SR101A is the low-cost emergency stop safety relay with which machines and systems can be safely switched off by disconnecting the power supply. Internal fault monitoring takes place during restarting via the start button.

Applications for the SR101A include single or dual-channel emergency stop circuits and guard monitoring on machines and systems.

Features
- 2 start behaviors possible:
  - Manual start
  - Automatic start
- Short circuit and earth fault monitoring
- Up to PL d, SIL CL 2, category 3
- It is not allowed to open the device, tamper with the device or bypass the safety devices.
- All relevant safety regulations and standards are to be observed.
- The overall concept of the control system in which the device is incorporated must be validated by the user.
- Failure to observe the safety regulations can result in death, serious injury and serious damage.

Correct Use

Function
The emergency stop safety switching device SR101A is designed for safe isolation of safety circuits according to EN 60204-1 and can be used up to safety category 3, PL d according to EN ISO 13849-1.

The internal logical system closes the safety contacts when the start button is pressed.

If the safety switch is opened, the positively driven safety contacts are opened and safely switch the machine off. It is ensured that a single fault does not lead to a loss of the safety function and that every internal fault is detected by cyclical self-monitoring no later than when the system is switched off and switched on again. Only a fault in the safety switch itself is not detected. This must be checked regularly as part of a maintenance plan.

Features
- 2 safe, redundant relay outputs
- Connection of:
  - Emergency stop buttons
  - Safety switches
  - Non-contact safety switches
- Single and dual-channel operation possible
- Feedback loop for monitoring downstream contactors or expansion modules
- Cyclical monitoring of the output contacts
- Indication of the switching state via LED
- 2 start behaviors possible:
  - Manual start
  - Automatic start
- Short circuit and earth fault monitoring
- Up to PL d, SIL CL 2, category 3

Installation
As per EN 60204-1, the device is intended for installation in control cabinets with a minimum degree of protection of IP54. It is mounted on a 35 mm DIN rail according to DIN EN 60715 TH35.

Safety Precautions
- Installation and commissioning of the device must be performed only by authorized personnel.
- Observe the country-specific regulations when installing the device.
- The electrical connection of the device is only allowed to be made with the device isolated.
- The wiring of the device must comply with the instructions in this user information, otherwise there is a risk that the safety function will be lost.
- It is not allowed to open the device, tamper with the device or bypass the safety devices.
- All relevant safety regulations and standards are to be observed.
- The overall concept of the control system in which the device is incorporated must be validated by the user.
- Failure to observe the safety regulations can result in death, serious injury and serious damage.

Electrical Connection
- When the 24 V version is used, a control transformer according to EN 61558-2-6 or a power supply unit with electrical isolation from the mains must be connected.
- External fusing of the contacts (4 A slow-blow or 6 A quick-action or 10 A gG) must be provided.
- A maximum length of the control lines of 1000 meters with a line cross section of 0.75 mm² must not be exceeded.
- The line cross section must not exceed 2.5 mm².
- If the device does not function after commissioning, it must be returned to the manufacturer unopened. Opening the device will void the warranty.
Safety Technology & Innovation

SR101A
User Information for SR101A

Applications

According to the application or the result of the risk assessment based on EN ISO 13849-1, the device must be wired as shown in Fig. 1 to Fig. 8.

Emergency Stop Circuit

Starting Behavior

Feedback Loop

Safety contacts

Commissioning Procedure

Note: The items listed under "Electrical connection" must be observed during commissioning.

1. Wiring emergency stop circuit:
   Wire the emergency stop circuit according to the required Performance Level determined (see Fig. 1 to Fig. 3).

2. Wiring start circuit:
   Wire the start circuit according to Fig. 4 or Fig. 5 to set the starting behavior.

3. Wiring feedback loop:
   If your application provides for external contactors or expansion modules, connect them to the device according to Fig. 6 and Fig. 7.

