April 2012

Description

Part of Moore Industries' **FS FUNCTIONAL SAFETY SERIES**, the SIL 2 certified SRM Safety Relay Module provides a high level of availability for safety-critical applications and for use as a component part of Safety Instrumented Systems (SIS). It has been developed following the IEC 61508 standard and is certified by *exida* for single use in Safety Instrumented Systems up to SIL 2.

The SRM is a relay repeater model that accepts a single contact closure input from a logic solver trip output such as the Moore Industries STA Safety Trip Alarm or the SPA[2] Programmable Limit Alarm Trip. The SRM provides three contacts per alarm input, allowing you to add alarm contacts for your safety processes without special installation or configuration.

Force Guided Relay
Unlike traditional multi-output off-the-shelf interposing relays, the SRM is built using a safety-rated relay with forcibly-guided contacts. This design is commonly used in control and safety systems where the logic of an application needs to detect the state of the output contacts. This is achieved by monitoring the state of the monitor contact that is also mechanically linked to the same armature as the output contacts.

The Force Guided Relay method avoids the possibility of having contacts become stuck and being in both Normally Open (NO) and Normally Closed (NC) states at the same time. Also known as a Positively Guided Relay, the Force Guided Relay offers confidence to users that mechanical problems such as welded contacts do not go unnoticed.

Rugged Housing
The SRM is housed in a "universal" DIN case that can be mounted on either a 32mm G-type or 35mm Top-Hat DIN-rail. The aluminum housing is more rugged and durable than other safety relays that are typically housed in a plastic case.


The SRM is a versatile relay module that can be mounted on a G-type or Top-Hat DIN-rail.

Features

- *exida* **certified to IEC 61508.** *exida* has certified the SRM for single use in a Safety Instrumented System up to SIL 2.

- **Comprehensive FMEDA certified safety data.** Upon request, *exida*-certified FMEDA (Failure Modes, Effects and Diagnostics Analysis) data is provided to be used by a competent functional safety practitioner to determine the SRM's applicability in specific safety-related applications.

- **Visual diagnostic information.** Front-panel LEDs provide diagnostic information, with three LED indicator lights that show the Input, Output and Power status. The panels provide an instant visual diagnostic on the SRM, letting users quickly see if there are any potential problems.

- **Easy to install and configure.** The SRM can be installed in a Safety Instrumented System with minimal wiring. Simply provide a contact closure input to the SRM and you get three process relay outputs. A monitor relay is also provided.

- **Fuse protection.** Input power and all four relay outputs on the SRM are fuse protected.

- **RFI/EFI Protection.** Provides enhanced RF immunity up to 20V/m, 20-1000MHz when tested to IEC 61000-4-3.

Certifications

exida **Certified -** IEC 61508 2010; Parts 1 and 2 Functional Safety of Electrical/Electronic/ Programmable Electronic Safety-Related Systems

CE **CE Conformant -** EMC Directive 2004/108/EC EN61326

SRM FS FUNCTIONAL SAFETY SERIES

Safety Relay Module

Figure 1. *The SRM features visual diagnostics that indicate the status of the Input, Output and Power.*

Green or red indicator lights show status on SRM front panel
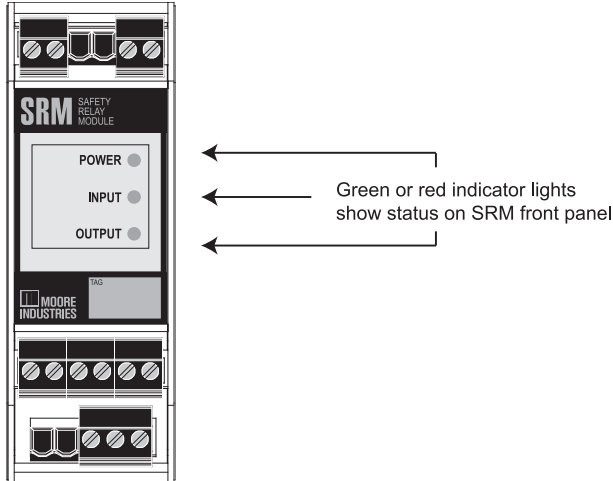
Visual Diagnostics

The three LEDs on the front panel of the SRM indicate the status of the Input, Output and Power.

- **Power LED—** The Power LED is green when the SRM input power is greater than 21Vdc. An extinguished Power LED may indicate that the power fuse has been blown and needs replacing, the power input is less than 21Vdc or that no power is currently applied to the unit.

- **Input LED—** A red light indicates the SRM Input is open; a green light indicates that it is closed and the relay is energized.

