



ATTENTION: To prevent electrical shocks, disconnect power source before servicing.
IMPORTANT: Save these instructions for future use.

General

The safety relay by itself can not provide safety. The safety relay requires proper component application and maintenance. The application must anticipate failures by using system safety risk assessment. This product must be installed and maintained in accordance with the manufacturer's instructions as well as applicable standards.

Mounting

The units must be mounted on a 35 mm DIN rail.

Construction

The relays and expander units have (4) groups of terminals:

1. Power Terminals:

(A1-A2) for 110V AC (23061, 23063) or 230V AC (23062, 23064) or (+B1 -B2) for 24V AC/DC

All units have a built-in transformer protected by an electronic fuse.

2. Input Terminals:

The E-Stop and Gate interlock operator:

Ch 1 (T11,T12), Ch 2 (X1,X2) (Fig. 1, 3, 4, 5)

Start button: (T31...T34) (Fig. 1, 4, 5)

Two-hand operator (T11...T34) (Fig. 2)

Expander Feedback (T34, T35, S1...S4, J1, J2) (Fig. 4)

*3. Safety Output Terminals:

Relay: 13-14...53-54

Expander: 13-14...83-84

These are monitored outputs.

These outputs are voltage free.

**4. Auxiliary Terminals:

Relay: 61-62, 73-74, Expander: 91-92, 101-102

ATTENTION:

Protection of Safety Circuits.

- ★ To avoid contact welding, a fuse must be connected externally. See performance specifications sheet for details.
- ★★ The auxiliary terminals are NOT monitored and must not be used as safety outputs. These may be used for data and signaling.

Wiring:

Use 0,2-2,5 mm² (24-14 AWG) Cu only, 250V min. insulation rating. Typical screwdriver needed is a flat blade 3 mm (.125 in.) wide. Tighten screws to 0.5-0.8 Nm (5-7 lb.in.).

	S2 Emergency Stop Dual channel EN 60617-7, EN 418	Refer to Guardmaster Catalogue
	S4 Emergency Stop Single channel EN 60617-7, EN 418	Refer to Guardmaster Catalogue
	S1 Reset	Refer to Guardmaster Catalogue
	S3 Gate Interlock EN 1088	Refer to Guardmaster Catalogue
	Positive operation EN 60617-7	Contacts are forced open mechanically
	Force guided contacts EN 60947-5 EN 50205	If N.O. welds all N.C. contacts cannot close
	Mechanically linked EN 60617-2	Contact set travels together

Applications: E-Stop, Gate Interlock, Two Hand Control, Expanders and Auxiliary Relays

E-Stop (Fig. 1)

a) Use an E-Stop button conforming to EN 418. It must have (2) Normally Closed (N.C.) contact blocks. The contact blocks must conform to EN 60947-5-1 positive-opening operation. □□□□

b) Use a start/reset momentary pushbutton with a single contact block with (2) circuits (1) Normally Open (N.O.) and (1) N.C. If two separate blocks are used, the N.O. must be assembled to the operator first and the N.C. assembled on it, so that if the N.O. welds, the N.C. will be held open and a fault detected (See Fig. 2B).

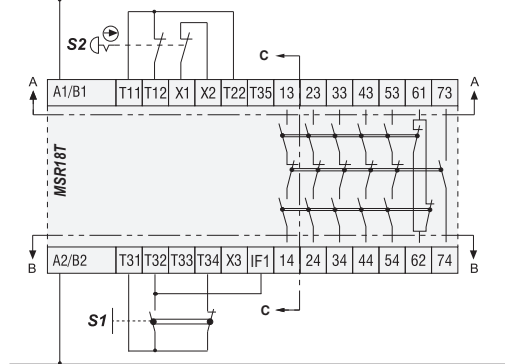


Fig. 1

Two-Hand Control (Fig. 2A)

This device conforms to the requirements of EN574 IIIC of less than 0.5 sec. of synchronous actions of two buttons. Use only pushbuttons with two direct-opening contact blocks; each contact block must have a N.O. and N.C. If four separate blocks are used, the N.O. must be assembled to the operator first, and the N.C. assembled onto it, so that if the N.O. welds, the N.C. will be held open and a fault detected (See Fig. 2B). The two-hand buttons and safety relay must be installed in the same enclosure (IP54 minimum). Wires leading from the two-hand buttons to the relay must be separated to prevent undetected shorts between lines.