4. Wiring feedback loop:
   Connecting load to safety contacts.
   (Figure shows example. Voltage "+V" according to techn. Data)

5. Starting the device:
   Switch the operating voltage on.
   Warning:
   If the "Automatic start" starting behavior is selected, the safety contacts will close immediately.
   If the "Manual start" starting behavior is selected, close the start button to close the safety contacts.

6. Triggering safety function:
   Open the emergency stop circuit by actuating the connected safety switch. The safety contacts open immediately.

7. Reactivation:
   Close the emergency stop circuit. If "Automatic start" is selected, the safety contacts will close immediately.
   If the "Monitored manual start" starting behavior is selected, close the start button to close the safety contacts.
Maintenance

The device must be checked once per month for proper function and for signs of tampering and bypassing of the safety function.

What to Do in Case of a Fault?

Device does not switch on:
- Check the wiring by comparing it to the wiring diagrams.
- Check the safety switch used for correct function and adjustment.
- Check whether the emergency stop circuit is closed.
- Check whether the start button (with manual start) is closed.
- Check the operating voltage at A1 and A2.
- Is the feedback loop closed?

Device cannot be switched on again after an emergency stop:
- Check whether the emergency stop circuit was closed again.
- Is the feedback loop closed?

If the fault still exists, perform the steps listed under "Commissioning Procedure".

If these steps do not remedy the fault either, return the device to the manufacturer for examination.

Opening the device is impermissible and will void the warranty.

Safety Characteristics According to EN ISO 13849-1

The device is certified according to EN ISO 13849-1 up to a Performance Level of PL d.

Note:
Additional data can be requested from the manufacturer for applications that deviate from these conditions.

Safety characteristics according to EN ISO 13849-1 for all variants of SR101A

<table>
<thead>
<tr>
<th>Load (DC13; 24V)</th>
<th>&lt;= 0,1A</th>
<th>&lt;= 1A</th>
<th>&lt;= 2A</th>
</tr>
</thead>
<tbody>
<tr>
<td>T10d [years]</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Category</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>PL</td>
<td>d</td>
<td>d</td>
<td>d</td>
</tr>
<tr>
<td>PFHd [1/h]</td>
<td>1,03E-07</td>
<td>1,3E-07</td>
<td>1,3E-07</td>
</tr>
<tr>
<td>nop [cycle / year]</td>
<td>&lt;= 400.000</td>
<td>&lt;= 73.000</td>
<td>&lt;= 17.000</td>
</tr>
</tbody>
</table>

