

ESM mats

Switching mats for activation of machinery and automatic doors

Translation of the original instructions

Please read through these instructions fully before starting installation work.



Take the following safety precautions before starting installation or when preparing the area to be protected:

- De-energise the system before starting work.
- The system must be safeguarded to prevent it from being switched on by a third party.
- Then it must be checked that power supply is not connected.
- The phases must be earthed and short-circuited.
- Adjacent live components must be covered or blocked off.

Safety Instructions

- Knowledge of standards EN ISO 13849-1 and EN 1760-1 is a precondition for installation in industrial applications
- Mounting, startup, modification and retrofitting of the system may only be carried out by a specialist.
- The safety regulations issued by the Trade Association and those for electrical installations must be adhered to.
- Failure to comply with the safety regulations may result in severe or fatal injury or serious damage to property.
- Keep these instructions available for further reference.

Safety Systems

A safety system is always composed of a switching device, a mat and a terminating resistor. Bircher Reglomat safety mat systems correspond to PL e, cat. 3 acc. to EN ISO 13849-1.

For safety-systems acc. to machinery directive see also user information under:
www.bircher-reglomat.com

CE/FCC Certification refers to:
«ADVISORY for COMPLIANCE to COUNTRY DIRECTIVE(S)»

Packaging /Transport

The mats are delivered in specially constructed packaging.

Warranty and Liability

1. The warranty and liability of Bircher Reglomat AG are based on the sales contract.
2. 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.
3. 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.
4. No liability can be assumed for any consequential damage, provided this is not governed otherwise by applicable product liability laws and regulations.
5. Warranty claims made against the seller on the basis of the sales agreement are not affected by these regulations.
6. 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.

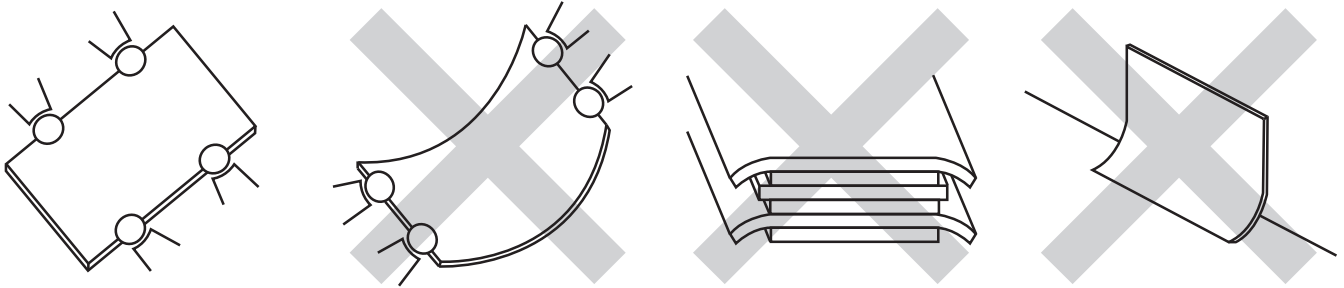
1 Handling and Storage

Recommended

- Storage temperature 0° C to 40° C
- Transport mats in the supplied packaging to where they are to be installed
- Ideal storage: dry, clean and flat
- Do not stack more than 10 mats on top of one another

Not recommended

- Significant bending of mats
- Storing mats vertically
- Stacking different sizes of mats in the same pile
- Extreme temperature fluctuations
- Outdoor storage
- Pulling mats by the cable



