

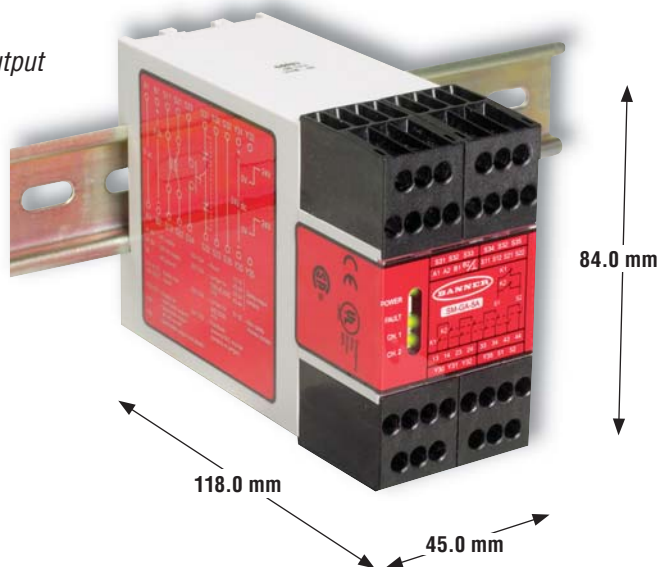
# Safety Mat Monitoring Modules

- Module monitors a single mat or a series of connected mats.
- Use with standard 4-wire safety mat or edge triggered by a short in a contact plate or strip.
- Available voltages include 115V ac or 24V dc, and 230V ac or 24V dc.
- Output contacts are rated 6 A.
- Reset options are Automatic or Monitored Manual.
- LED indicators show power on, output and fault.



## Safety Mat Monitoring Modules

- Removable terminal blocks
- 4 redundant forced-guided output contacts
- Polycarbonate 45 mm housing
- Maximum 50 milliseconds response time
- Standard 35 mm DIN rail track mounting



SM-..A-5A Models





## Safety Mat Monitoring Modules

Model	Supply Voltage	Inputs	Safety Outputs	Output Rating	Aux. Outputs	Output Response Time	Data Sheet
SM-GA-5A	115V ac & 24V dc	1 (or multiple in series) 4-wire Safety Mat	4 NO	6 amps	1 NC & 2 PNP	50 ms	112364
SM-HA-5A	230V ac & 24V dc						

