

April 2018

## Description

Part of Moore Industries' **FS FUNCTIONAL SAFETY SERIES**, the SRM Safety Relay Module provides a high level of availability for safety-critical applications and as a 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<sup>2</sup> 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.

A Force Guided Relay avoids the possibility of having contacts stuck in the Normally Open (NO) and Normally Closed (NC) states at the same time. Also known as a Positively Guided Relay, the Force Guided Relay assures users that mechanical problems such as welded contacts won't be missed.

### Rugged Housing

The SRM is housed in a DIN case that can be mounted on 35mm Top-Hat DIN-rail. The aluminum housing is more rugged and durable than safety relays housed in a plastic case.

#### Certifications



**exida Certified** - IEC 61508 2010  
Functional Safety of Electrical/Electronic/  
Programmable Electronic Safety-Related Systems



**CE Conformant** - EMC Directive 2014/30/EU  
EN61326 Low Voltage Directive 2014/35/EU  
EN 61010-1



**Underwriter's Laboratory**  
(Canada & US) - General/Ordinary Locations



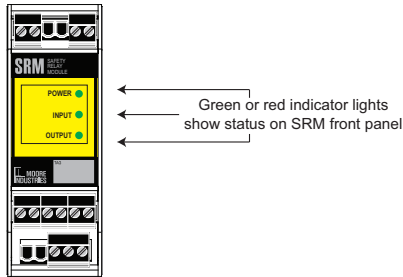
*The SRM is a versatile relay module that can be mounted on a Top-Hat DIN-rail.*

## Features

- **exida certified to IEC 61508.** exida has certified the SRM for single use in a Safety Instrumented System up to SIL 2.
- **Comprehensive FMEA certified safety data.** Upon request, exida-certified FMEA (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.
- **Input Snubber.** The Contact Closure input circuit includes an internal snubbing diode across its relay coil, meaning there is no need for external suppression across the input terminals.
- **Fuse protection.** Input power and all four relay outputs on the SRM are fuse protected.
- **RFI/EFI protection.** Enhanced RF immunity up to 20V/m, 20-1000MHz when tested to IEC 61000-4-3.

## Safety Relay Module

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



### 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 appropriate input power is applied to the SRM. An extinguished Power LED may indicate that the power fuse has been blown and needs replacing, the power input is less than the appropriate amount 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 and needs to be replaced.

### Easy Installation

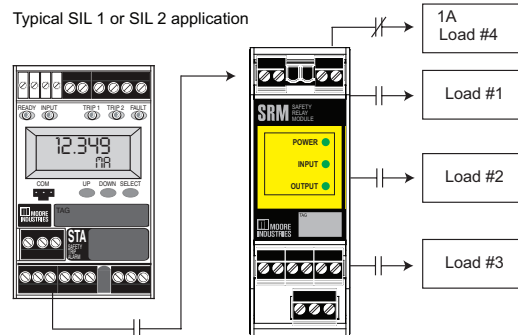
The ease of installation and use of the SRM makes it an ideal choice to use as a repeater-relay model. Because it is a passive unit that has been certified for single use in a safety instrumented device up to SIL 2, the SRM can be installed without additional user configuration.

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

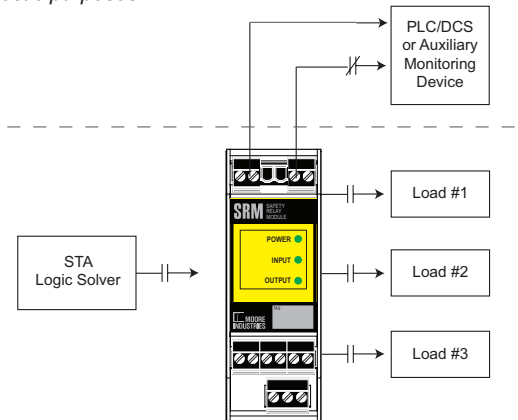
The SRM is designed to IEC 61508 standards. For SIL 1 and SIL 2 applications, it can be connected directly to a Safety Logic Solver such as the STA from Moore Industries (see Figure 2).

For diagnostic purposes, the monitor relay and input signal may also be connected to a third-party system. (See Figure 3).

**Figure 2.** The SRM used in a standard SIL 1 or SIL 2 application with three normally open and one normally closed contacts.



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



### SIL 1 or SIL 2 Application when used with “wet” Relay/Contact Outputs

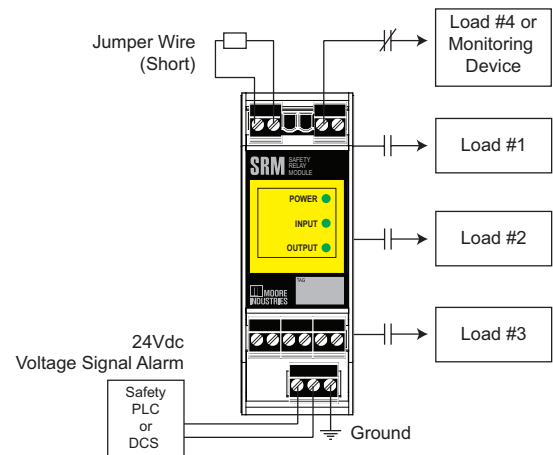
The Contact Closure (CC) input of the SRM is designed to accept a dry or volt free contact. Applications that require hooking up the SRM to an output that includes a “wet” or voltage (usually 24Vdc) contact output are shown in Figure 4.

