Pressure-Sensitive Mat Systems

Safety mats for protection of people around machinery, robots & other hazardous areas

Signal mats for activation of a device or counter through presence detection

Safe, reliable, low maintenance

- Wide variety of sizes & shapes available
- Easy to install
- Safety category 3 systems available
- Made in the USA
Pressure-Sensitive Mats

**Durable and reliable**

Bircher Reglomat pressure-sensitive mats are durable products with well-balanced sensitivity that are ideal for a variety of safety or control applications. These mat systems meet or exceed current US & CE standards. 2-wire & 4-wire failsafe wiring and safety category 3 systems are available. The unique edge design allows multi-mat systems to have consistent detection across seams without the need for joining trim. This benefit reduces installation time and material costs.

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**Your benefits**

- Maintenance-free
- Easy to install
- Custom shapes & sizes available
- Three surface pattern options
- Molded, totally sealed design is water resistant
- Multiple activation zones available
- Mats can be easily joined together to create larger systems
- Mats are silicone-free, PVC-free option also available

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**Mat design**

Bircher Reglomat pressure-sensitive mats consist of copper clad epoxy sheets encapsulated in black polyurethane compound. Copper offers superior corrosion resistance compared to other safety mat contact plates.

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**Surface pattern options**

- Standard non-skid surface
- Knob surface
- Smooth surface (no pattern)
Aluminum trim options

Aluminum ramp trim
Use extruded aluminum ramp trim to secure pressure-sensitive mats to the floor. Ramp trim increases safety by minimizing stumbling hazards and shifting of the mat system. Black & yellow awareness tape can be added to ramp trim for additional visibility. Ramp trim can withstand vehicle traffic.

Ramp trim adds an additional 2 1/2" (64 mm) to each side on which it is used.

*Please refer to technical data on page 4 for standard supplied cable diameter

Aluminum machine-side trim
Use extruded aluminum machine-side trim to secure pressure-sensitive mats to the floor in close proximity to machinery. Machine-side trim is not suitable for vehicle traffic.

Machine-side trim adds an additional 1 9/16" (40 mm) to each side on which it is used.

Standard mats

- Two 12’ (4 m) 2-conductor cable leads exiting the middle of the longer side
- Black non-skid diamond surface pattern
- Width and length measurement in inches (mat measurement only - not including dimensions with trim)
- Sample part number denoting standard 24” x 36” mat: CESM-21CB-2436
- Sample part number denoting standard 24” x 36” ramp trim kit: ASSY ES-S2436

Standard mat & corresponding ramp trim kit sizes (width x length in inches):
- 24” x 24” 24” x 30” 24” x 36” 24” x 42” 24” x 48”
- 24” x 60” 24” x 72” 30” x 30” 30” x 36” 30” x 42”
- 30” x 48” 30” x 60” 30” x 72” 36” x 36” 36” x 42”
- 36” x 48” 36” x 60” 36” x 72” 42” x 42” 42” x 48”
- 42” x 60” 42” x 72” 48” x 48” 48” x 60” 48” x 72”

Custom mats & mat systems

- Create large custom systems with multiple mats
- Cut-out, mitre & multiple zone options available
- Customer-specified cable length
- Customer-specified cable exit location (two 2-conductor leads in any length located at least 2” from a corner - only on sides that will not be joined against another mat)
- Standard Bircher Reglomat mat options will be used if custom options are not specified
- Drawings are required
Order Information

Safeguarding requirements for the majority of safety mat applications can be met with the products listed below. Contact Bircher Reglomat for additional information or custom designs.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES-S10</td>
<td>Aluminum ramp trim, sold in 10-ft (3m) sections</td>
</tr>
<tr>
<td></td>
<td>Without mitre cutting, holes &amp; screws</td>
</tr>
<tr>
<td>ES-S</td>
<td>Aluminum ramp trim, to fit all safety mats</td>
</tr>
<tr>
<td></td>
<td>With mitre cutting, holes &amp; screws</td>
</tr>
<tr>
<td>ES-SZ10</td>
<td>Aluminum machine-side trim, sold in 10-ft (3m) sections</td>
</tr>
<tr>
<td></td>
<td>Without mitre cutting, holes &amp; screws</td>
</tr>
<tr>
<td>ES-SZ</td>
<td>Aluminum machine-side trim, cut to length</td>
</tr>
<tr>
<td></td>
<td>Without mitre cutting, holes &amp; screws</td>
</tr>
<tr>
<td>ES-Tape</td>
<td>Yellow/black adhesive awareness tape</td>
</tr>
<tr>
<td></td>
<td>Sold in 108 ft (33 m) rolls</td>
</tr>
<tr>
<td>ES-WID</td>
<td>8.2kOhm resistor - one supplied complimentary per mat system</td>
</tr>
<tr>
<td>ES-CON</td>
<td>Lead wire connector kit - 2 pieces</td>
</tr>
<tr>
<td></td>
<td>Crimp splices &amp; shrink tubing</td>
</tr>
<tr>
<td>ES-EC</td>
<td>Extension cable - 2 x 20 AWG wires (0.52 mm dia.) inside 5 AWG (4.5 mm dia.) PVC jacket</td>
</tr>
</tbody>
</table>

Safety controller features

- Rated PL e, meets safety category 3 when used with the safety mat. (BG certificate from BIA available upon request)
- Fail-safe wiring with only 2 wires and a resistor
- 2 input terminals to connect multiple mats/edges

Safety controller selection

The following chart provides the safety output logic.

