



■ Description

The FGR Series relays have contacts that are force-guided/mechanically-linked conforming to IEC 60947-1-1 as required for use in Safety-Related Control Systems. Relays with ‘Force-Guided Contacts’ are also referred to as relays with ‘Captive Contacts’ or ‘Positive-Guided Contacts’.

In lower current applications, the FGR Series relays may serve as the MPCE (Machine Primary Control Element) as shown in the Circuit Example on the next page. In heavier current applications, the FGR Series relays should be wired in series between the heavy current carrying MPCE and a safety monitoring relay, light curtain, or other safety rated redundant output controller.

The force-guided contacts of the FGR Series relays are designed to function as follows:

- When a normally open (make) contact welds, the linkage will prevent the reclosing of normally closed (break) contacts.
- When a normally closed (break) contact welds, the linkage will prevent the closing of normally open (make) contacts.

For more information on force-guided relays, see the article “Positively Driven/Force-Guided Contacts” at www.sti.com/pdf/820.pdf.

FGR Series

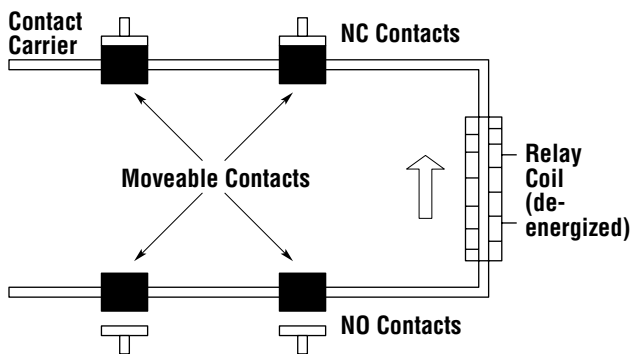
Force-Guided Relays

- Power requirements — Coil operating voltages of 24 VDC or 110 VAC
- Contacts are force-guided/mechanically-linked conforming to IEC 60947-1-1 as required for Safety-Related Control Systems
- Wide range of switching capabilities from 5 mA to 10 A satisfy most application requirements
- Choice of contact configurations provides application versatility
- Built-in coil suppression is available to simplify external circuitry; suppression of the external contact loads must be done externally
- Easy installation — the FGR Series may be mounted on 35 mm DIN rail or surface mounted with four screws

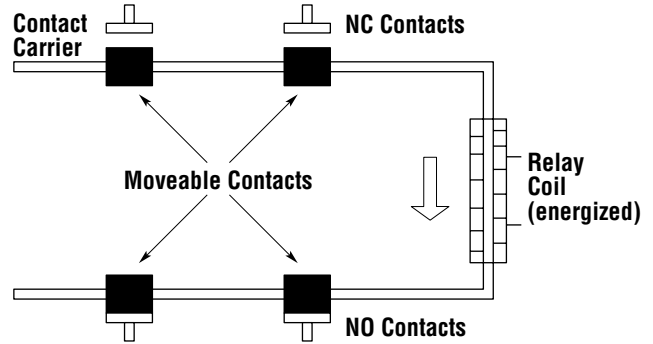
A Go to the Engineering Guide
For in-depth information on safety standards and use.

■ Operation

De-energized



Energized

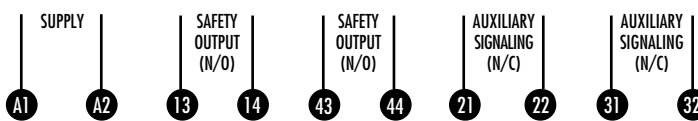


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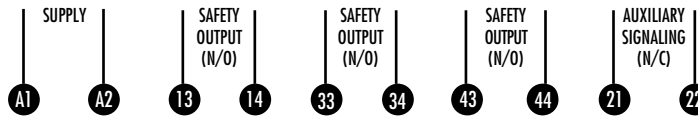
safety light curtains

