

Safety mats SM and SM11



EN | Installation instructions

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Safety first!



- Read the instructions carefully before use.
- The warnings in the instructions are there to warn you of any unexpected dangers. Always heed the warnings.
- Keep the instructions somewhere safe so you can refer to them throughout the product's entire service life.
- Pass the instructions on to every subsequent owner or user of the product.
- Add any supplement received from the manufacturer to the instructions.
- **Observe the information under "Safety" (starting on page 5).**

Conformity



The design type of the product complies with the basic requirements of the following directives:

- 2006/42/EC (Safety of Machinery)
- 2011/65/EU (RoHS)
- 2014/30/EU (EMC)

The Declaration of Conformity is available in the Downloads section of our website: www.mayser.com.

EC type examination

The product was tested by an independent institute.
There is an EC type examination certificate to confirm conformity.

The EC type examination certificate is stored in the Downloads section of our website: www.mayser.com.

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About these instructions

These instructions are part of the product.
 Mayser accepts no responsibility or warranty claims for damage and consequential damage due to failure to observe the instructions.

Validity These instructions are only valid for the products specified on the title page.

Target group These instructions are intended for the operating company and for electrically skilled persons. The electrically skilled person must be familiar with installation and commissioning.

Other applicable documents → Please also observe the following documents:

- Product information
- Drawing of the sensor system (optional)
- Wiring diagram (optional)
- Handling instructions
- Operating instructions of the control unit used

Symbols used

Symbol	Meaning
→ ...	Action with one step or with more than one step where the order is not relevant.
1. ...	Action with more than one step where the order is relevant.
• ... - ...	Bullets first level Bullets second level
(see chapter <i>Installation</i>)	Cross-reference

Danger symbols and information

Symbol	Meaning
⚠ DANGER	Immediate danger leading to death or serious injury.
⚠ WARNING	Imminent danger which may lead to death or serious injury.
⚠ CAUTION	Possible danger which may lead to minor or moderate injuries.
NOTE	Potential risk of damage to property or the environment. Information on easier and safer working practices.

Dimensions in drawings

Unless otherwise stated, all dimensions are in millimetres (mm).

Safety

Intended use

This product has been designed as a flat pressure-sensitive protective device. Individual sensors are activated when someone weighing more than 20 kg (44 lb) steps on them. Sensor combinations are activated when someone weighing more than 35 kg (77 lb) steps on them.

- Limits**
- No more than 10 /BK-type sensors can be connected to one control unit.
 - No more than 9 /BK-type sensors and 1 /W-type sensor can be connected to one control unit.
 - Max. system size: 15 m² (160 ft²)
= max. quantity × max. sensor size

- Exclusions** Sensors are not suitable for:
- Detecting walking aids
 - Detecting people who weigh less than 20 kg (44 lb)
 - Driving on with industrial trucks

Sensor SM with GM 5 is not suitable for:

- Detecting people who weigh less than 35 kg (77 lb)

Sensor combinations are not suitable for:

- Detecting people who weigh less than 35 kg (77 lb)

Safety instructions

For your **own safety**, you must adhere to the following safety instructions.

➔ **Avoid electric shocks**

Before working on electrical systems, disconnect them from the power supply and secure them to prevent them being switched back on to avoid electrical injuries.

➔ **Take care when setting up the interface**

Overall safety is affected by the quality and reliability of the interface between the protective device and the machine. Take particular care when setting up the interface.

➔ **Stipulate a minimum user weight**

Make sure that only those meeting the minimum weight requirement actually step onto the sensors.

Sensor combinations: min. 35 kg (77 lb)

Individual sensor: min. 20 kg (44 lb)

➔ **Prohibit the use of walking aids**

Make sure that no one ever steps onto the sensors while using a walking aid. The sensors are not suitable for detecting walking aids.

➔ **Do not cover the sensor**

Extra coverings adversely affect the sensor function. Make sure that sensors are never covered by other elements, even partially.

➔ **In the event of a fault, put out of operation**

In the event of malfunctions and visible damage, put the protective device out of operation by decommissioning it.

To prevent irreparable damage to the **product**, you must observe the following safety instructions.

➔ **Carry the sensor in an upright position (on edge)**

Always carry an unpacked sensor in an upright position (on edge), ensuring that it is held by two hands at each end to prevent sagging.

➔ **Ensure cleanliness when laying out sensors**

Only place sensors on surfaces that are flat, dry and free of dirt.

➔ **Do not exert a tensile load on the cable**

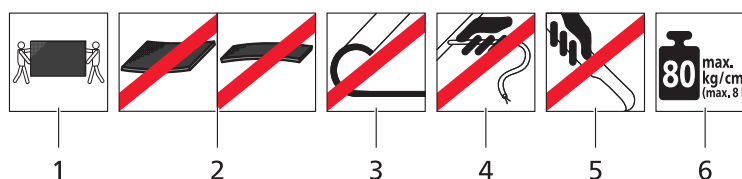
Never exceed the maximum tensile load (see *Technical data*), e.g. by pulling the cable.

➔ **Do not kink the cables**

Avoid extreme kinks in cables.

➔ **Follow the handling instructions**

Make sure you follow the handling instructions to avoid damaging the sensor.



- 1 Always carry the safety mat in an upright position (on edge).
- 2 Never allow the safety mat to sag or droop.
- 3 Avoid bending the safety mat.
- 4 Do not exert any tensile force on the cable.
- 5 Never use sharp objects on the safety mat.
- 6 The maximum load that can be exerted on the safety mat is 80 kg/cm² (1138 lb/in²) (up to 8 h).

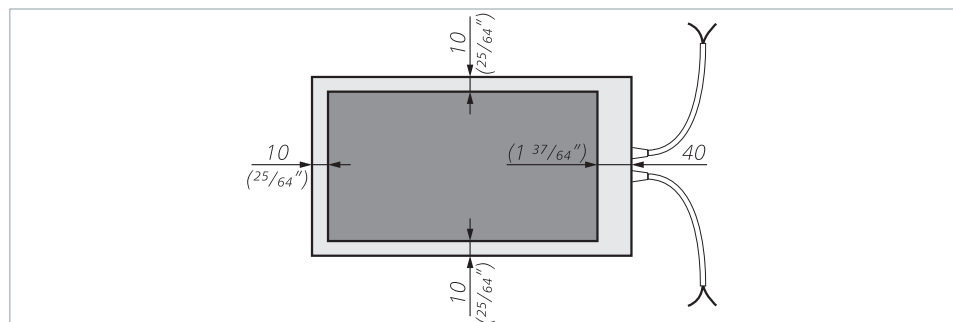
➔ **Do not drive industrial trucks onto sensor**

Make sure that no one ever drives industrial trucks onto the sensors. The sensors are not suitable for this.

Residual dangers

Non-sensitive areas

The edges of the sensor are not sensitive (40 mm (1 37/64") on the cable exit side, 10 mm (25/64") on the other sides). When someone steps onto a non-sensitive area, the sensor will not respond and so will not provide any protection.