- **Output LED—** When the Normally Open terminals are closed and the Monitor terminal is open, the Output LED is green. A red LED means the Normally Open terminals are open and the Monitor terminal is closed.

The Input and Output LED colors should match unless there is a relay failure such as stuck contacts. If both Input and Output LEDs are correct but any of the outputs are stuck open, the fuse on the stuck output may be blown out and need to be replaced.

Easy Installation

The ease of installation and use of the SRM makes it an ideal choice to use as a repeater-relay model. Because it is a passive unit that has been certified for single use in a safety instrumented device up to SIL 2, the SRM can be installed without additional user configuration.

Typical Examples of the SRM in Safety Instrumented Systems (SIS)

The SRM is designed to IEC 61508 standards. For SIL 1 and SIL 2 applications, it can be connected directly to a Safety Logic Solver such as the STA from Moore Industries (see Figure 2).

For diagnostic purposes, the monitor relay and input signal may also be connected to a third-party system.

Figure 2. *The SRM used in a standard SIL 1 or SIL 2 application with up to three outputs.*
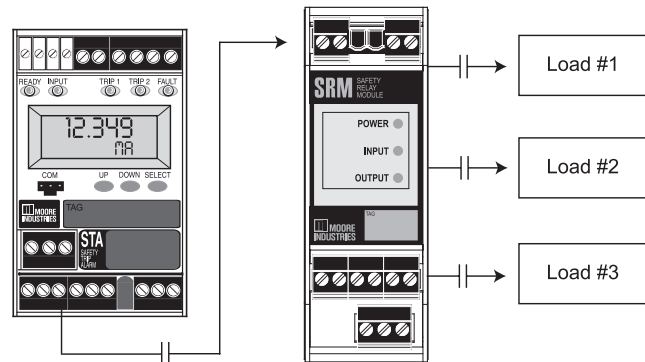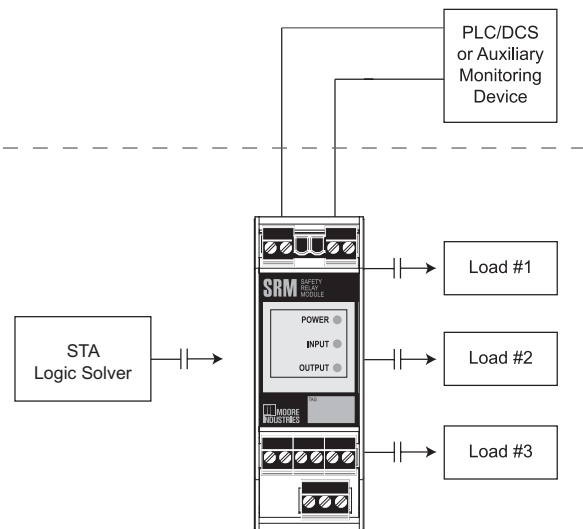
Typical SIL 1 or SIL 2 application

Figure 3. *The Monitor and Input contacts of the SRM may be connected to a PLC, DCS or other monitoring device for diagnostic purposes.*

Specifications

Performance	**Power Consumption:** 1.5W, typical; 2.3W max	**Output Type**	**Protected Normally Open Terminals:** 250Vac/30Vdc 5A (resistive) for user application	**Ambient Conditions (continued)**	**RFI/EMI Protection:** RF immunity at 20V/m, 20-1000MHz, when tested to IEC61000-4-3

Performance

Power Consumption: 1.5W, typical; 2.3W max

Response Time: 20ms typical, 50ms max

Isolation: 1500Vrms between; power and input to each output, power and input to each case, case to output

Power: 24Vdc -5% to +10%

Input Type **Contact Closure:** (CC) 24Voc, Isc 55mA

Output Type **Protected Normally Open Terminals:** 250Vac/30Vdc 5A (resistive) for user application

One (1) fuse-protected Normally Closed Terminal (Monitor Contact): 250Vac/30Vdc 1A (resistive) for diagnostics

Ambient Conditions **Operating Range:** -20°C to +70°C (-4°F to +158°F)

Relative Humidity: 0-95% non-condensing

RF Standards: Meets IEC61326-1 and IEC61326-3 (Functional Safety)

Ambient Conditions (continued) **RFI/EMI Protection:** RF immunity at 20V/m, 20-1000MHz, when tested to IEC61000-4-3

Indicators **Power:** Green (ON) when input power is >21Vdc

Input: Green when CC terminals are closed; Red when CC terminals are open

Output: Green when the Normally Open terminals are closed and the Monitor terminal is open; Red when the Normally Open terminals are open and the Monitor Terminal is closed