■ Terminal Connections

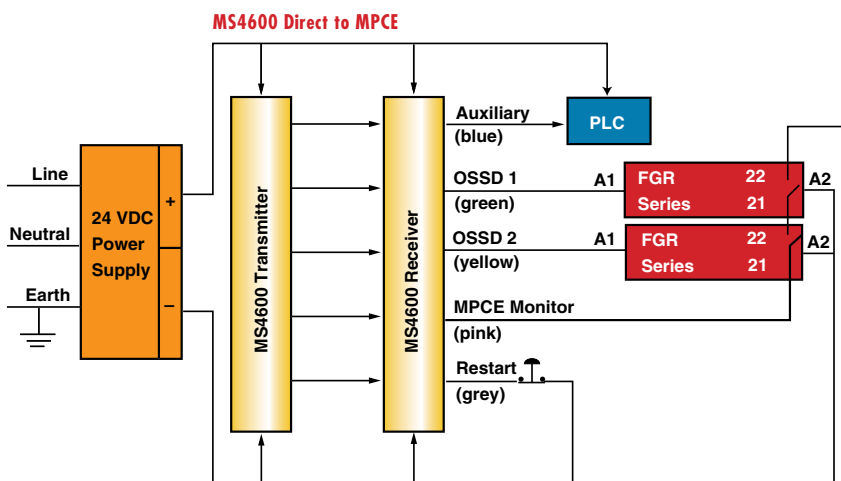
FGR22



FGR31



■ Circuit Example



■ Specifications

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safety light curtains

ELECTRICAL
Operating Coil
Supply Power: 24 VDC or 110 VAC
Inrush: 30 VA for AC versions 3 W for DC versions
Power Usage: 4.5 VA for AC versions 3 W for DC versions
Switching Capability
AC: Break 120 V - 6 A, 240 V - 3 A (continuous 10 A)
DC: 24 V - 3 A
Max. Switching Frequency: 10,000 per hour
Min. Switching Current: 5 mA
Max. Drop-Out Time*: 20 ms for AC versions 10 ms for DC versions
MECHANICAL
Mechanical Life: 1 x 10 ⁷ operations min.
Mounting: 35 mm DIN rail or 4 screw holes for panel mounting
Wire Size: Screw terminals accept two 12 AWG solid or stranded wires
Weight: AC versions: 180 g (6 oz.) DC versions: 225 g (8 oz.)
Vibration: 5 to 300 Hz
ENVIRONMENTAL
Vibration Resistance: 2 g with control relay open; 4 g with control relay closed
Operating Temp: -25 to 50°C (-13 to 122°F)
Approvals: IEC 60947-1-1, NF C63-140, VDE 0660, BS 5424, UL E164353, CSA LR43364

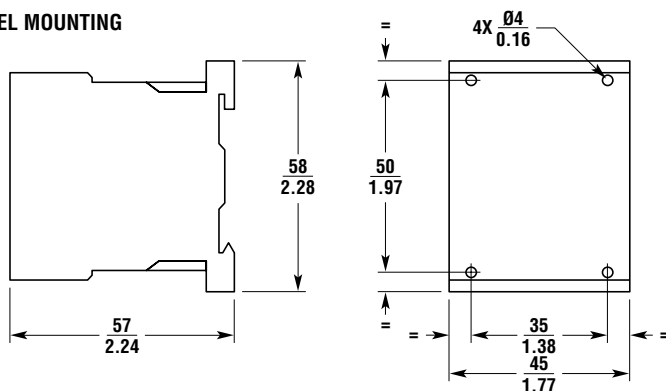
*The Drop-Out Time is the time it takes for the N/O contacts to open after the coil voltage is turned OFF.

Specifications are subject to change without notice.

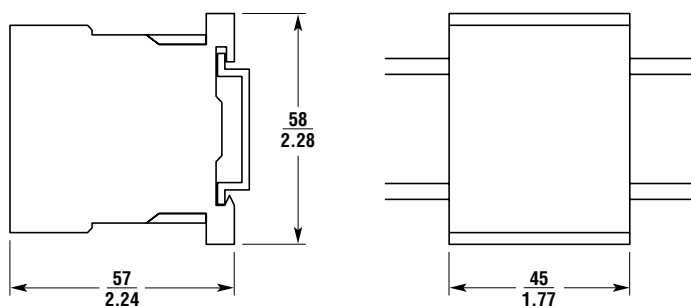
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■ **Dimensions—mm/in.**

PANEL MOUNTING



35MM DIN MOUNTING



■ **Ordering**

Model	Supply	Control Contacts	Auxiliary Contacts	Part No.
FGR22-24	24 VDC	2 N/O	2 N/C	44532-3010
FGR22-110	110 VAC	2 N/O	2 N/C	44532-3020
FGR31-24	24 VDC	3 N/O	1 N/C	44532-3110
FGR31-110	110 VAC	3 N/O	1 N/C	44532-3120
Coil Suppression Built-In				
FGR22-24S	24 VDC	2 N/O	2 N/C	44532-3013
FGR22-110S	110 VAC	2 N/O	2 N/C	44532-3022
FGR31-24S	24 VDC	3 N/O	1 N/C	44532-3113
FGR-31-110S	110 VAC	3 N/O	1 N/C	44532-3122

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safety light curtains