- ➔ Install the sensors as close as possible to the source of danger.
- ➔ When installing more than one sensor, ensure that cable exit sides always remain clear.
- ➔ At the danger source: place a covering over parts (surfaces, cross struts, etc.) which could be used as a tread.
- ➔ When positioning the sensors, observe standard ISO 13855 "Positioning of safeguards with respect to the approach speeds of parts of the human body".

Unexpected risk of tripping

In the case of sensor combinations, there is a risk of tripping due to the potential accumulation of dirt in the joint if the abutting edges are not uniform. Over time, this dirt can also get under the sensors, causing them to lift up at these points. This creates a risk of tripping that is difficult to see and therefore comes as a nasty surprise.

- ➔ Make the abutting edges as uniform as possible.

Parts supplied

The parts supplied are listed on the delivery note.

- ➔ Upon receipt, immediately check the parts supplied to ensure they are complete and in good condition.

Storage

- ➔ Store sensors in a dry place inside the original packaging.
- ➔ Observe the storage temperature in accordance with the technical data.

Installation

- ➔ Before starting the installation process, refer to the technical data to check that the product is suitable for your application (see *Technical data*).

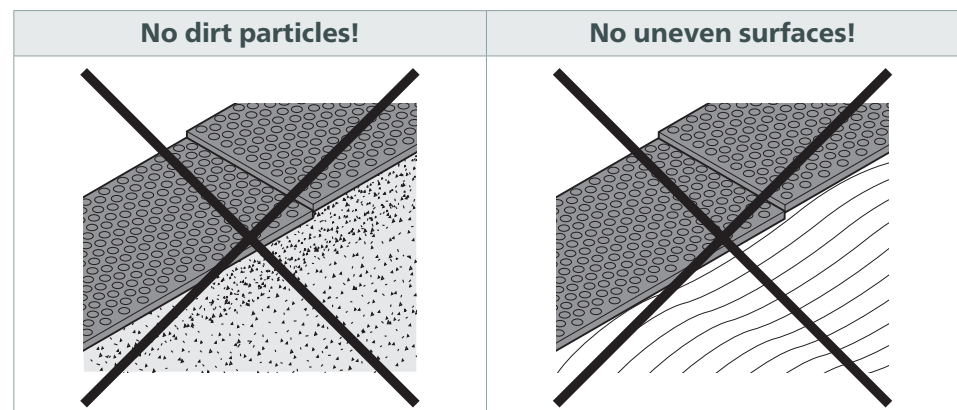
Overview Install sensors in the following order:

- Prepare for installation
- Lay out the sensors
- Install Z-profiles
- Position the sensors
- Install ramp edges
- Lay the cables

This chapter describes how to lay the cables along the sensor system – essentially all on the same level. The multi-functional cut-out on the cable exit of the sensor also allows the cable to be laid downwards.

Preparing for installation

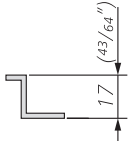
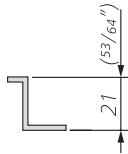
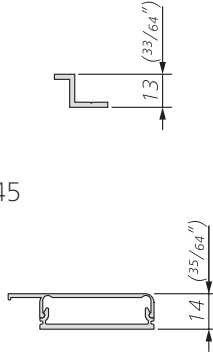
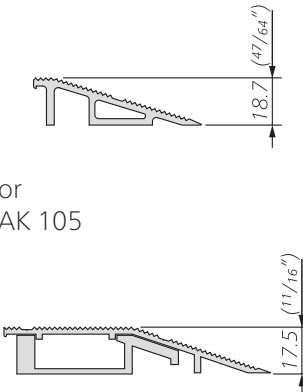
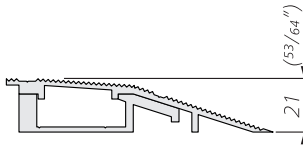
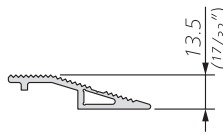
- ➔ Prepare the installation surface as follows:
 - Remove dirt particles from the installation surface.
 - Ensure that the installation surface is level (e.g. screed).
 - Ensure that there are no holes with a diameter of more than 20 mm ($25/32''$) and that there are no bumps.
 - Ensure that the installation surface is dry.



- ➔ Have the tools and aids you will need for installation to hand.
 - Drill and drill bit
 - Saw
 - Dowels (Ø 6 mm (15/64"))
 - Screws (Ø 4.5 mm (11/64"), min. length 40 mm (1 37/64"))
 - Multimeter

Unpacking the product The handling rules contained in chapter *Safety instructions* apply.

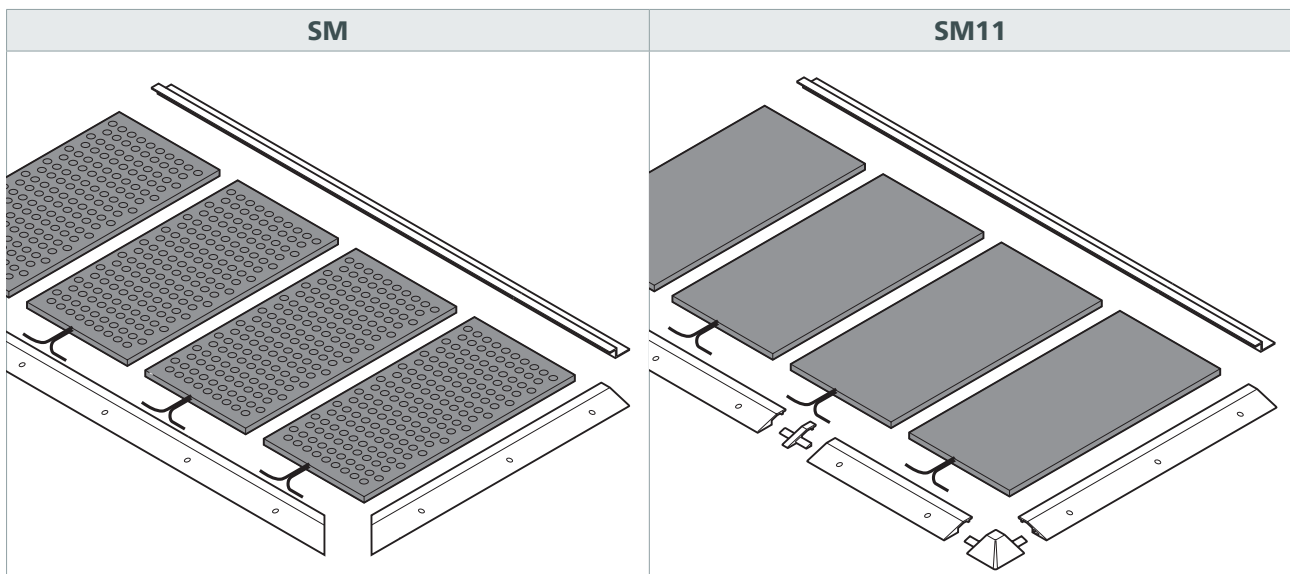
1. Lay out the sensors and installation accessories next to one another at the installation location.
2. Check that you have all the required parts – particularly the Z-profiles and ramp edges that are appropriate for the overall height – and that they are in good condition (see table).

