

ESR-11, -12, -13

BIRCHER REGLOMAT

Operating Instructions for Switching Units ESR-1

Remark

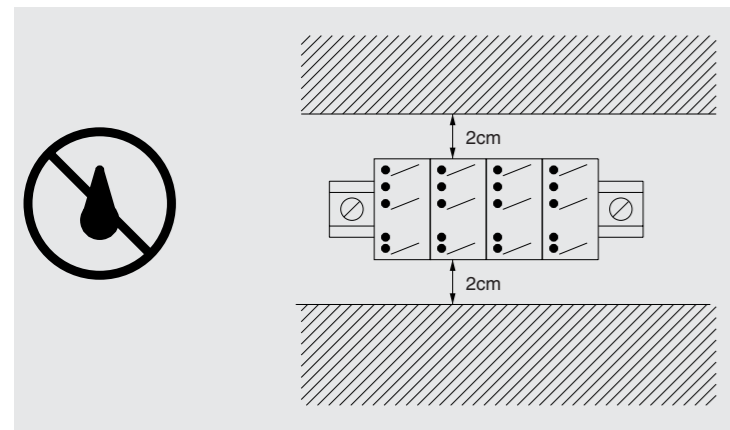
The operating instructions indicate only the most important information.

General

Safety systems in the Category 1 can be achieved with Switching Units Type ESR-1. Contact bars ELE, Contact mats ESM and Safety Bumpers ESB can be used as sensors. The Switching Units together with the sensors are intended for use in industrial applications. For applications in connection with small children, special sensors are required. Contact us for further details concerning such applications. The Switching Unit has two input channels and accordingly sensors can be connected to each single channel. The switching unit is equipped with a simple signal evaluation which detects sensor errors. An activation of the sensor (safety function) causes the signal output relay to immediately de-energise. The ESR-1 switching unit is reset by disconnecting the power supply for a few seconds or when the sensor is no longer activated.

Installation of the Switching Unit

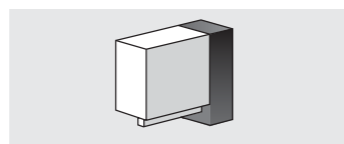
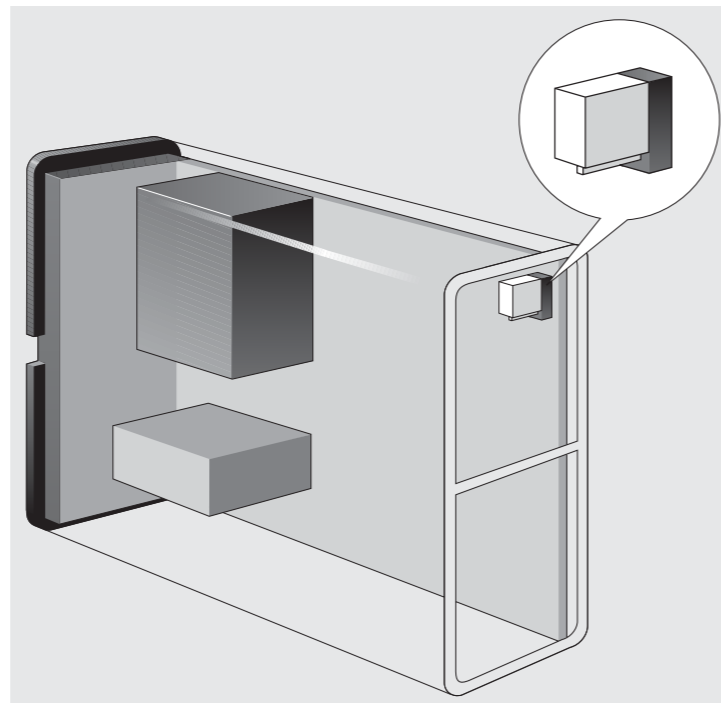
The switching unit and sensors are to be installed and wired according to the applicable local regulations. The min. sensor cable cross section is 0.5mm². The 11 pin socket can be screwed on the mounting plate or snapped on to a DIN rail. The switching units may only be installed in dry locations and must be provided with drip-water protection. It is preferable that the unit be installed in a control cabinet with a min. protection class of IP54. Several switching units can be mounted in a row, but it must be insured that there is at least 2cm of free space above and below the units to ensure that heat from the power supply dissipates.