NC = Normally Closed Relay, NO = Normally Open Relay

### Safety Mat Monitoring Module Specifications

<b>Supply Voltage and Current</b>	<b>SM-GA-5A:</b> 115V ac (A1-A2), 24V dc, $\pm 15\%$ , 10% max. ripple (B1-B2) <b>SM-HA-5A:</b> 230V ac (A1-A2), 24V dc, $\pm 15\%$ , 10% max. ripple (B1-B2) <b>Power consumption:</b> approx. 7 VA/4 W												
<b>Supply Protection Circuitry</b>	Protected against transient voltages and reverse polarity												
<b>Output Configuration</b>	<p><b>Outputs (K1 &amp; K2):</b> four redundant (total of eight) safety relay (forced-guided) contacts – AgNi, 5 <math>\mu</math>m gold-plated, plus 1 normally closed auxiliary monitor output - AgNi, 5 <math>\mu</math>m gold-plated.</p> <p><b>Low Current Rating:</b>  <b>Caution: The 5 <math>\mu</math>m gold-plated contacts allow the switching of low current/low voltage.</b>            To preserve the gold plating on the contacts, the following max. values should not be exceeded at any time:</p> <table border="0"> <tr> <td><b>Min. voltage:</b> 1V ac/dc</td> <td><b>Max. voltage:</b> 60V</td> </tr> <tr> <td><b>Min. current:</b> 5 mA ac/dc</td> <td><b>Max. current:</b> 300 mA</td> </tr> <tr> <td><b>Min. power:</b> 5 mW (5 mVA)</td> <td><b>Max. power:</b> 7 W (7 VA)</td> </tr> </table> <p><b>High Current Rating:</b>            If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) changes to:</p> <table border="0"> <tr> <td><b>Min. voltage:</b> 15V ac/dc</td> <td><b>Max. voltage:</b> 250V ac/dc</td> </tr> <tr> <td><b>Min. current:</b> 30 mA ac/dc</td> <td><b>Max. current:</b> 6 A</td> </tr> <tr> <td><b>Min. power:</b> 5 W (5 VA)</td> <td><b>Max. power:</b> 200 W (1,500 VA)</td> </tr> </table> <p><b>Mechanical life:</b> 50,000,000 operations  <b>Electrical life:</b> 150,000 operations (typical, @ 1,500 VA switched power, resistive load)            150,000 operations (typical, @ 200 W switched power, resistive load)</p> <p><b>Note: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.</b></p> <p><b>Solid-State Monitor Outputs:</b></p> <ul style="list-style-type: none"> <li>- Two non-safety solid-state dc outputs</li> <li>- Output at Y32 monitors state of outputs – conducts (output high) when both K1 and K2 are energized</li> <li>- Output at Y35 conducts (output high) when internal power supply is OK</li> <li>- Output circuits require application of 24V dc <math>\pm 15\%</math> at terminal Y31; dc common at Y30</li> <li>- Maximum switching current: 100 mA at 24V dc</li> <li>- Both outputs are protected against short circuits</li> </ul>	<b>Min. voltage:</b> 1V ac/dc	<b>Max. voltage:</b> 60V	<b>Min. current:</b> 5 mA ac/dc	<b>Max. current:</b> 300 mA	<b>Min. power:</b> 5 mW (5 mVA)	<b>Max. power:</b> 7 W (7 VA)	<b>Min. voltage:</b> 15V ac/dc	<b>Max. voltage:</b> 250V ac/dc	<b>Min. current:</b> 30 mA ac/dc	<b>Max. current:</b> 6 A	<b>Min. power:</b> 5 W (5 VA)	<b>Max. power:</b> 200 W (1,500 VA)
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<b>Output Response Time</b>	50 milliseconds typical												
<b>Input Requirements</b>	Mat contacts must be capable of switching 12-30V dc @ 200 mA. Resistance on inputs S11-S12 and S21-S22 must not exceed 10 ohms (ac supply) or 28 ohms (dc supply). Resistance between mat layers must not exceed 10 ohms. Reset switch must have one normally open contact capable of switching 20 to 50 mA @ 12 to 30V dc.												
<b>Status Indicators</b>	<table border="0"> <tr> <td><b>3 green LED indicators:</b></td> <td><b>1 red LED indicator:</b></td> </tr> <tr> <td>Power ON</td> <td>Step on Mat or Fault (internal power supply, ground fault, or other internal failures)</td> </tr> <tr> <td>K1 energized</td> <td></td> </tr> <tr> <td>K2 energized</td> <td></td> </tr> </table>	<b>3 green LED indicators:</b>	<b>1 red LED indicator:</b>	Power ON	Step on Mat or Fault (internal power supply, ground fault, or other internal failures)	K1 energized		K2 energized					
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<b>Construction</b>	Polycarbonate housing												

**Safety Mat Monitoring Module Specifications (cont'd)**

<b>Environmental Rating</b>	Rated NEMA 1; IEC IP20
<b>Mounting</b>	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IEC IP54) or better.
<b>Vibration Resistance</b>	10 to 55 Hz @ 0.35 mm displacement per IEC 68-2-6
<b>Operating Conditions</b>	<b>Temperature:</b> 0° to +50° C <b>Relative humidity:</b> 90% @ +50° C (non-condensing)
<b>Certifications</b>	For a list of certifications see page 237.
<b>Wiring Diagrams</b>	<b>4-Wire Safety Mat:</b> WD055 (p. 282)