	SM with GM 1	SM with GM 5	SM11
Overall height	15 mm (19/32")	19 mm (3/4")	11 mm (7/16")
Z-profiles	Z 	Z/1 	Z/2 or AP 45 
Ramp edges	AK 66 or AK 105 	AK 105/1 	AK 56 

Laying out the sensors

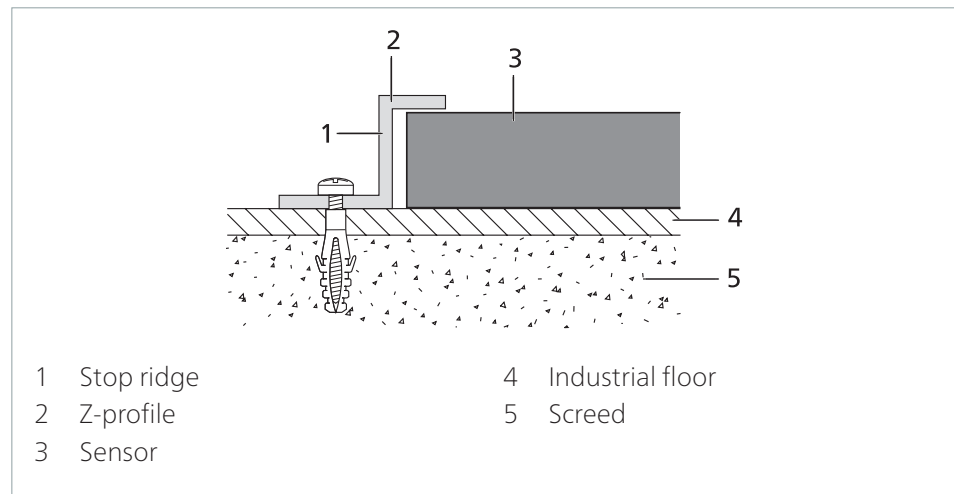
1. Roughly arrange the sensors (according to the sensor system drawing, where applicable). Position the sensors as follows:
 - With the textured side face up and the type plate face down
 - With the cable exits facing in the direction of the ramp edges
 - So that only sides without a cable exit are touching each other
 - So that no more than one sensor touches each side
2. Check the resistance between the two wire ends of the cable of each sensor with a multimeter. The measured resistance must have the following value:
 - Sensor /W: 8k2 ohms \pm 5%
 - Sensor /BK: > 1 Mohm
3. Arrange all fixing rails (Z-profiles, ramp edges) at a short distance from their final position around the sensors.

Is the individual sensor OK?



The illustrations show the typical arrangement with Z-profiles on the side where the danger source is located.

Installing Z-profiles



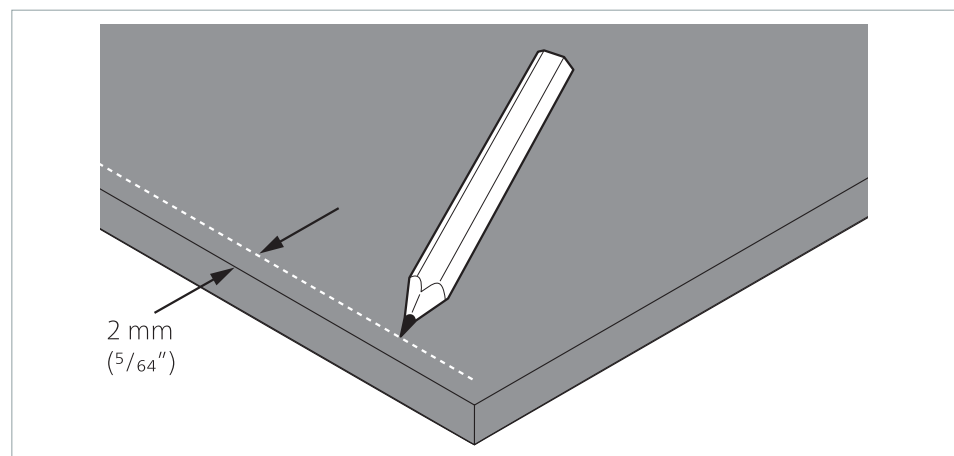
⚠ CAUTION Danger of tripping!

There is a risk of tripping on a side which is bordered by a Z-profile.

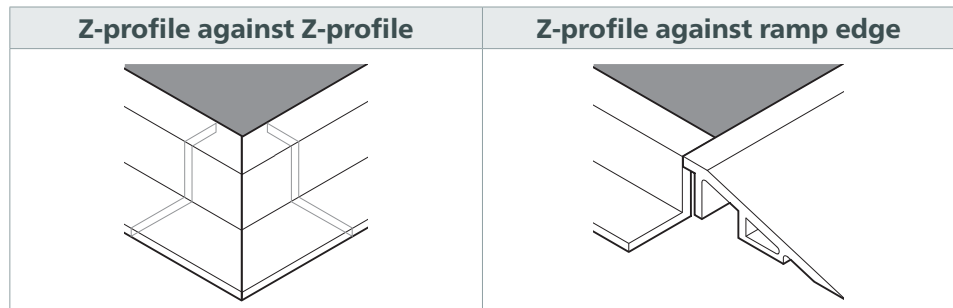
➔ Only install Z-profiles on sides directly adjacent to machine parts or walls.

1. On the installation surface, draw a line along which the Z-profiles are to be installed.
2. Arrange the sensors on the line.
3. Position the Z-profiles at the edges of the sensors. Proceed as follows:
 - First side: Push the stop ridges of the Z-profiles against the sensor edges.
 - Remaining sides: Make a mark 2 mm ($\frac{5}{64}$ ") from the sensor edge and use it to align the Z-profiles. Once the Z-profiles have been positioned, mark them on the installation surface.

The sensor edge must be covered by the upper ridge of the Z-profiles.



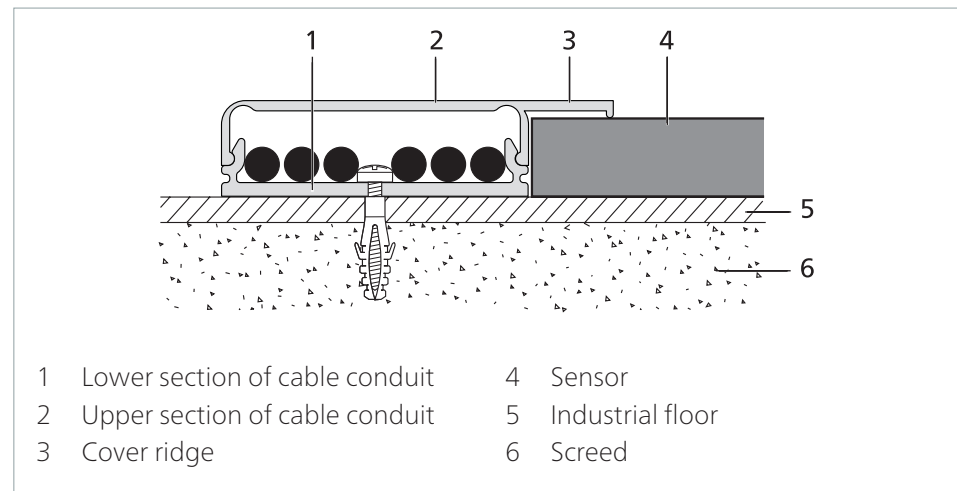
4. Mark the corners of the sensor system on the Z-profiles.
5. Saw the Z-profiles at the corner marks, cutting them to size accordingly.