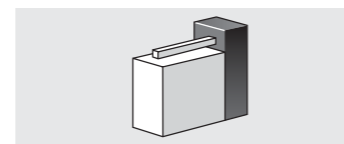
Drip-water protection/Free space

Connection of Sensors

Sensors, with a total length of up to 50m and a total area of 5 m², can be connected to each of both sensor inputs. The sensors are to be connected in series and the last must have a termination resistor with a value of 8.2kOhm. If only one sensor input is used channel 2 must be jumpered or the error signal «Sensor Error» is indicated.



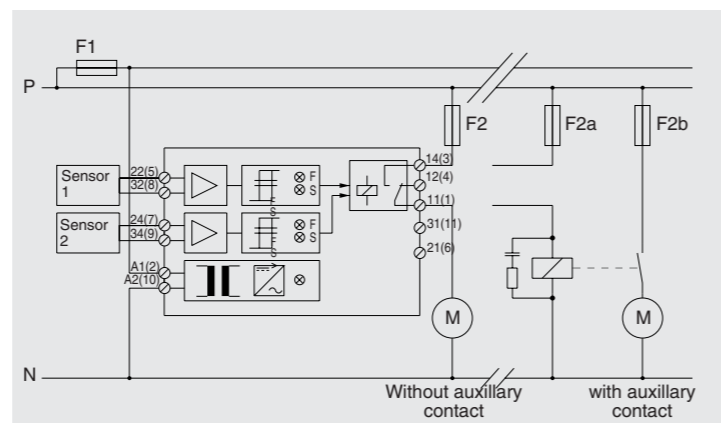
Jumper setting when two sensors are connected



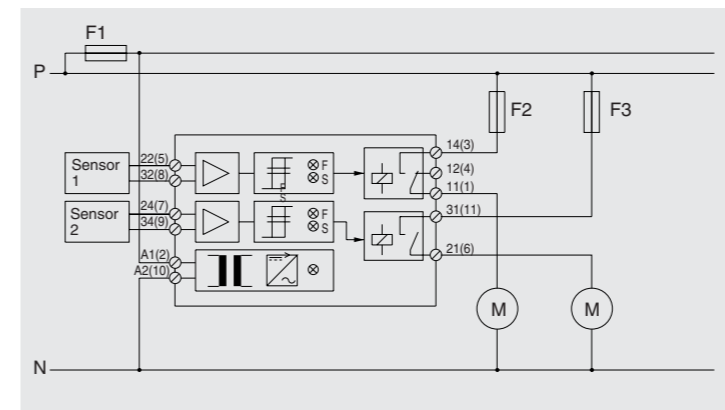
Jumper setting when one sensor is connected

Wiring and Connecting Diagrams

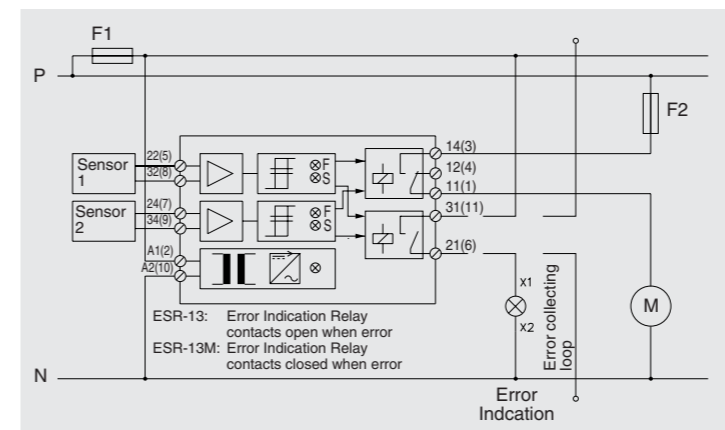
ESR-11
Two channel switching unit with simple signal evaluation corresponding to Safety Category 1 with sensor error detection



ESR-12
Two channel switching unit each with simple signal evaluation corresponding to Safety Category 1 with sensor error detection



ESR-13
Usage similar to ESR-11 however an additional error indication contact allows an external evaluation of the interrupted sensor input.