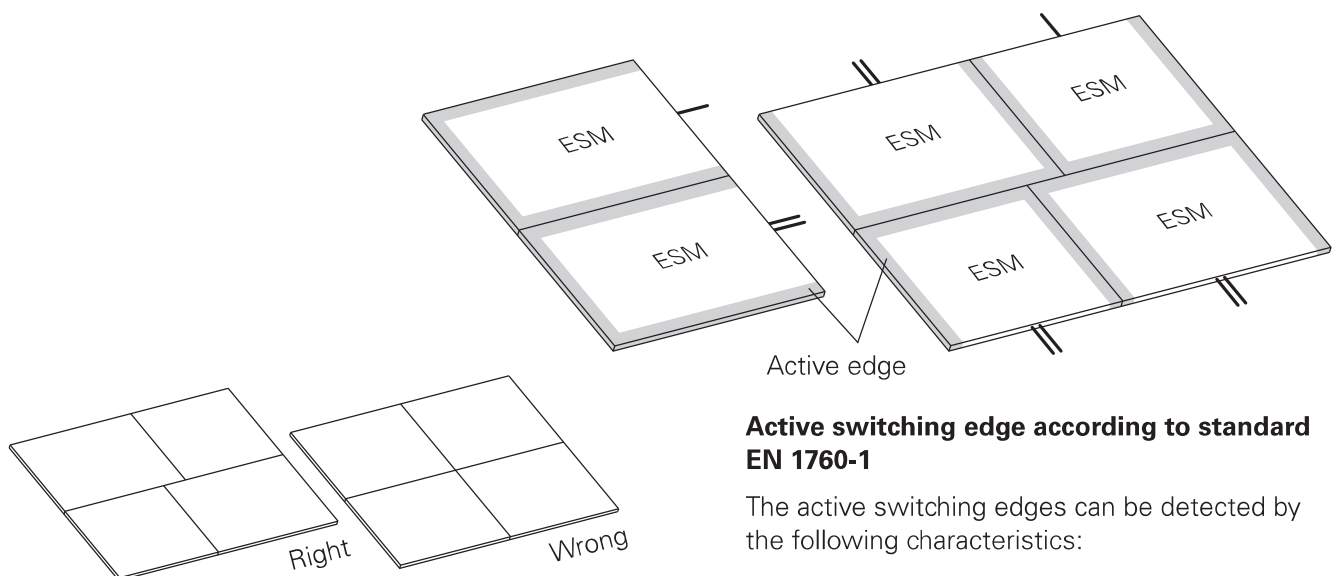
2 Preparations for installation

The area where you are planning to install the mat should have a flat and dry surface. Remove any dirt particles and raised points. We recommend recoating the floor if it contains any cracks or holes. We recommend conducting a function test on the mat system before installing the edge ramp and laying the connection cables. Refer to

standard DIN 18202, line 4 for detailed information about the composition of the floor. Place the mats with the rubbing facing up. Take care to leave a gap of 1 mm between individual mats when laying them (see section 4.3).

3 Assembling mat systems

Only mats with active switching edges are allowed to be assembled into safety systems. Never lay the sides with the cable outputs facing one another. The following assembly is recommended:



Active switching edge according to standard EN 1760-1

The active switching edges can be detected by the following characteristics:

- Mats with grip pads on the surface:
The outlying rows of grip pads are offset in relation to the other grip pads.
- Mats without a surface structure:
The mats are marked with a type label on its bottom side.



The side where the cable comes out is NOT an active switching edge.

4 Laying mat systems

4.1 Measure and mark out the corners of the system

(Distance from the machine, prepare a rough layout)

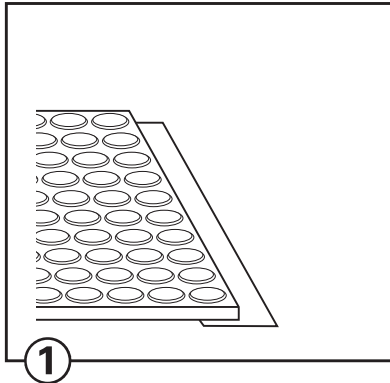
4.2 Position the first row of mats

(Are the alignment, dimensions and marking OK?)

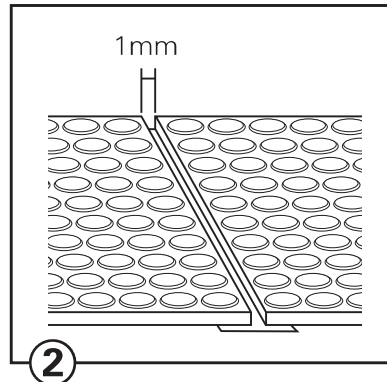


Whenever possible, position the outgoing cables on the side of the Z-rails.