6. Where necessary, drill holes in the stop ridges of the Z-profiles for cable exits.
7. Remove burrs on holes and interfaces.
8. Put the Z-profiles back in the installation position. Align the Z-profiles with the marks made on the installation surface.
9. Fix the Z-profiles to the installation surface with dowels ($\varnothing 6 \text{ mm}$ ($15/64''$)) and screws ($\varnothing 4.5 \text{ mm}$ ($11/64''$), min. length 40 mm ($1 \text{ }^{37/64}''$)) spaced at intervals of $50 \text{ to } 70 \text{ cm}$ (approx. $20'' \text{ to } 26''$).
10. Remove the drilling dust (e.g. using a vacuum cleaner). Otherwise, the drilling dust could get under the sensors and Z-profiles, leading to unevenness.
11. Position the sensors in relation to the installed Z-profiles. Proceed as follows:
 - First side: Push the sensors against the stop ridges of the Z-profiles.
 - Remaining sides: Use the marks (on the sensor surface) to align the sensors with the Z-profiles.
12. Place all sensors edge to edge. Observe the following:
 - Place the sensors with the cable exits facing in the same direction.
 - Ensure that the sensors are spaced no more than 1 mm ($3/64''$) apart.
 - Ensure that the sensors are not buckled or bulging.
 - Ensure that there are no changes in level at the sensor edges.

SM11 only: cable conduit instead of Z-profile

In the case of safety mat SM11, cable conduit AP 45 can be installed as an alternative instead of the Z/2-profile. The cable conduit must be installed in such a way that no one is able to step on it.



⚠ Warning Failure of protective function

When someone steps onto the cable conduit **and** the non-sensitive edge of the sensor, the sensor will not respond and so will not provide any protection.

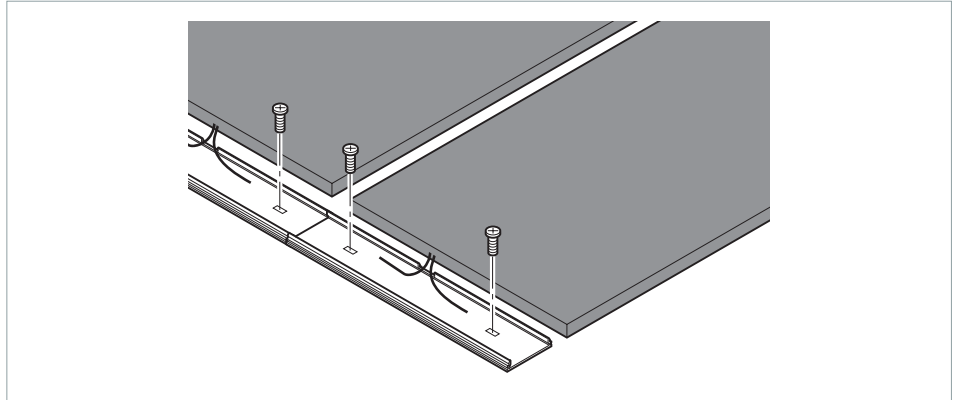
➔ Install the cable conduit with protection so that no one can step on it.

⚠ CAUTION Danger of tripping!

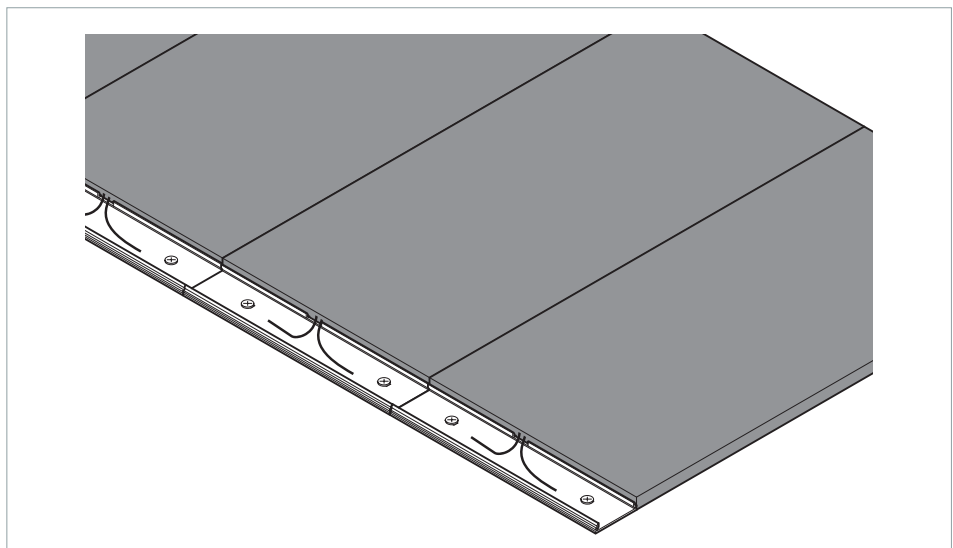
There is a risk of tripping on a side which is bordered by a cable conduit.

➔ Only install cable conduits on sides directly adjacent to machine parts or walls.

1. On the installation surface, draw a line along which the cable conduits are to be installed.
2. Arrange the lower sections (1) of the cable conduits along the line. Observe the following:
 - Arrange the cable conduits according to the various sensor widths.
 - The cut-outs must be oriented in the direction of the sensor.
3. Fix the lower sections to the installation surface by inserting dowels (\varnothing 6 mm ($15/64''$)) and screws (\varnothing 4.5 mm ($11/64''$), min. length 40 mm ($1\ 37/64''$)) through the oblong holes provided.



4. Remove the drilling dust (e.g. using a vacuum cleaner). Otherwise, the drilling dust could get under the sensors and ramp edges, leading to unevenness.
5. Push the sensors right up against the installed lower sections as far as they will go.
6. Place all sensors edge to edge. Observe the following:
 - Place the sensors with the cable exits facing in the same direction.
 - Ensure that the sensors are spaced no more than 1 mm ($\frac{3}{64}$ ") apart.
 - Ensure that the sensors are not buckled or bulging.
 - Ensure that there are no changes in level at the sensor edges.