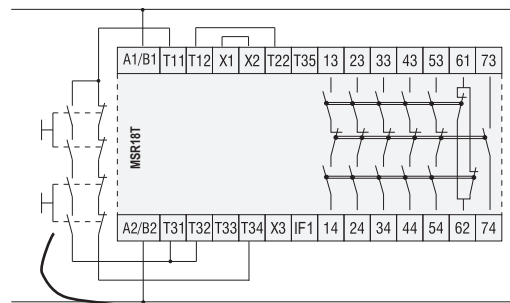


Fig. 2A

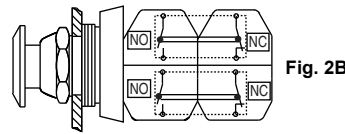


Fig. 2B

Gate Interlock (Fig. 3)

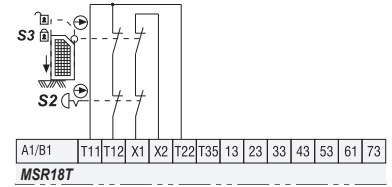


Fig. 3

Attaching an Expander Relay (Fig. 4)

The expander can be used with E-Stop, Gate Interlock and Two-Hand Control.

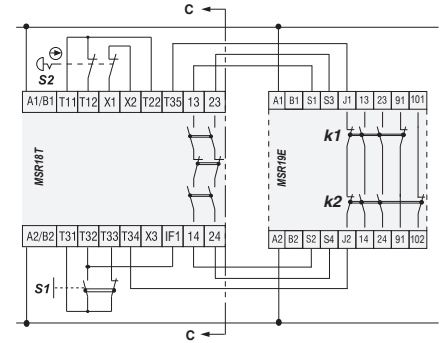


Fig. 4

Attaching Auxiliary Relays (Fig. 5)

The auxiliary relays must be of the "positively-guided/Direct Drive™" style conforming to EN 50205. The auxiliary relays may be monitored by connecting N.C. contacts in series to the reset circuit.

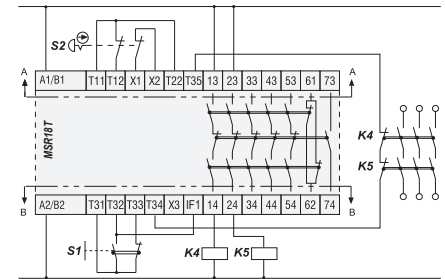


Fig. 5

Maintenance

The relay and its application must be inspected periodically based on environmental and operating conditions. Causes of contamination must be eliminated. Worn and broken assemblies must be replaced. Fasteners must be securely re-tightened. Unit has no customer serviceable parts. Fault conditions must be corrected before restoring power. After maintenance, test the control system under controlled conditions.

LEDs: Run & Fault Conditions (Fig. 1,3,4,5)

CONDITION	STOP RESET						STOP ACTUATED	
	○	○	○	○	○	○	○	○
INPUT SHORT	○	○	○	○	○	○	○	○
POWER	●	●	●	●	●	●	●	●
RUN	○	●	●	●	●	○	○	○
INPUT FAULT	○	○	●	●	○	○	○	○
OUTPUT FAULT	○	○	○	●	●	●	○	○
ACTION	None	None	Release start button or replace start contacts.	Release start button or replace start contacts.	Replace (channel 1) contact block or secure jumper wire.	1. Replace safety relay, expander (if used), or auxiliary relays (if used) or 20 sec. to reset fuse or 3. replace start contacts or 4. secure jumper wire.	After clearing short, power must be off 20 sec. to reset fuse.	Reset E-stop or gate before actuating start.