In this instance the source relay output is used to apply power to the SRM rather than being applied to the input of the SRM. By shorting the CC input terminals of the SRM, the outputs of the SRM will be energized when the source relay output applies voltage to the SRM's power terminals. When the source relay output circuit opens, the SRM will be turned off and the output relays will become de-energized.

In this application, the LEDs will be green when 24Vdc is applied and all LEDs will be dark when 0Vdc is applied. (See Figure 4).

*Note: Output Relay signal source must be capable of providing and handling a load of 24Vdc +/- 5% at 100mA.*

**Figure 4.** The SRM in SIL 1 and SIL 2 applications when used with "wet" contact (24Vdc) outputs.



## Specifications

<p><b>Performance</b> <b>Power Consumption:</b> 1.5W, typical; 2.3W max</p> <p><b>Response Time:</b> 20ms typical, 50ms max</p> <p><b>Isolation:</b> 1500Vrms between; power and input to each output, power and input to each case, case to output</p> <p><b>Input Type</b> <b>Power:</b> 24Vdc -5% to +10%</p> <p><b>Contact Closure:</b> (CC) 24Vdc, I<sub>sc</sub> 55mA, includes diode suppression of relay coil</p> <p><b>Output Type</b> <b>Three (3) Fuse Protected Normally Open Terminals:</b> 250Vac/30Vdc 5A (resistive)</p>	<p><b>Output Type (continued)</b> <b>One (1) fuse-protected Normally Closed Terminal:</b> 250Vac/30Vdc 1A (resistive)</p> <p><b>Operating Range:</b> -20°C to +70°C (-4°F to +158°F)</p> <p><b>Ambient Conditions</b> <b>Relative Humidity:</b> 5-95% non-condensing</p> <p><b>RF Standards:</b> Meets IEC61326-1 and IEC61326-3 (Functional Safety)</p> <p><b>RFI/EMI Protection:</b> RF immunity at 20V/m, 20-100MHz, when tested to IEC61000-4-3</p>	<p><b>Indicators</b> <b>Power:</b> Green (ON) when appropriate power is applied.</p> <p><b>Input:</b> Green when CC terminals are closed; Red when CC terminals are open</p> <p><b>Output:</b> Green when the NO terminals are closed and the NC terminals are open; Red when the NO terminals are open and the NC terminals are closed.</p> <p><b>Weight</b> 328.9g (11.6oz)</p>
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## Ordering Information

Unit	Input	Output	Power	Options	Housing
SRM Safety Relay Module	CC Contact Closure	3RO Three (3) Relay Outputs	24DC	None	DIN DIN-style housing mounts on 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 <b>700-702-35</b>	<b>FMEDA Report</b> 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)
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**To Request a FMEDA (Failure Modes, Effects and Diagnostics Analysis) Report with an SRM Safety Relay Module Order, See "Accessories"**

## Safety Relay Module

Figure 5. The SRM Installation Dimensions

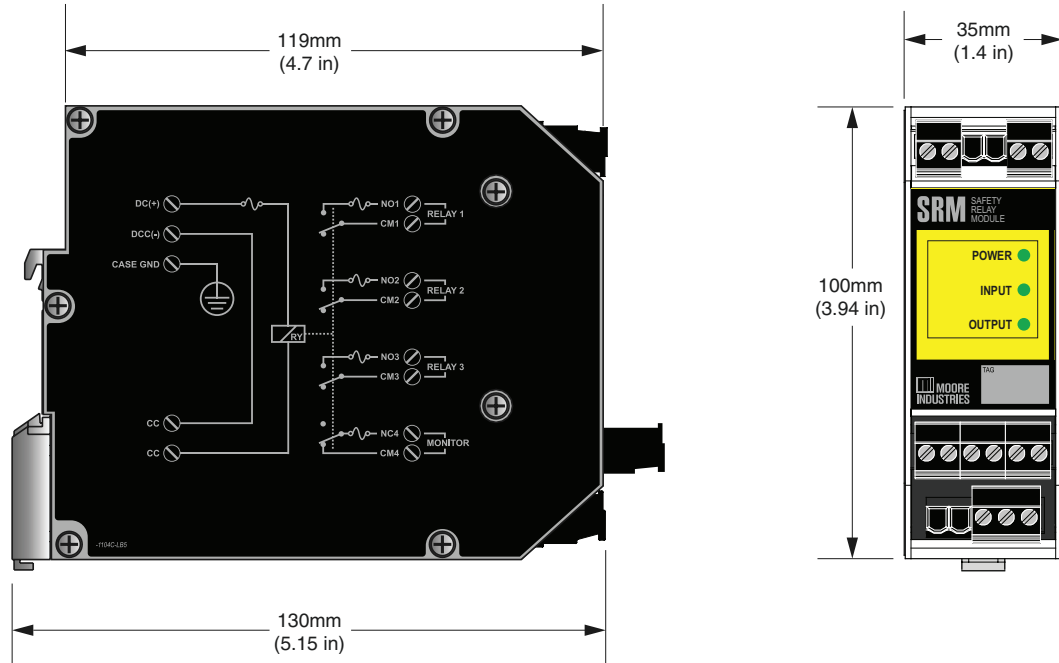


Figure 6. SRM Terminal Designations