Weight 328.9g (11.6oz)

Ordering Information

Unit	Input	Output	Power	Options	Housing
SRM Safety Relay Module	**CC** Contact Closure	**3RO** Three (3) Relay Outputs	**24DC**	None	**DIN** Universal DIN-style housing mounts on 32mm (EN50035) G-type and 35mm (EN50022) Top Hat DIN-rails

When ordering, specify: Unit / Input / Output / Power / Options [Housing]
Model number example: SRM / CC / 3RO / 24DC [DIN]

Accessories:

Part Number **700-702-35**	**FMEDA Report** consistent with IEC 61508-2:2002 providing the information necessary to design a Safety Instrumented System (One copy provided free with each order Upon Request)

To Request a FMEDA (Failure Modes, Effects and Diagnostics Analysis) Report with an SRM Safety Relay Module Order, See "Accessories"

SRM FS FUNCTIONAL SAFETY SERIES
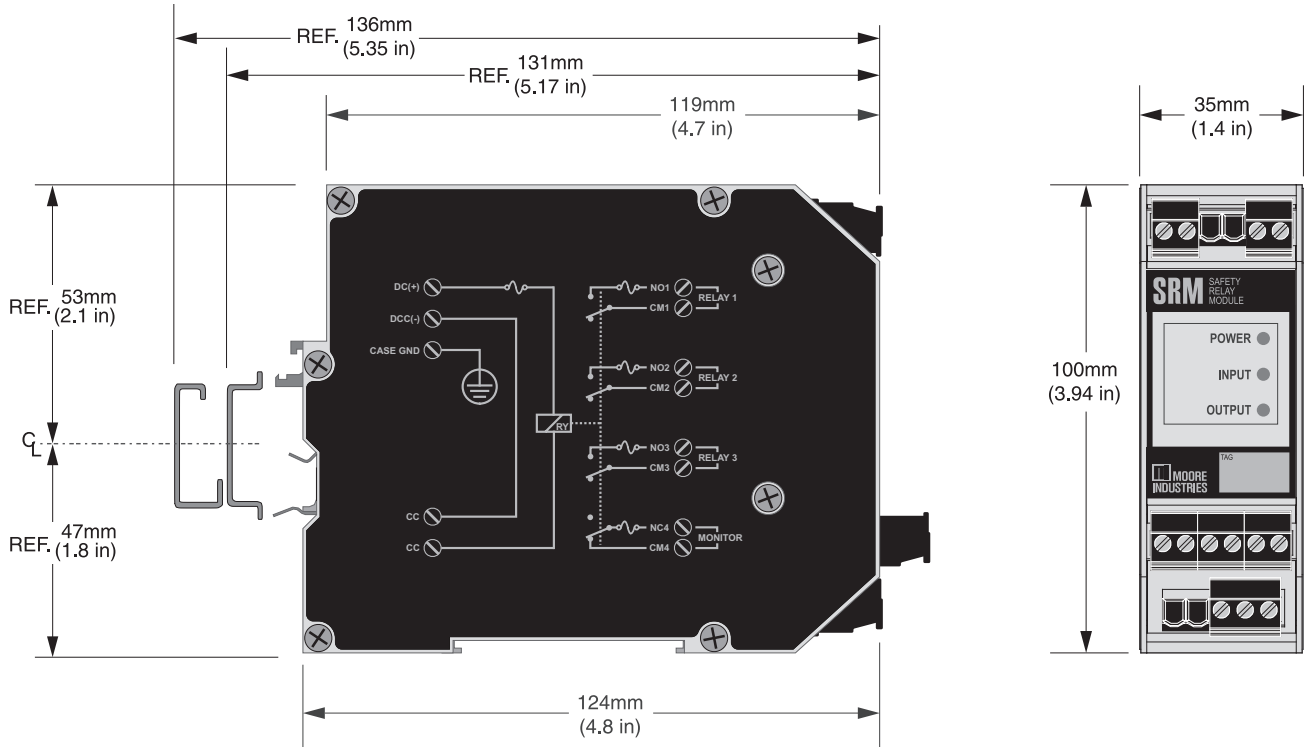
Safety Relay Module

Figure 4. *The SRM Installation Dimensions*

Figure 5. *SRM Terminal Designations*

VIEWED FROM TOP

VIEWED FROM BOTTOM

KEY:
DC = Power Input   NO = Normally Open
DCC = Power Input   NC = Normally Closed
CM = Relay Common
GND = Ground

NOTES:
1. Terminal blocks can accommodate 14-22 AWG solid wiring.

Specifications and information subject to change without notice.