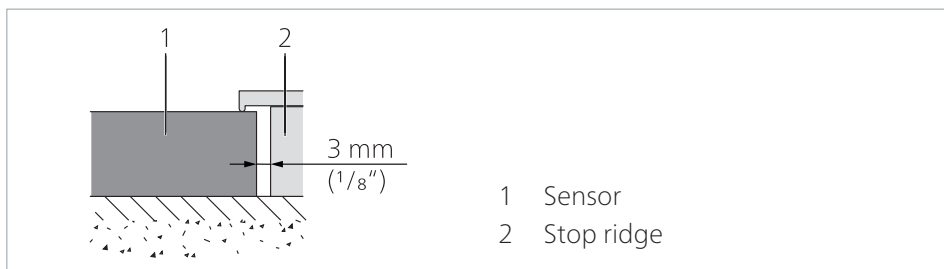


7. Lay the sensor cables (see *Laying the cables*).
8. Attach the upper sections of the cable conduits.

Installing ramp edges

Once the Z-profiles (or cable conduit AP 45) have been installed and the sensors are in their final positions, the next step is to install the ramp edges.

Ramp edges are installed at room temperature while leaving an air gap of 3 mm between the sensor edge and the stop ridge of the ramp edge. Otherwise, the sensors may bulge at high temperatures due to thermal expansion.

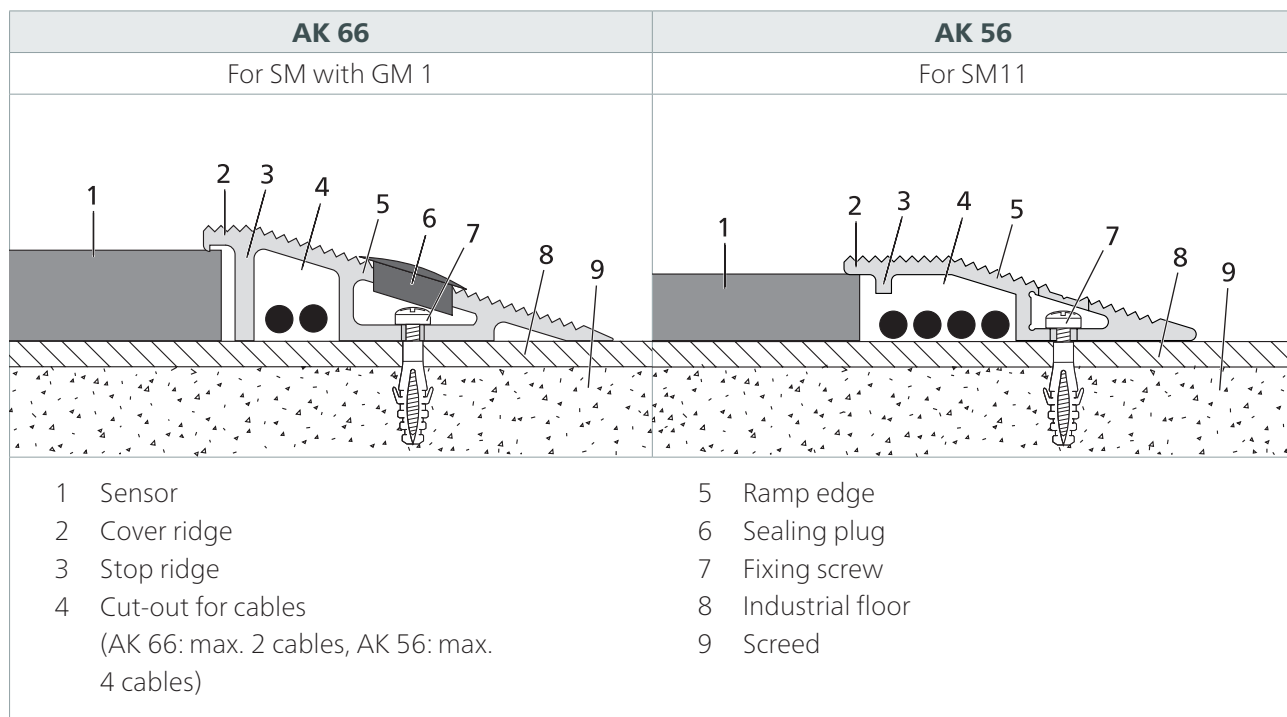


The installation procedure differs for the one-part and two-part ramp edges. Consequently, it is described in different chapters.

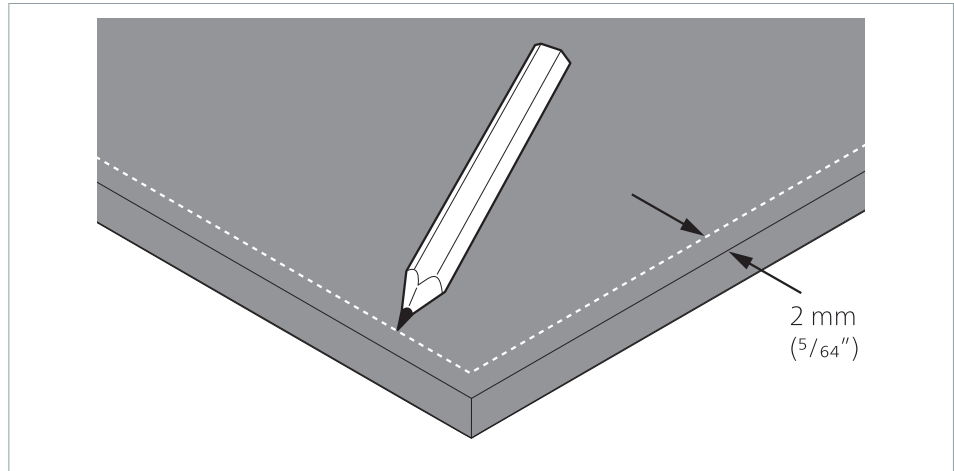
Ramp edge	One-part	Two-part
SM with GM 1	AK 66	AK 105
SM with GM 5	–	AK 105/1
SM11	AK 56	–

One-part ramp edges

This description concerns the installation process for the one-part ramp edges AK 66 and AK 56.

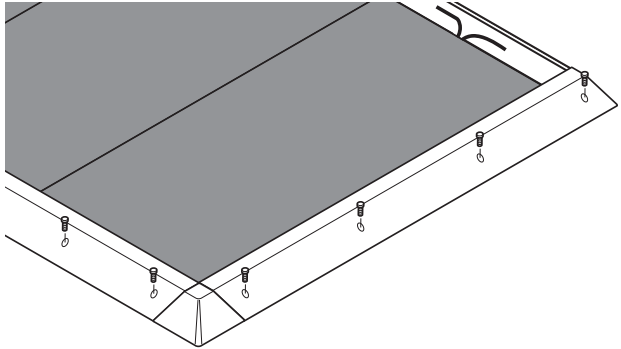


1. Use a pen (e.g. a ballpoint pen) to mark the sensors 2 mm ($\frac{5}{64}$ ") in from the outer edge of the sensor system.