Technical Data

<table>
<thead>
<tr>
<th>Corresponds to the standards</th>
<th>EN 60204-1; EN ISO 13849-1; EN 62061</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>SR101A01 AC/DC 24V</td>
</tr>
<tr>
<td></td>
<td>SR101A02 AC 115V</td>
</tr>
<tr>
<td></td>
<td>SR101A03 AC 230V</td>
</tr>
<tr>
<td>Rated supply frequency</td>
<td>50-60 Hz</td>
</tr>
<tr>
<td>Permissible deviation</td>
<td>+ / - 10%</td>
</tr>
<tr>
<td>Power consumption</td>
<td>DC 24V</td>
</tr>
<tr>
<td></td>
<td>ca. 1.2 W</td>
</tr>
<tr>
<td></td>
<td>AC 230V</td>
</tr>
<tr>
<td></td>
<td>ca. 3.5 VA</td>
</tr>
<tr>
<td>Control voltage at S11</td>
<td>DC 24 V</td>
</tr>
<tr>
<td>Control current S11...S14</td>
<td>max. 40 mA</td>
</tr>
<tr>
<td>Safety contacts</td>
<td>2 NO contacts</td>
</tr>
<tr>
<td>Max. switching voltage</td>
<td>AC 250 V</td>
</tr>
<tr>
<td>Safety contact breaking capacity (13-14, 23-24)</td>
<td>AC: 250 V, 1500 VA, 6 A for ohmic load,</td>
</tr>
<tr>
<td></td>
<td>250 V, 4 A for AC-15</td>
</tr>
<tr>
<td></td>
<td>DC: 24 V, 30 W, 1.25 A for ohmic load;</td>
</tr>
<tr>
<td></td>
<td>24 V, 30 W, 2 A for DC-13</td>
</tr>
<tr>
<td>Minimum contact load</td>
<td>24 V, 20 mA</td>
</tr>
<tr>
<td>Min. Contact fuses</td>
<td>4 A slow-blow or 6 A quick-action or 10 A gG</td>
</tr>
<tr>
<td>Max. line cross section</td>
<td>0.14 - 2.5 mm²</td>
</tr>
<tr>
<td>Max. length of control line</td>
<td>1000 m with 0.75 mm²</td>
</tr>
<tr>
<td>Contact material</td>
<td>AgNi</td>
</tr>
<tr>
<td>Contact service life</td>
<td>mech. approx. 1 x 10⁵, electr. 1 x 10⁵ operating cycles</td>
</tr>
<tr>
<td>Test voltage</td>
<td>2.5 kV (control voltage/contacts)</td>
</tr>
<tr>
<td>Rated impulse withstand voltage, leakage path/air gap</td>
<td>4 kV (DIN VDE 0110-1)</td>
</tr>
<tr>
<td>Rated insulation voltage</td>
<td>250 V</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP20</td>
</tr>
<tr>
<td>Temperature range</td>
<td>DC 24 V: -15°C to +60°C</td>
</tr>
<tr>
<td></td>
<td>AC 230/115 V: -15°C to +60°C</td>
</tr>
<tr>
<td>Degree of contamination</td>
<td>2 (DIN VDE 0110-1)</td>
</tr>
<tr>
<td>Overvoltage category</td>
<td>3 (DIN VDE 0110-1)</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 230g</td>
</tr>
<tr>
<td>Mounting</td>
<td>DIN rail according to EN 60715TH35</td>
</tr>
</tbody>
</table>
EC Declaration of Conformity
The manufacturer named below herewith declares that the product fulfills the provisions of the directive(s) listed below and that the related standards have been applied.

OMRON Scientific Technologies Inc.
6550 Dumbarton Circle
Fremont, CA 94555, U.S.A.

Directives applied:
EMC directive 2004/108/EC
Machinery directive 2006/42/EC
RoHS directive 2002/95/EC

Standards applied:

Certificates:01/205/0692/14
TÜV: NB 0035
TÜV Rheinland Industrie Service GmbH - TÜV Rheinland Group
AM Grauen Stein, 51105 Köln, Germany

Fremont, May 2014

Marty Krikorian
Director, Quality Control
(Authorized Signer of Declarations of Conformity)
OMRON Scientific Technologies, Inc.

Representative in EU: J.H.P.W. Vogelaar
European Quality & Environment Operations Manager
Omron Europe B.V
Zilverenbert 2, 5234 GM, ’s-Hertogenbosch
The Netherlands

The signed EC Declaration of Conformity is included with the product.
Authorized Distributor:

Automation Control Systems
- Machine Automation Controllers (MAC) • Programmable Controllers (PLC)
- Operator interfaces (HMI) • Distributed I/O • Software

Drives & Motion Controls
- Servo & AC Drives • Motion Controllers & Encoders

Temperature & Process Controllers
- Single and Multi-loop Controllers

Sensors & Vision
- Proximity Sensors • Photoelectric Sensors • Fiber-Optic Sensors
- Amplified Photomicrosensors • Measurement Sensors
- Ultrasonic Sensors • Vision Sensors

Industrial Components
- RFID/Code Readers • Relays • Pushbuttons & Indicators
- Limit and Basic Switches • Timers • Counters • Metering Devices
- Power Supplies

Safety
- Laser Scanners • Safety Mats • Edges and Bumpers • Programmable Safety Controllers • Light Curtains • Safety Relays • Safety Interlock Switches