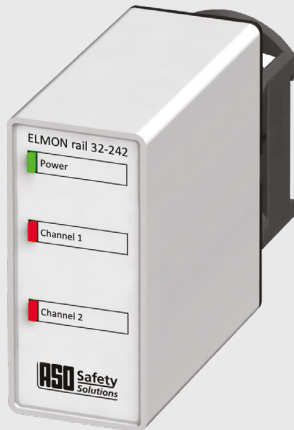
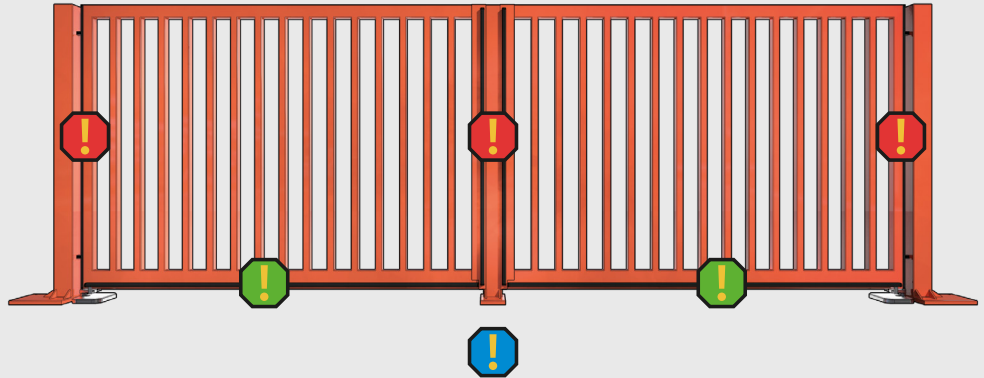






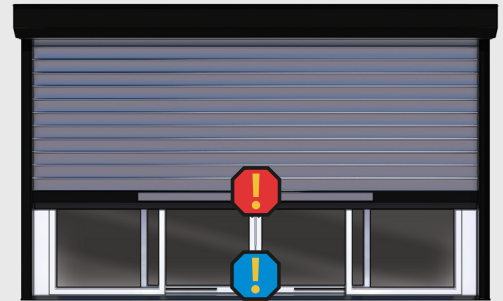
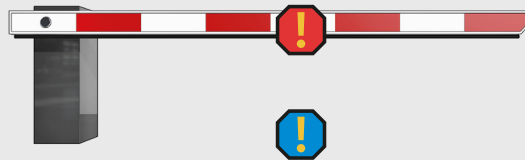
# GENERAL & OPERATIONAL INFORMATION



## ELMON RAIL 32-242



-  **CRUSHING POINT**
-  **DRAW-IN POINT**
-  **VEHICLE IMPACT**
-  **SHEARING POINT**



The **ELMON relay** is designed for use on hinged gates, barriers, shutters and machine solutions. The relay evaluates pressure sensors fitted to the systems, including safety contact mats, safety contact edges and safety bumpers, reducing the risk of crush and shearing points.

Two separate sensor circuits can be connected to the **SK 32** switching unit, whereby both act on one switching output.

Monitoring of the standby current is made possible by an integrated terminating resistor in the sensor circuit. If the specified standby current is flowing, the output relay is activated and the switching contact is closed. If a sensor is actuated or a sensor circuit is interrupted, the relay switching contact opens.

The relay is designed in accordance with **EN ISO 13849-1:2008** for **Category 3**. To comply with Category 3 for compliance with category 3, the safety output is set up redundantly with two independent switching elements.

The monitoring state of the sensors and the applied operating voltage are indicated by LEDs.

In the event of a fault alarm, all safety outputs are inactive.

## PROPER USE

The switching device can only fulfill its safety-relevant task, if it is used as intended within specifications.

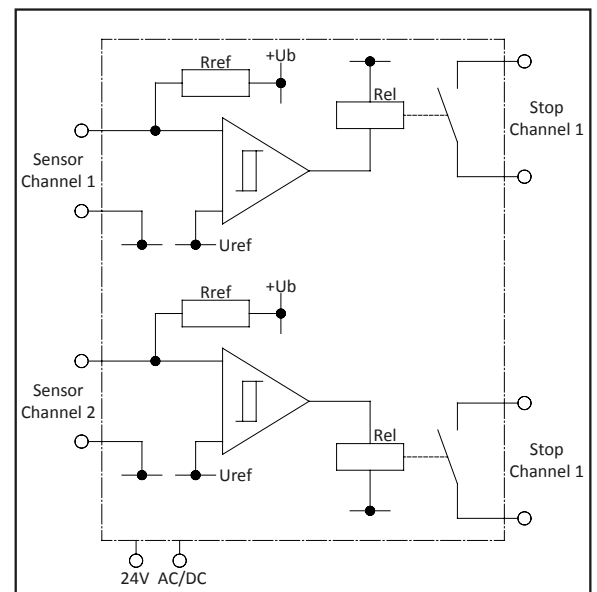
The intended use of the switching device is the use as a protection system in connection with safety contact mats, safety bumpers and safety contact edges with 8.2 kΩ resistance for steady-state current monitoring.