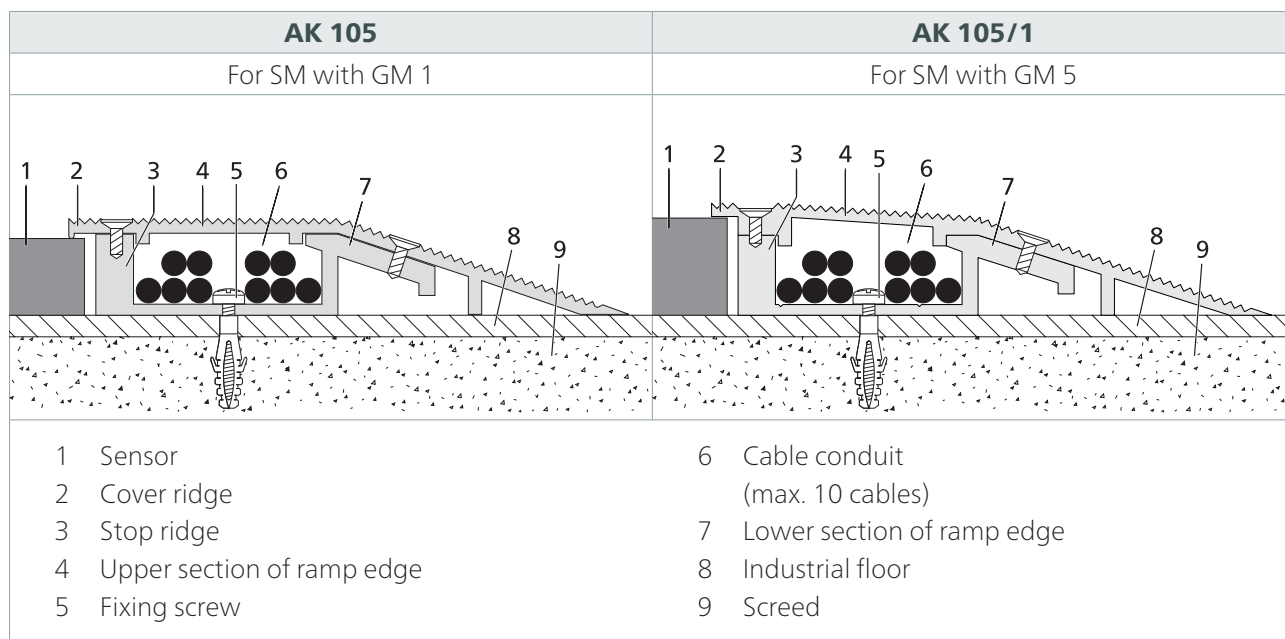
The ramp edges will be aligned with these marks so that an air gap of 3 mm ($\frac{1}{8}$ ") remains between the sensor edge and the stop ridge (3) of the ramp edges.

<p style="text-align: center;">AK 66</p> <p style="text-align: center;">For SM with GM 1</p>	<p style="text-align: center;">AK 56</p> <p style="text-align: center;">For SM11</p>
<ol style="list-style-type: none"> 2. Position the ramp edges (4) against the sensors. While doing so, align the edges of the cover ridges (2) with the marks on the sensors. 3. Mark the corners of the sensor system – and, where applicable, the cable exits – on the ramp edges. 4. Saw the ramp edges at the corner marks, cutting them to size accordingly. 	<ol style="list-style-type: none"> 2. Connect the ramp edges (4) using the connecting wedges and corner connectors. 3. Position the connected ramp edges against the sensors. While doing so, align the edges of the cover ridges (2) with the marks on the sensors.
<ol style="list-style-type: none"> 5. If necessary, mark cable exits on the stop ridges and cut them out as follows: <ul style="list-style-type: none"> - Saw right into the stop ridge at every marked point at intervals of approx. 10 mm ($\frac{25}{64}$"). - Break off the piece between the saw cuts with pliers. 	<ol style="list-style-type: none"> 4. Mark the holes in the ramp edges on the installation surface. 5. Remove the connected ramp edges from the sensors.

<p style="text-align: center;">AK 66</p> <p style="text-align: center;">For SM with GM 1</p>	<p style="text-align: center;">AK 56</p> <p style="text-align: center;">For SM11</p>
<ol style="list-style-type: none"> 6. Remove burrs on edges. 7. Reposition the ramp edges against the sensors while aligning the edges of the cover ridges with the marks on the sensors. 8. Drill holes in the ramp edges and installation surface at intervals of 50 to 70 cm (approx. 20" to 26") so that the ramp edges can be fixed to the installation surface with dowels (Ø 6 mm (15/64")) and screws (Ø 4.5 mm (11/64"), min. length 40 mm (1 37/64")). 9. Remove burrs on holes. 10. Remove the ramp edges. 11. Remove the drilling dust (e.g. using a vacuum cleaner). Otherwise, the drilling dust could get under the sensors and ramp edges, leading to unevenness. 12. Insert the dowels (Ø 6 mm (15/64")) into the holes in the installation surface. 13. Reposition the ramp edges against the sensors. While doing so, feed the cables through the cable openings on the stop ridges and into the cable cut-outs (if applicable). 14. Lay the sensor cables (see <i>Laying the cables</i>). 15. Align the edges of the cover ridges with the marks on the sensors. 16. Fix the ramp edges to the installation surface by fastening screws (Ø 4.5 mm (11/64"), min. length 40 mm (1 37/64")) through the holes. 17. Seal the holes with sealing plugs (optional). 	<ol style="list-style-type: none"> 6. Drill holes at the points marked on the installation surface (Ø 6 mm (15/64"), min. depth 40 mm (1 37/64")) and insert dowels into them. 7. Remove the drilling dust (e.g. using a vacuum cleaner). Otherwise, the drilling dust could get under the sensors and ramp edges, leading to unevenness. 8. Lay the sensor cables (see <i>Laying the cables</i>). 9. Reposition the connected ramp edges against the sensors while aligning the edges of the cover ridges with the marks on the sensors. 10. Fix the ramp edges to the installation surface by fastening screws (Ø 4.5 mm (11/64"), min. length 40 mm (1 37/64")) through the holes. 

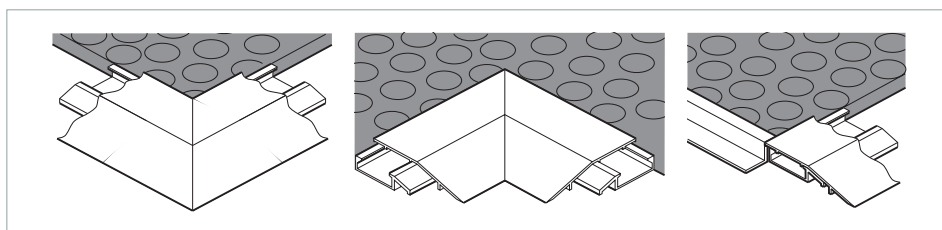
Two-part ramp edges

This description concerns the installation process for the two-part ramp edges AK 105 and AK 105/1.



