closed in a time domain of appr. 200ms.

Manual start with monitoring:
The bridge S2 LOCK, between S21 and S22 must be closed. The relay will be activated if both inputs S31/S32 are closed and the START push-button will be closed and reopened.

Manual start:
The bridge S2 LOCK, between S21 and S22 is not inserted. The relay will be activated if both inputs S31/S32 are closed and the START push-button will be closed. If the START push-button is holding closed, the relay can be automatically restarted.

Automatic start:
The bridge S2 LOCK, between S21 and S22 is not inserted. The start circuit is by a bridge between S10 and S11 permanent closed. The relay will be activated when both input circuits S21 and S22 are closed. The relay is open when one or both input circuits are interrupted. This operating mode must NOT BE USED for E-Stop applications, because after power shutdown and reconduction of the supply voltage the relay and the output circuits are automatically activated.

INSTALLATION AND WIRING

Power connection:
Supply voltage (12VDC or 24VDC, equal to type) at the terminals A1(+VDC) and A2(0V) wired.

START-CIRCUIT:

Manual start with monitoring:
Insert the bridge S2, between S21 and S22.
Connect the Start push-button S1 (momentary push-button NO) between S10 and S11. The start push-button must be mounted, that at actuation, the dangerous area can be overviewed and monitored.
Sensors/Input circuit:
Connect the supply voltage at the connected ESPW or PDF-M. (Terminals Y41(SSV+) and Y42/Y43(SSV-). The outputs PNP-type or contacts must be wired to the terminals S31(Input 1) and S32 (Input 2).

Manual start:
Bridge S2 between S21 and S22 must be remove.
Connect the Start push-button S1 (momentary push-button NO) between S10 and S11. The start push-button must be mounted, that at actuation, the dangerous area can be overviewed and monitored.
Sensors/Input circuit:
Connect the supply voltage at the connected ESPW or PDF-M. (Terminals Y41(SSV+) and Y42/Y43(SSV-). The outputs PNP-type or contacts must be wired to the terminals S31(Input 1) and S32 (Input 2).

Automatic start:
NOT FOR E-STOP APPLICATIONS ALLOWED!
Remove the bridge S2 LOCK, between S21 and S22.
Insert the bridge S1 between S10 and S11.
Connect the supply voltage at the connected ESPW or PDF-M (terminals Y41(SSV+) and Y42/Y43(SSV-). The outputs PNP-type or contacts must be wired to the terminals S31(Input 1) and S32 (Input 2).

Safety instructions
This operating manual provides the machine manufacturer's or machine operator's technical personnel instructions on the safe mounting, configuration, electrical installation, commissioning, and on the operation and maintenance of the Gardix safety relay. Please read this operating instructions carefully. Only install and commission the unit if you have read and understood these operating instructions and are familiar with the applicable regulations for health and safety at work and accident prevention. Ensure VDE and local regulations are met, especially those relating to safety.
These operating instructions do *not* provide instructions for operating machines on which the safety relay is, or will be, integrated. Information on this is to be found in the appropriate operating instructions of the machine. The safety concept of the machinery is to valid.
Capacitive and inductance loads must have a protection circuitry.
The safety relay should be installed in a control cabinet with a protection type of at least IP54.
Any guarantee is rendered invalid if the housing is opened or unauthorized modifications are carried out.
The safety relay meets the requirements of:
IEC/EN 60947-1, IEC/EN 60947-5-1, EN ISO 13849-1, IEC/EN 62061, IEC/EN 60204-1/A1, IEC/EN 60529:2014, IEC/EN 61326-3-1, GS-ET-20, Machine directive: 2006/42/EC, EMC directive: 2004/108/EG, RoHS directive: 2011/65/EU.

General Notes, disposal:
We reserve the right to modify our equipment. Our equipment is designed such way, that it has the least possible adverse effect on the environment. It neither emit or contain any damaging substances and use a minimum of energy and resources. No longer usable or irreparable units must be disposed of in accordance with local waste disposal regulations.

EC-declaration of conformity, short form
Approval:
Safety relay at machine directive 2006/42/EC.
Certification No. ET 13090 / ET 13091.
Berufsgenossenschaft Energie Textil Elektro Medienerzeugnisse, Fachausschuss Elektrotechnik, Prüf- und Zertifizierungsstelle im DGUV Test, Gustav-Heinemann-Ufer 130,
D-50968 Köln, Kennnummer: 0340
The conformity of the devices with the EC standards and directives and the EC-type examination certificate and the observation of the Quality Safety System ISO 9001:2008 with the ATEX module "Production", declares:

Hans Bracher, Matrix Elektronik AG

Tippkemper - Matrix GmbH
Meegener Str. 43 D-51491 Overath
Tel.:+49 2206 9566-0 Fax -19
info@tippkemper-matrix.com

Matrix Elektronik AG (Manufacturer)
Kirchweg 24 CH-5420 Ehrendingen
Tel.:+41 56 20400-20 Fax -29
info@matrix-elektronik.com