A different use or any use going beyond the intended use is not within specifications.

The manufacturer does not accept any liability for any damage arising from use not within specifications.

Any use for special applications requires prior release by the manufacturer.

The use of the safety relays at heights 2000m above sea level is not approved.



ELMON rail 32-242 Block circuit diagram

# DEVICE OVERVIEW

## SIGNAL DISPLAYS



**LED POWER** (green)  
Operation mode (on) - **OK**  
Fault alarm (pulse) - **see error diagnostics**

**LED CHANNEL 1** (red)  
Sensor activated (on) - **OK**  
Sensor circuit broken (flashes rapidly) - **See error diagnostics**  
Fault self-lock (flashes slowly) - **See error diagnostics**

**LED CHANNEL 2** (red)  
Sensor activated (on) - **OK**  
Sensor circuit broken (flashes rapidly) - **See error diagnostics**  
Fault self-lock (flashes slowly) - **See error diagnostics**

If there is no fault alarm, the operating state is shown via the LED Power (on). When signaling a fault alarm the number of pulses emitted indicates the nature of the fault:

Pulse	Error message diagnostics
1	Supply voltage outside the available range - 24v AC/DC +/- 10%
2	Output control <b>Stop Channel 1</b> - faulty
3	Output control <b>Stop Channel 2</b> - faulty
4	Data transfer between micro-controllers faulty - Replace unit
5/6	Error in testing signal input ( <b>Channel 1 / Channel 2</b> ) - See error diagnostics

## CONNECTION TERMINALS

Pin 12	(Not allocated)
Pin 3 11	Signal input Channel 1
Pin 3 10	Signal input Channel 2
Pin 5 4	Relay output to Channel 1 control
Pin 6 7	Relay output to Channel 2 control
Pin 8 9	Supply voltage 24V AC/DC



## MECHANICAL MOUNTING

- The switching unit must be mounted correctly:
- In a dust-protected and moisture protected switch cabinet or casing.
  - For use in an environment with contamination level 2.
  - With a protection type of at least IP54.
  - On a 35 mm DIN support rail according to EN 50 022.

The switching unit must not be installed in the immediate vicinity of an intense heat source.

The switching unit can be installed in horizontal or vertical positions.

The unit must not be operated in areas with major temperature changes.



*The products manufactured by ASO are exclusively intended for commercial use (B2B). At the end of use, the products must be disposed of according to all local, regional and national regulations. ASO is also happy to take back the products and disposes of them properly.*

## ELECTRICAL CONNECTION

Connection to the wrong terminals may damage the relay.

Wiring laid in the open or outside the control box must be properly protected.

The signal wiring may not be connected parallel to the motor wiring or other power wiring. The limits shown in the "Technical Data" for the supply voltage and relay switching capacity must be observed.

### Supply Voltage

The supply voltage is to be connected to the terminal pair **8,9** **24 V AC/DC +/- 10%**. The supply wiring to the relay must be protected by a suitable circuit breaker. The supply voltage must meet the requirements for low voltage protection (SELV).

### Sensor Connection

Connect the sensor for Channel 1 to the terminal pair **3,11**. Connect the sensor for Channel 2 to the terminal pair **3, 10**.



*If a channel is not used, it must be fitted with an 8.2 kΩ resistance.*

## CONNECTING MULTIPLE SENSORS PER SENSOR CIRCUIT

One or more sensors can be connected to sensor input. For this purpose, the individual sensors are connected in series according to figure 1.

### Safety edges SENTIR edge:

Up to five SENTIR edge may be connected in series. The maximum total length of the SENTIR edge shall not exceed **100m**. The length of one SENTIR edge may be up to **25 m**. The total cable length of the in series connected SENTIR edge must not exceed **25m**.

### Safety bumper SENTIR bumper:

Up to five SENTIR bumper may be connected in series. The maximum total length of the SENTIR bumper shall not exceed **15m**. The length of one SENTIR bumper may be up to **3 m**. The total cable length of the in series connected SENTIR bumper must not exceed **25 m**.