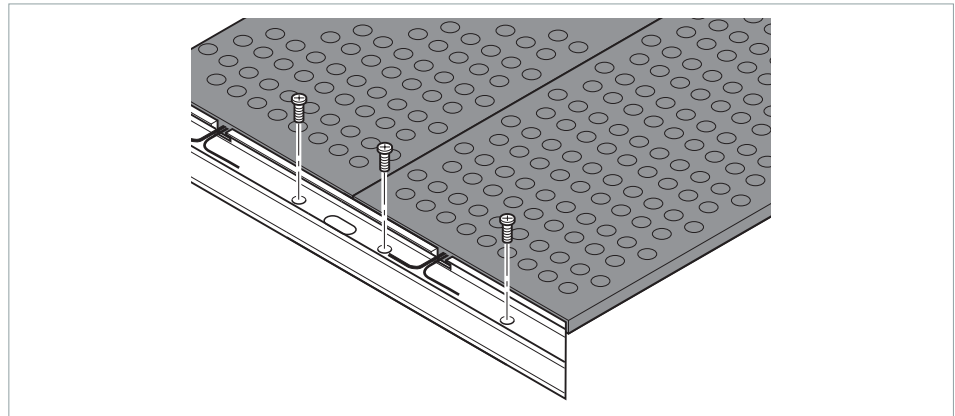
Given that both ramp edges are virtually identical in appearance, they are represented by ramp edge AK 105 in each of the images below.

1. Position the lower sections of the ramp edges in relation to the sensors, leaving a gap of 3 mm ($1/8''$) between them and the sensors.
2. Mark the corners of the sensor system – and, where applicable, the cable exits – on the lower sections.
3. Saw the lower sections at the corner marks, cutting them to size accordingly.



4. If necessary, mark cable exits on the stop ridges and cut them out as follows:
 - Saw right into the stop ridge at every marked point at intervals of approx. 10 mm ($25/64''$).
 - Break off the piece between the saw cuts with pliers.

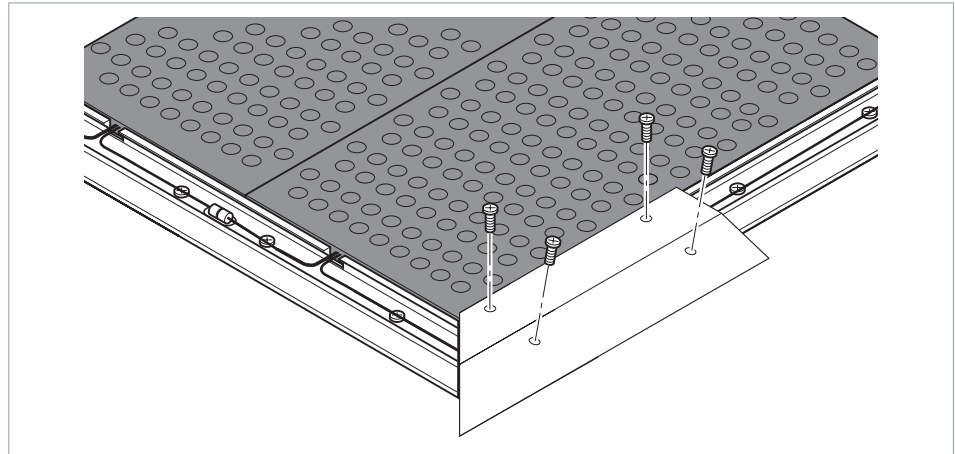
5. Remove burrs on edges.
6. Put the lower sections back in position with a gap of 3 mm ($1/8''$) in relation to the sensors.
7. Drill holes in the lower sections and installation surface at intervals of 50 to 70 cm (approx. 20" to 26") so that the lower sections can be fixed to the installation surface with dowels (\varnothing 6 mm ($15/64''$)) and screws (\varnothing 4.5 mm ($11/64''$), min. length 40 mm ($1\ 37/64''$)).
8. Remove burrs on holes.
9. Remove the lower sections.
10. Remove the drilling dust (e.g. using a vacuum cleaner). Otherwise, the drilling dust could get under the sensors and ramp edges, leading to unevenness.
11. Insert dowels (\varnothing 6 mm ($15/64''$)) into the holes in the installation surface.
12. Reposition the lower sections against the sensors. While doing so, feed the cables through the cable openings on the stop ridges and into the cable conduits.
13. Fix the lower sections to the installation surface by fastening screws



(\varnothing 4.5 mm ($11/64''$), min. length 40 mm ($1\ 37/64''$)) through the holes.

14. Place the upper sections of the ramp edges onto the installed lower sections.
15. Mark the corners of the sensor system on the upper sections.
16. Saw the upper sections at the corner marks, cutting them to size accordingly (see step 3).
17. Remove burrs on edges.

18. Lay the sensor cables (see *Laying the cables*).
19. Place the upper sections on the lower sections again.
20. Use self-tapping screws (M6) to secure the upper sections on the lower sections.



Laying the cables

The type of cabling depends on the operation principle of your system.

1. Wire the sensors in accordance with the wiring diagram (optional) or in accordance with the wiring technologies described below. Observe the following:
 - Connect the wire ends of the sensors in accordance with the colour coding.
 - Insulate soldering points and seal with heat-shrinkable sleeves.
2. Lay the cables to the control unit.
The control unit will be wired later.

Sensor system wired correctly?

3. Use a multimeter to check the electrical resistance between the wire ends when sensors are activated and not activated.

The measured resistance must have the following values:

- Activated sensor system: < 150 ohms
- Sensor system not activated:
 - Without monitoring resistor: > 1 megaohms
 - With monitoring resistor: dependent on the connected resistor

4. Wire together the sensor system and the control unit (see the control unit operating instructions).

NOTE

Cables can become damaged if laid incorrectly.

- ➔ Make sure that cables are neither bent nor crushed.
- ➔ Make sure that cables are laid free of tension.

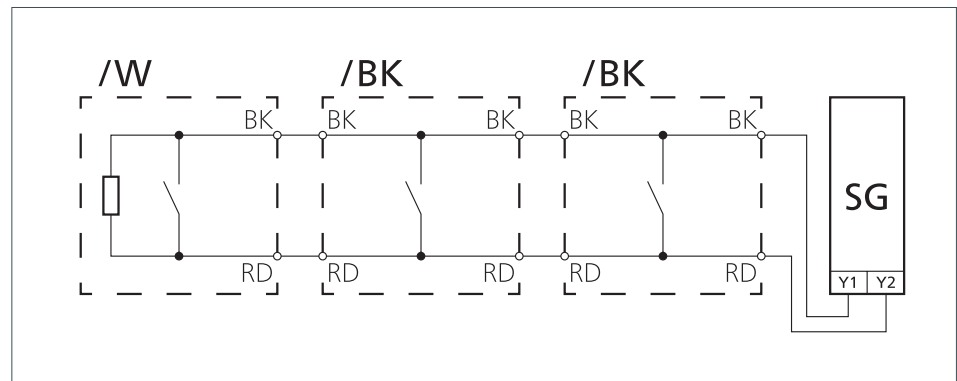
Key to the following wiring diagrams:

- /W Sensor with integrated monitoring resistor
- /BK Sensor with cables on both sides for use as a through sensor or for connection of an external monitoring resistor
- SG Control unit
- R Resistor for functional monitoring of the system

