



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 relay has (4) groups of terminals:

1. Power Terminals:
(+B1 -B2) for 24V DC
2. Input Terminals:
The E-Stop and Gate interlock operator: Ch 1 (S10 & S11), Ch 2 (S21 & B2) (Fig. 1, 2)
Start button: S10, S33 (Fig. 1, 2)
- *3. Safety Output Terminals:
13-14, 23-24
These are monitored outputs. These outputs are voltage free.
- **4. Auxiliary Terminals:
33-34 (K1 Aux.), 43-44 (K2 Aux.)

Applications: E-Stop, Gate Interlock, Expanders and Auxiliary Relays, Automatic Start

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 (1) Normally Open (N.O.) contact block.

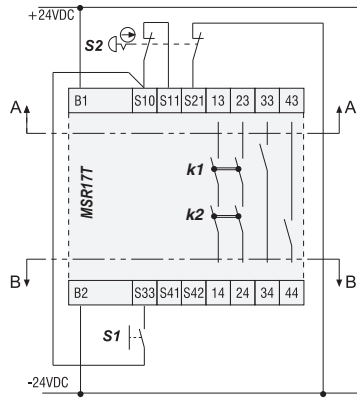


Fig. 1

Gate Interlock (Fig. 2)

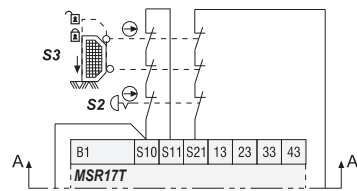


Fig. 2

Attaching an Expander (Fig. 3)

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

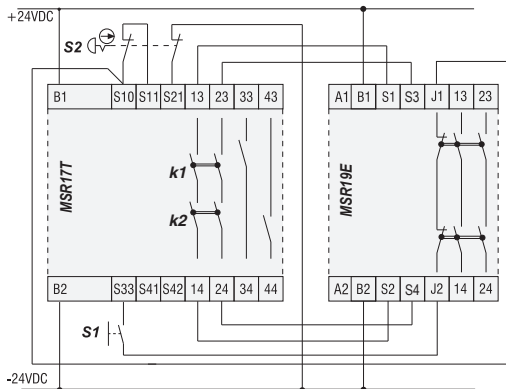


Fig. 3

Attaching Auxiliary Relays (Fig. 4)

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.

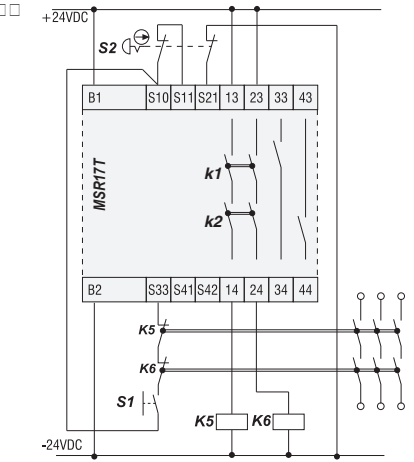


Fig. 4

Automatic Start



- ATTENTION:**
- Unexpected/unintended start-up may occur after power supply interruption.
 - Autostart is not allowed for E-Stops per EN 292-2, 954-1, 60204-1 and 418.

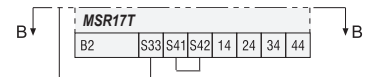


Fig. 5

Single Channel E-Stop (Fig. 6)

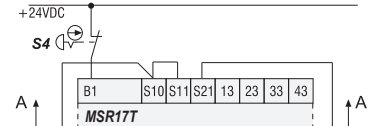


Fig. 6

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.



ATTENTION:

Protection of Safety Circuits.

- * To avoid contact welding, a fuse (5A quick or 1.6A slow) must be connected externally.
- ** 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. Typical screwdriver needed is a flat blade 3 mm (.125 in.) wide. Tighten screws to 0.5-0.8 Nm (5-7 lb.in.).