<table>
<thead>
<tr>
<th>System operative</th>
<th>Sensor actuated</th>
<th>Wire failure or no voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>Open</td>
<td>Open</td>
</tr>
<tr>
<td>Open</td>
<td>Open</td>
<td></td>
</tr>
</tbody>
</table>

For available monitoring output options, see chart below.

Voltage for all controllers is 24 VAC/DC. Controllers listed in bold are standard in most applications. Please contact Bircher Reglomat for additional controller options.

<table>
<thead>
<tr>
<th>Version</th>
<th>Reset</th>
<th>Monitoring output (status relay)</th>
<th>Power supply</th>
<th>Power consumption</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESD3-04</td>
<td>Auto</td>
<td>Closed, Open</td>
<td>24 VAC/VDC, 4</td>
<td>2,900 lbs/in2</td>
<td></td>
</tr>
<tr>
<td>ESD3-08</td>
<td>Auto</td>
<td>Open</td>
<td>20 VAC/VDC, 2</td>
<td>2,200 lbs/tire</td>
<td></td>
</tr>
<tr>
<td>ESD3-03</td>
<td>Auto</td>
<td>Closed</td>
<td>15 VAC/VDC, 1</td>
<td>1,000 lbs/tire</td>
<td></td>
</tr>
<tr>
<td>ESD3-06</td>
<td>External</td>
<td>Closed, Open</td>
<td>10 VAC/VDC, 1</td>
<td>1,000 lbs/tire</td>
<td></td>
</tr>
<tr>
<td>ESD3-09</td>
<td>External</td>
<td>Open</td>
<td>5 VAC/VDC, 1</td>
<td>1,000 lbs/tire</td>
<td></td>
</tr>
<tr>
<td>ESD3-05</td>
<td>External</td>
<td>Closed</td>
<td>2 VAC/VDC, 0.5</td>
<td>500 lbs/tire</td>
<td></td>
</tr>
</tbody>
</table>

1 Also available in 115 VAC or 230 VAC
2 Also available in 230 VAC
3 Item # 991003: Switched-mode power supply, DIN rail mounted, Vin = 90 VAC - 240 VAC
4 Vout = 24 VDC

Controller order example: ESD3-04-24ACDC

Version from table above _____ _____ Supply voltage

Technical Data

Mats

- Material: Polyurethane compound
- Color: Black
- Min/max dimensions (Length x Width)
  - Max. 40" x 72" (102 x 1828 mm)
  - Min. 8" x 8" (200 x 200 mm)
  - Tolerance: +1/-1.5 mm
- Thickness:
  - Thickness: 0.4" (10 mm)
  - Tolerance: ± 1.5 mm
- Weight (approximate): Max. 4 lbs/ft² (20 kg/m²)
- Inactive zone:
  - Ramp trim: 0.4 lbs/ft² (0.6 kg/m²)
- Operating zone: 1 1/8" (32 mm) on cable side
  - 1/4" (19 mm) on other sides
- Operating temperature: 32° to 125° F (0° to 50° C)
- Loading capacity:
  - 2,900 lbs/in² (20,000 N/cm²)
  - For 5,000 repetitions
- Vehicle capacity:
  - Solid rubber tire: 2,200 lbs (1000 kg/tire)
  - Pneumatic tire: 4,400 lbs (2000 kg/tire)
- Voltage:
  - Max. 24 VDC/VAC, 0.5 A
- Reaction time: < 50 ms
- Actuating force:
  - Typical force is 15-23 lbs (6.5 - 10.5 kg)
- Bircher Reglomat safety mat systems meet the actuating force requirements defined by the EN-1760-1 and ANSI/RIA 15.06. The mat shall respond to a force of 66 lbs (30 kg) applied to a flat disc with 3.15” (80 mm) diameter placed anywhere on the effective sensing area.
- Protection class:
  - NEMA 4 (IP67)
- Insulation resistance: >1500 VAC
- Lead wires:
  - 2 x 20 AWG wires (0.5 mm² dia) inside 5 AWG (4.5 mm dia) PVC jacket
- Directives & standards:
  - Bircher Reglomat safety mat systems correspond to safety category 3 according to EN954-1 and are type approved according to standard EN1760-1
- Chemical resistance:
  - Weathering, ozone, oils, gasoline water at 88° F (20° C), paraffin, solvents, diluted acids
- Operating life:
  - More than 1 million cycles at the same position with test piece of 3.15” (80 mm) diameter with a force of 170 lbs (76 kg/750 N) vertical down to the surface. Contact loaded with 24V/0.5A

ESD3 Controllers

- Protection class: NEMA 3 (IP54)
- Operating temperature: 0° to 125° F (-15° to 50° C)
- Safety output:
  - 2 Relays: 2A/250 VAC
  - To be connected in series to meet safety category 3
- Monitoring output:
  - 1 relay: 1A/30 VAC
- Power consumption:
  - Max. 5 VA
- Power supply:
  - 24 VAC/VDC ± 10% / 115 VAC ± 10% / 230 VAC ± 10%
- Reaction time: < 50 ms
- Dimensions (L x W x D):
  - 4” x 1 ¾” x 3” (104 x 45 x 79 mm)

Note: Technical details and recommendations concerning our products are based on experience and are an aid for the orientation of the user. Details stated in our brochures and data sheets do not guarantee special properties of the products. This does not apply to special product properties confirmed in writing or individually on a case-by-case basis. Subject to technical alterations.

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