Specifications

Conforms to: EN 60204, EN 954-1, EN 947-5-1, EN 574, UL 508, CSA C22.2 No. 14	23061	23062	23063	23064
Electrical Ratings				
Supply voltage, IEC 38 (AC: -15%+10% 50-60Hz, DC: -20% +10%)	110V AC / 24V AC / 24V DC	230V AC / 24V AC / 24V DC	110V AC / 24V AC / 24V DC	230V AC / 24V AC / 24V DC
Ripple	DC: 10%			
Internal Control Voltage	24VDC			
	230V AC	8.5VA, 6.3W	230V AC	8.5VA, 6.3W
Nominal Input Power Consumption	110V AC	6.2VA, 5.7W	110V AC	6.2VA, 5.7W
	24V AC/VDC	3.6 W	24V AC/VDC	3.6W
Number of Safety Circuits	5		8	
Safety Contact Maximum Voltage	1 ~50/60Hz 240V; 24V DC			
Safety Contact Minimum Load NOTE: Exceeding 48V may remove gold flash and thus affect minimum load performance.	24V AC/DC, 20mA			
Safety Contact Rating Designation (inductive) (IEC 947-5-1)	All Circuits C300 AC-15, 120V, 1.5A; C300 AC-15, 240V, 0.75A; DC-13 24V, 2A MAX.			
Output Protection Fuse Needed (inductive)	1.6A Slow-Blow (T) for C300, AC15 Type (Inductive loads other than C300, AC15 type may require a different fuse.)			
Safety Contact Rating Designation (non-inductive) (IEC 947-5-1)	AC-12, 240V DC-12, 24V			
• Safety Contact Maximum Load (non-inductive) • Output Protection Fuse Needed (Use Type (F) Quick-Blow Fuse)	Circuits	Max. Load	Fuse	Circuits
	1	8A	8A	1
	2	7A	6.3A	2
	3	5.5A	5A	3,4
	4	5A	5A	5,6
	5	4.5A	4A	7,8
				4,5A
				4A
Number of Auxiliary (Data) Circuits	2			
Auxiliary Contact Maximum Voltage	1 ~50/60Hz 24V; 24V DC			
Auxiliary Contact Rating Designation (inductive) (IEC 947-5-1)	AC-15, 24V, 0.1A MAX. DC-13 24V, 0.1A MAX.			
Auxiliary Contact Rating Designation (non-inductive) (IEC 947-5-1)	AC-12, 24V, 0.1A, 2.4VA DC-12 24V, 0.1A, 2.4W			
Auxiliary Contact Minimum Load	50/60Hz 24V; DC 24V, 20mA			
Wire Gauge	0,2-2,5mm ² (24-14 AWG)			
Terminal Capacity	One wire: 1 X 2,5mm ² (1 X 14 AWG), Two wires: 2 X 1,5mm ² (2 X 16 AWG) Cu only			
Electronic Fuse Reset Time	20 sec.			
Rated Impulse Withstand Voltage (U _{imp})	Overvoltage cat.III/2,5 kV Class I Equipment			
Rated Insulation Voltage (U _i)	300V			
Pick Up (Start/Reset Button)	190 msec		200 msec	
Drop Out (E-Stop/two-hand control Button)	25 msec		40 msec	
2 Hand Control Pick-Up EN 574 Type IIIC	<0.5 sec.			
Maximum Distance to E-Stop Plus Start/Reset Using 1,5mm ² (16AWG)	24V DC SUPPLY	0.5Km (1,640ft.)	230V AC SUPPLY	1.7Km (5,750ft.)
Stranded Copper Wire with Resistance of 17.36Ω/km (5.29Ω/1000ft.)	110V AC SUPPLY	1.5Km (4,920ft.)	230V AC SUPPLY	1.7Km (5,750ft.)
Environmental				
Operating Temperature Ambient	-25° C to 55° C (-13° F to 131° F)			
Humidity, Non Condensing	95% RH			
Storage Temperature	-30° C to 85° C (-22° F to 185° F)			
Mounting Method, EN 50022	On 35 mm DIN Rail			
Permitted Mounting Position	Any			
Terminal Protection, IEC 529	IP2X			
Housing Protection, IEC 529	IP40			
Insulation Coordination	Degree of Pollution 2			
Mechanical Operations	>1 X 10 ⁷ Switching Operations			
Shock/Bump, IEC 68-2-24	11ms, 10G/16ms, 10G			
Vibration	10-200Hz, 10G			
Construction				
Housing Material	Polyester PBT (UL 94V-0)			
Safety Contact Material	AgCdO + Gold Flash			
Auxiliary Contact Material	AgCdO + Gold Flash			
Height	94 mm (3.70 in.)			
Depth	103 mm (4.06 in.)			
Width	90 mm (3.54 in.)			
Weight	780 Grams		630 Grams	

CE Declaration of Conformity / Konformitätserklärung / Déclaration de conformité

This is to declare that the Guardmaster Minotaur MSR18T conforms with the Essential Health & Safety Requirements (EHSR's) of the European Machinery Directive (98/37/EC), the relevant requirements of the Low Voltage Directive (73/23/EEC as amended by 93/68 EEC) and the essential protection requirements of the EMC Directive (89/336/EEC as amended by 92/31 EEC). The MSR18T also conforms to EN 60204-1, EN 574, EN 954-1, EN 60947-5-1, EN50082-2. The Guardmaster Minotaur MSR19E conforms with the Essential Health & Safety Requirements (EHSR's) of the relevant requirements of the Low Voltage Directive (73/23/EEC as amended by 93/68 EEC). The MSR19E also conforms to EN 60204-1, EN 292-1, EN 292-2, EN 60947-5-1.

Signed for EJA Ltd (Guardmaster)

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