Installation/Commissioning

- With the unit unplugged, check the sensor inputs 5/8 and 7/9 for the correct resistance value. This value should be between 7.5kOhm and 9kOhm. If only one sensor is connected, the internal jumper must be fitted accordingly.
- Check the voltage information indicated on the unit type plate with that of the supply voltage.
- After switching on the unit, the green LED «Operation» illuminates. The yellow and red LED's must not illuminate.
- The functioning of the system can be checked by the activation of a sensor. The LED of the corresponding input channel must illuminate.

Periodic Tests

The correct function of the safety system is to be periodically checked (e.g. monthly or according to applicable regulations). The sensors and their connections are to be inspected to determine possible mechanical damage. In addition, the sensor wiring should be disconnected annually and checked as described in Commissioning points a. and c.

Trouble Shooting

Initial Position:

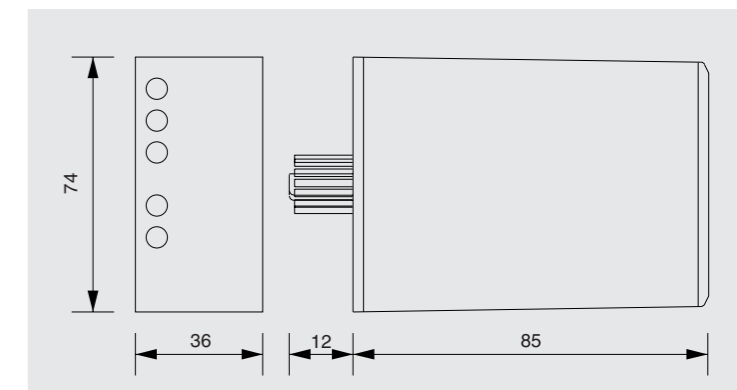
– Connections according to wiring diagram

- Green LED does not illuminate
Check the power supply. If the voltage is correct the unit is defect.
- Yellow LED illuminates even though the sensor is not activated Switch off power supply and remove unit. Measure resistance values at terminals 5/8 and 7/9. The resistance value must be between 7.5kOhm and 9.0kOhm. If the values are lower, the sensor and the connections must be checked for any eventual short circuit.
- Red LED illuminates
Repeat procedure under point 2. If the resistance values are correct the unit is defect.

Technical Data

Housing	Type M3, Material orange Noryl
Isolation Class	IP30 (IEC 529)
Weight	max. 250g (depending on type)
Power Supply	DC voltages are for battery operation only
- Type ESR-1.-24VADC	24–36VAC/24–48VDC (±20%)
- Type ESR-1.-115VAC	115VAC (+10%/-20%) with isolating transformer
- Type ESR-1.-230VAC	230VAC (+10%/-20%) with isolating transformer
Frequency Range	50/60Hz (45 to 66Hz)
Power consumption	max. 3VA
Duty Cycle	100%
Sensor Inputs	max. allowable voltage 15VDC max. allowable current 5mA
Output relay/ Error Indication Relay	
- Switching Capacity	250VAC/6A resistive
- Contact material	Hard silver
- Operating Life	Mechanical 30 million operations Electrical 80'000 switchings at 250VAC/6A resistive
- Fuse Protection	6A slow-blow
Indicators	LED 5mm
- Operation	Green
- Safety Function	Yellow
- Sensor Error	Red
Reaction Time	<70ms
Temperature Range	
-Operation	-20°C to +50°C
-Storage	-20°C to +80°C
Humidity	max. 80% relative
Socket	BS-11, 11 pole

Dimension sheet



Warranty and Liability

- The warranty and liability of Bircher Reglomat AG are based on the sales contract.
- The warranty and liability shall expire prematurely, should the client or third parties not use and/or operate the product in compliance with existing operating instructions, should incorrect changes or repairs be made by the client or third parties, should the client or third parties, when a fault has occurred, not take suitable steps at once for a reduction of possible damage/losses and offer Bircher Reglomat AG a chance for remedying the said fault.
- The warranty and liability shall exclude any damage for which there is no proof that it is due to poor materials, faulty construction, poor workmanship, and any damage caused by other reasons, for which Bircher Reglomat AG cannot be held liable.
- No liability can be assumed for any consequential damage, provided this is not governed otherwise by applicable product liability laws and regulations.
- Warranty claims made against the seller on the basis of the sales agreement are not affected by these regulations.
- For the benefit of its customers Bircher Reglomat AG constantly develops its products further. Bircher Reglomat AG reserves the right to make changes to any of the products described in this document without prior notice.