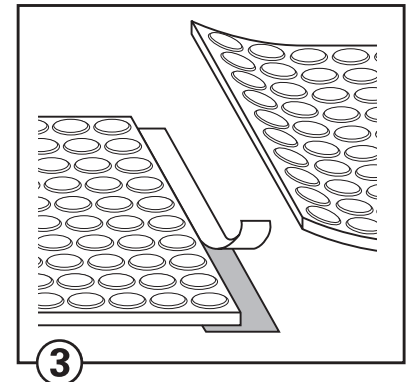
4.3 Join the mats together optionally the using connection stripe



Stick one side of the connection stripe under the mat.



Use a template to position the next mat (tools: nylon hammer and wood board).



Apply weight to the positioned mat so that it cannot move. Lift up the side to be connected, pull the backing foil off the connection stripe, carefully put down the mat and press it into place.

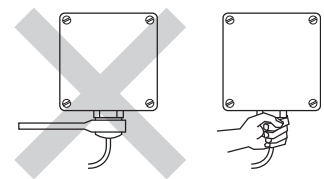
4.4 Check that the mats are functioning correctly before connecting them

(Multimeter or continuity tester – take care if the mats have a terminating resistor)

4.5 Lay the cables

(Combine into cable harnesses if necessary)

As well as their use for electrical signal transmission, the cables also exchange air between the mat and the environment. This prevents excessive pressure build-up in the mat due to changes in ambient temperature. **If the cable is routed to an electrical distribution box, the cable gland is only allowed to be screwed finger-tight.**