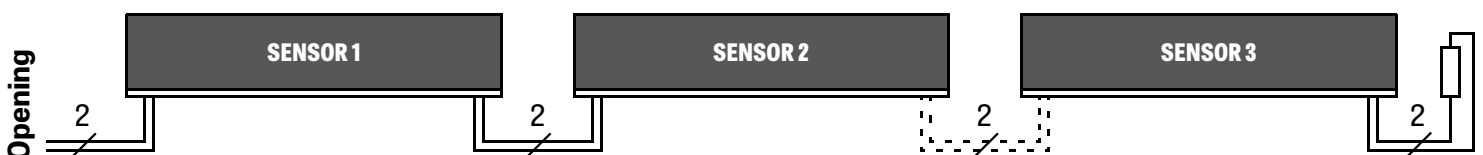
### Safety contact mat SENTIR mat:

Up to ten SENTIR mat may be connected in series. The maximum total area shall not exceed **10 m2**. The maximum size of an SENTIR mat is **1350 x 2350 mm**. The total cable length of the in series connected SENTIR mat must not exceed **25m**.

Before connecting the sensors that are connected in series, it is recommended that the resistance value of the arrangement is to be measured. The resistance must be **8.2 kΩ ± 500 Ω** when the sensor is inactive and must not exceed **500 Ω** when it is active.



*ASO sensors must not be connected in parallel.*

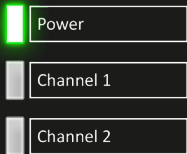


**Figure 1: Connection of multiple sensors; in this example: Safety Contact Edge**

# ERROR DIAGNOSIS

If the wiring and connecting up of the supply voltage is correct, only the green LED Power should light up. If the red LED lights up there is a fault in the system, which can be isolated with the aid of the LED.

LED	Error	Error correction
Green LED Power does not light up	Supply voltage absent, too low or wrongly connected.	<p><b>Test connections and supply voltage:</b> - 24 V AC/DC to terminals <b>8 9</b>, tolerance range: ±10%</p>
Red LED Channel 1 / Channel 2 lights up  Green LED Power flashes cyclically (pulse)	<p>The relevant sensor is recognised as activated.</p> <p>6 pulses from power LED - this code can be caused by a number of issues</p>	<ul style="list-style-type: none"> <li>• <b>Check connections of the relevant sensors (pinched wiring, brittle wiring etc.)</b></li> <li>• <b>Check sensor *</b></li> <li>• <b>SK relay has been housed / positioned next to high EMF I.E. large transformer.</b> In some installations, a separate cabinet may not have been fitted to house other electrical components. This may result in the SK relay sharing the same housing as the mains transformer for the motor. In some cases this has caused the circuitry of the relay to fail. Remove the relay from the motors housing and reset the power to check for improvement.</li> <li>• <b>Cabling has been shared with DC voltage apparatus which is causing interference.</b> Check that the safety edges are not sharing the same cabling / conduits as anything which may be carrying a DC voltage. This may result in the static edge inputs (3,10 &amp; 3,11) having a back feed of interference which the controller cannot cope with.</li> </ul>
Red LED Channel 1 / Channel 2 flashes rapidly	<p>Sensor circuit broken, sensor not connected, connected incorrectly or faulty</p> <p>* If the fault is not in the wiring, the functioning of the electronics may be checked by fitting an 8.2 kΩ resistance to the safety input on the relay. If the electronics then work properly, the safety device must be tested with an ohmmeter. For this the connection between the safety device and the relay must be disconnected and connected to an ohmmeter. With an inactivated safety device the resistance should be 8.2 kΩ ± 500 Ω. If the safety device is activated, the resistance should not exceed 500 Ω.</p>	<ul style="list-style-type: none"> <li>• <b>8.2KOhms on input</b> Before making any other checks, the first task required for you to do is meter the Ohms measured at the relay inputs across terminals <b>3 &amp; 10</b> (Close edge input) and <b>3 &amp; 11</b> (Opening edge input). These should be reading around 8K2Ohms. If they are reading significantly more or less than this value, then this will indicate the reason for the LED to be lit on the relay. The acceptable switching tolerances of this relay measure from 5Kohms up to 12Kohms. Anything outside of these values will result in the inputs relay opening and the relative LED showing lit on the front of the ISK71-242.  If you are not reading 8K2Ohms and you have a series of safety edges wired into that circuit, then you will need to deduce which edge is causing the problem. The quickest fault finding means to achieve this is by testing each edge in series until you find 8K2. If you do not find this value at all, then you know that there is an issue with the end of line edge which will need to be addressed.</li> <li>• <b>Water within a safety edge</b> Check all drainage holes have been cut at the bottom of the vertical edges and either side of the horizontal edges.</li> <li>• <b>Damaged edge / earthed connections</b> Check to ensure no cables have been wearing on joints where movement may incur or in junction boxes which may have other wiring in place. Carry out a full inspection of each edge to ensure no signs of obvious damage.</li> <li>• <b>Cuts / Rips on the edge</b> Check that all edges have no obvious visible signs of damage / vandalism. If the safety edge has any short or broken contact, the relay will read 0.0 Ohms and the corresponding input LED will be lit.</li> </ul>