Gv	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

LEDs: Run & Fault Conditions (Fig. 1-4)

POWER LED	STOP RESET						STOP ACTUATED			
	●	○	●	○	●	○	○	●	○	●
CH 1 LED	●	○	●	●	●	○	○	○	●	○
CH 2 LED	●	●	○	●	●	○	○	○	○	●
K1 LED	●	○	○	●	○	○	○	○	○	●
K2 LED	●	○	○	○	●	○	○	○	●	○
CONDITION	proper running conditions	channel 1 contacts may be open	channel 2 contacts may be open	start/reset actuator contacts may be welded	safety contacts may be welded	● waiting for start/reset signal ● expander or aux. contacts may be welded	input short or no power	input circuit is open	channel 1 contacts may be welded	channel 2 contacts may be welded
ACTION	none	replace channel 1 contact block	replace channel 2 contact block	replace reset contacts	replace safety relay	replace expander or aux. relay □□	after clearing short, power must be off 20 sec. to reset fuse	reset E-stop or gate	replace channel 1 contact block	replace channel 2 contact block

Specifications

MINOTAUR MSR17T

Conforms to: EN 60204, EN 292, EN 954-1, EN 60947-5-1, UL 508, CSA C22.2 No. 14

Electrical Ratings

Supply voltage, IEC 38	DC: 24V, -20% +10%	
Maximum Supply Voltage Interruption	20 ms	
Ripple	DC: 10%	
Nominal Input Power Consumption	2.6W	
Internal Control Voltage	24V DC	
Inrush/Sealed Current	4A/110mA	
Number of Safety Circuits	2	
Safety Contact Maximum Voltage	1 ~50/60Hz 240V; DC 24V	
Safety Contact Maximum Free Air Thermal Current (I_{th})	5A, AC/DC	
Safety Contact Rating Designation (inductive) (IEC 947-5-1)	C300 AC-15, 120V, 1.5A C300 AC-15 240V, 0.75A	DC-13 24V, 2A MAX.
Safety Contact Rating Designation (non-inductive) (IEC 947-4-1)	AC-1 240V, 5A, 1200VA	DC-1 24V, 5A, 120W DC-12 24V, 5A MAX.
Safety Contact Minimum Load NOTE: Exceeding 48V may remove gold flash and thus affect minimum load performance	24V AC/DC, 20mA	
Number of Auxiliary (Data) Circuits	2	
Auxiliary Contact Maximum Voltage	50/60Hz 24V; DC 24V	
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)	AC-1, 24V, 0.1A, 2.4VA	DC-1 24V, 0.1A, 2.4W
Auxiliary Contact Minimum Load	5V DC, 10mA	
Pick Up (Start/Reset Button)	13ms	
Drop Out (E-Stop Button)	13ms	
Wire Gauge	0.2-2.15mm ² (24-14 AWG) Cu only	
Terminal Capacity	One wire 1 X 2.5mm ² Two wires 2 X 1.5mm ²	1 X 14 AWG 2 X 16 AWG
Output Protection Fuse Needed	5A Quick-Blow (F) (Non-inductive) 1.6A Slow-Blow (T) (Inductive)ⓘ	
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	
Maximum Distance to E-Stop Plus Start/Reset Using 1,5mm ² (16 AWG) Stranded Copper With Wire Resistance of 17.36 Ω /km (5.29 Ω /1000ft.)	860 m (2,800 ft.)	

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
Vibration	10-200Hz, 5G
Shock/Bump, IEC 68-2-24	11ms, 10G/16ms, 10G
Insulation Coordination	Degree of Pollution 2
Mechanical Operations	>1 X 10 ⁷ Switching Operations

Construction

Housing Material	Polyester PBT (UL 94V-0)
Safety Contact Material	AgSnO ₂ + Gold Flash
Auxiliary Contact Material	Ag Alloy
Weight	225 Grams
Width	45 mm (1.77 in.)
Height	94 mm (3.70 in.)
Depth	103 mm (4.06 in.)

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CE Declaration of Conformity / Konformitätserklärung / Déclaration de conformité

This is to declare that the Guardmaster Minotaur MSR17T conforms with 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 MSR17T also conforms to EN 60204-1, EN 292, EN 954-1, EN 60947-5-1.

Signed for EJA Ltd (Guardmaster)

Malcom A. Campbell

Quality Assurance Manager