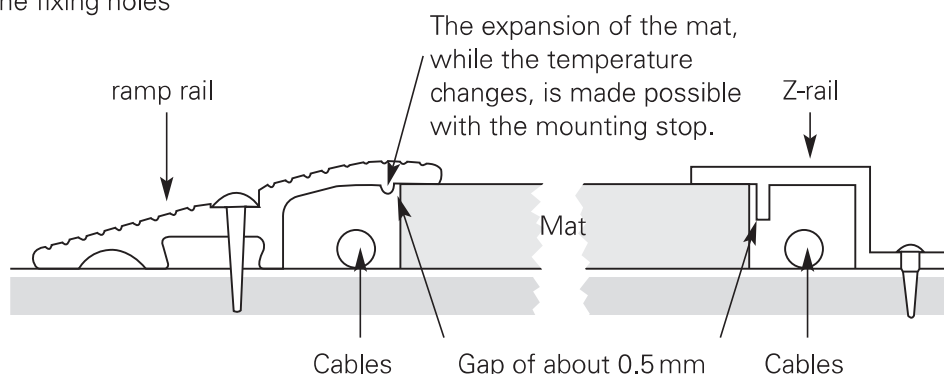
4.6 Fixing to the floor

Pre-drilled ramp rail

1. Arrange all ramp rails around the mat system
2. Mark the holes to be drilled
3. Drill the fixing holes

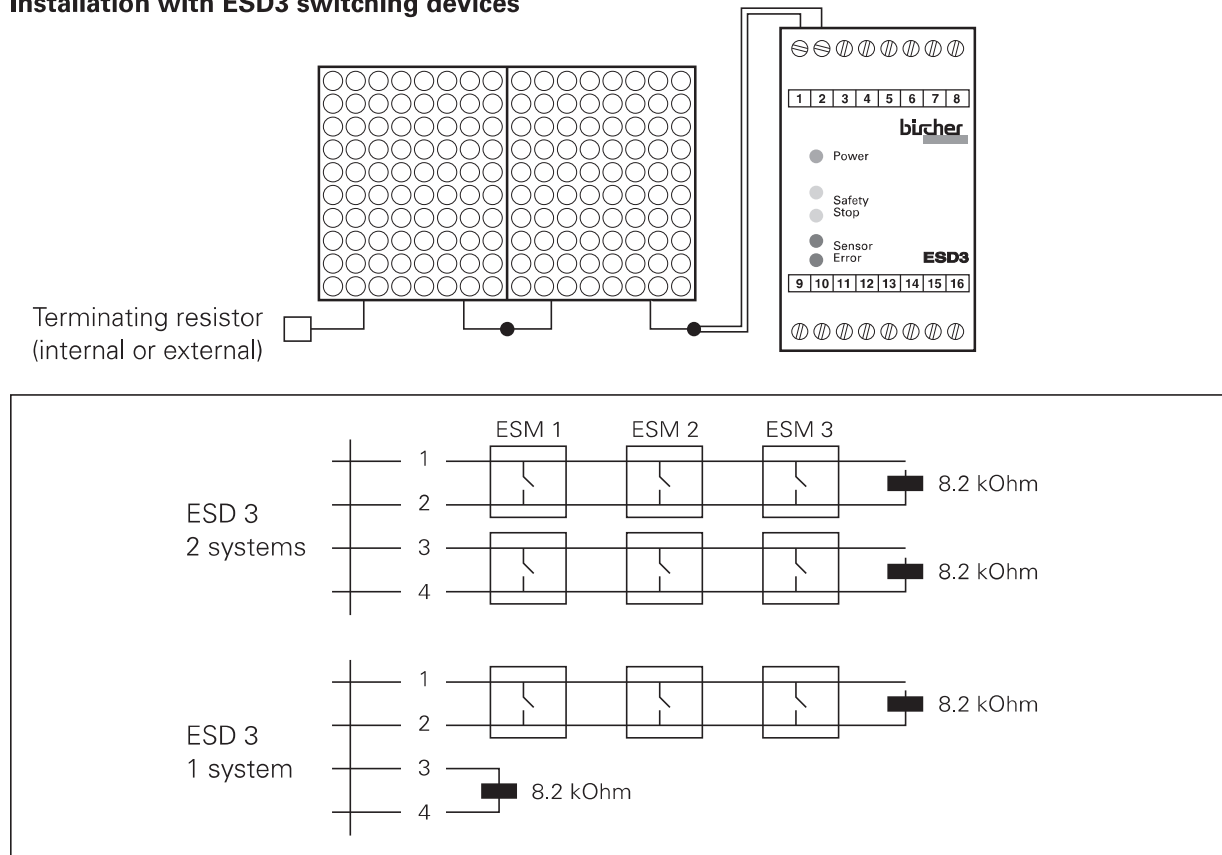
Z-rail

1. Arrange rails on the machine side
2. Mark the holes to be drilled
3. Drill the fixing holes



5 Installation of the switching device

Installation with ESD3 switching devices



- Clip the switching device onto the DIN mounting rail (35 mm).
- It is possible to connect several sensors in series.
- If only one sensor channel is used on the ESD3 switching device, the unused channel must be jumpered with an 8.2 kohm resistor (supplied with the switching device).

6 Troubleshooting

Please check the following points if the mat or the switching device do not operate correctly:

- Is the system wired up as shown in the diagram?
- Is the r.m.s. voltage supply correct?
- Are the sensors laid out so the cables are not kinked or damaged?
- Are the mats lying flat on the floor or are they bent?
- Is there any dirt under the mat?

7 Care / maintenance

Read through the whole of this section before starting maintenance work!

- Check the safety function of each individual mat at periodic intervals.
- Check for visible defects at periodic intervals.
- Remove all mounting and installation brackets when cleaning the system.



- All covers, edge ramps and brackets removed during maintenance and cleaning work must be reinstalled afterwards in such a way that the safety function is assured.
- Only replace components with parts approved by the manufacturer. Parts which are not approved may prevent the safety equipment from functioning in accordance with the requirements and result in the system no longer complying with the safety certificate.