# TECHNICAL DATA

## Supply Voltage

Low Voltage:	$U_E$	24V AC/DC $\pm$ 10%
	$I_E$	85mA
	$I_{max}$	180mA (100ms)
Input Power	$P_{E-max}$	3 W 24 V DC
	$P_{E-max}$	3 VA 24 VDC
Ensuring low voltage (external)	<b>125mA</b>	Medium acting fuse Flink can be used alternatively

## Terminal Resistance of the SCEs

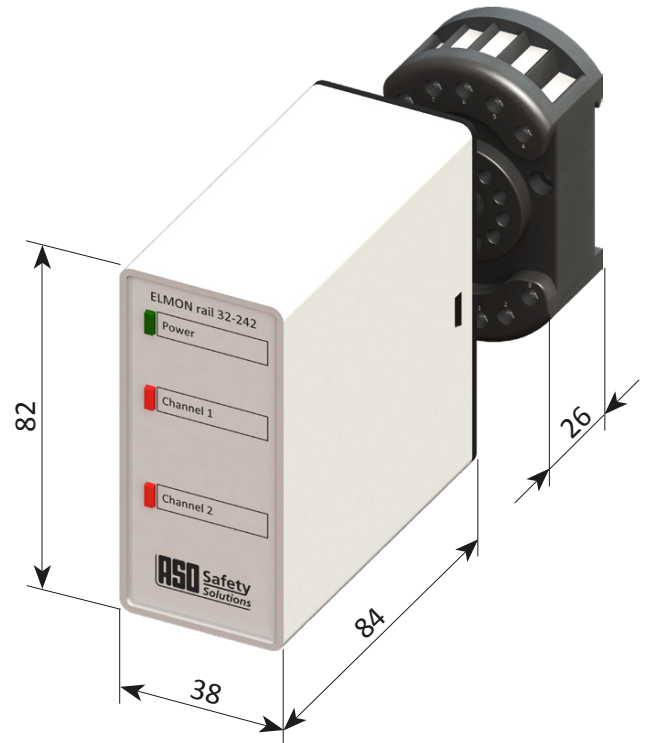
nominal value	$R_{nom}$	= 8,2 k $\Omega$
upper switching point	$R_{AO}$	> 12,0 k $\Omega$
lower switching point	$R_{AU}$	< 5,0 k $\Omega$


## Safety Relay

Nominal current DC	3 A	(30 V DC)
Nominal current AC	3 A	(30 V AC)
Mechanical life-time	>10 <sup>6</sup> actuations	

## Safety Relay Switching Times

Switching off delay	<12ms	
Turn-off time	500ms (ELMON rail 32-242) 100ms (ELMON rail 32-242 K) (Power on 700ms)	



	<b>EC type-examination no.:</b>	44 205 12 399386
	<b>Certificate no.:</b>	44 780 12 399386
	<b>Test report no.:</b>	12 205 399386-000

<b>Assembly</b> .....	Plug base for 35 mm DIN snap-on rail mounting
<b>Housing</b> .....	11-pin DIN plug-base housing with plug base for 35 mm mounting rail (DIN rail)
<b>Dimensions (HxWxD)</b>	
Housing .....	82 x 38 x 84 mm
Housing (incl. plug in socket) .....	82 x 38 x 110 mm
<b>Protection Class</b> .....	IP20
<b>Weight</b> .....	225g
<b>Temperature Range</b> .....	-25°C to + 55°C
<b>Connection Cable cross-section</b> .....	Single or fine-stranded cable 0.75 -1.5mm <sup>2</sup>
<b>Certifications</b> .....	DIN EN ISO 3849-1:2008 Category 3 PL e MTTFd 170 years, DC 91%
Electronics .....	MTTFd 1616 years, DC 99 %
Electromechanics .....	B10d 1000000 MTTFd 190 years (Nop 52560)

**All voltages connected to the switching unit must be safely isolated**