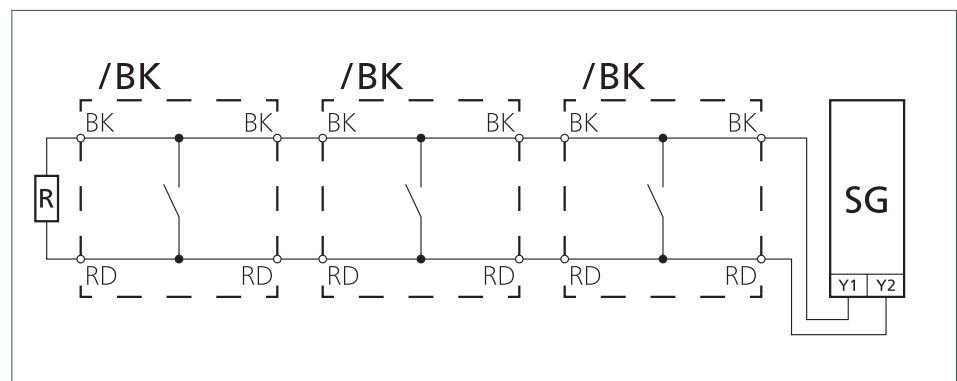
Colour coding

- BK Black
- BN Brown
- BU Blue
- RD Red
- WH White

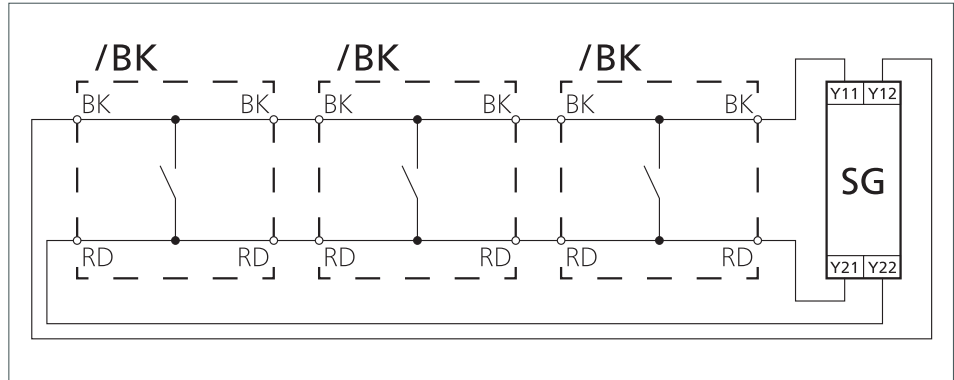
**Sensors
/W and /BK:
2-wire technology**



**Sensor /BK:
2-wire technology**



**Sensor /BK:
4-wire technology**

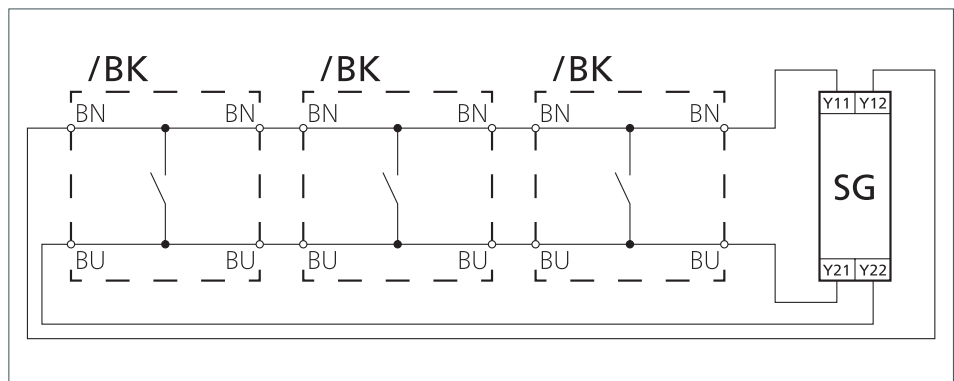


For sensors with **M8 plug-in connections**:

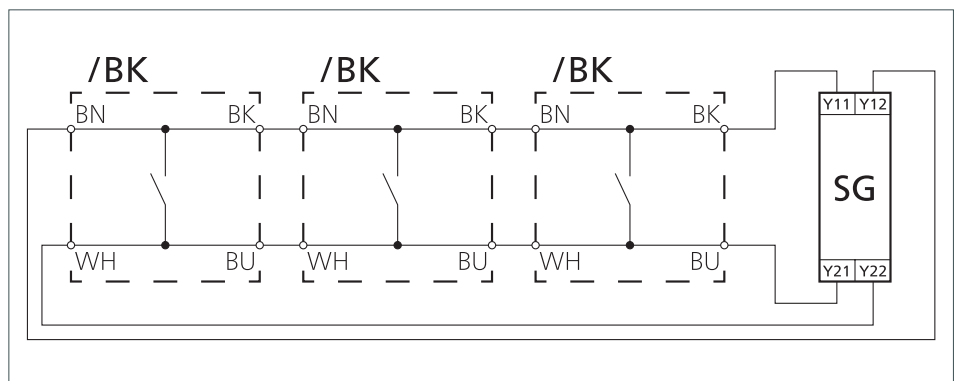


Cable	PIN	Lead colour
2x 2-wire	1	BN Brown
	2	-
	3	BU Blue
	4	-
1x 4-wire	1	BN Brown
	2	WH White
	3	BU Blue
	4	BK Black

**Sensor /BK:
4-wire technology
with 2x 2-wire cables**



**Sensor /BK:
4-wire technology
with 1x 4-wire cable**



Commissioning

The sensors can only be put into operation in conjunction with a suitable control unit.

Commissioning is described in the control unit operating instructions.

Decommissioning

The sensors are taken out of operation together with the connected control unit.

Decommissioning is described in the control unit operating instructions.

Recommissioning

The sensors can only be put back into operation in conjunction with a suitable control unit.

Recommissioning is described in the control unit operating instructions.

Maintenance and cleaning

Maintenance

The sensors are virtually maintenance-free.

The control unit also monitors the sensor at the same time.

WARNING Failure of protective function

If the sensor is damaged, this could cause the protective function to fail.

- ➔ Immediately put the protective device out of operation as soon as damage is detected which could impair safe operation.

Depending on the operational demands, the sensors must be inspected at regular intervals (at least monthly). The operating company must define the testing interval in accordance with the applicable national regulations.

- ➔ Check the protective function by activating or applying the relevant test sample.
- ➔ Visually inspect the sensors for damage.
- ➔ Visually inspect the sensors for good fixing.

Cleaning

- ➔ If the sensors are dirty, clean them with a mild cleaning product.
- ➔ After cleaning, remove any remaining fluid.

Troubleshooting and remedies

Fault indication	Possible cause	Remedy
Resistance values do not match specifications	Cables of the individual sensors are incorrectly connected	➔ Check connections between the sensors
	Cables are bent or damaged	➔ Replace affected sensors
	Sensors are not lying flat on the floor	➔ Check sensor installation surface
		➔ Eliminate unevenness and remove dirt particles
	Sensor is faulty	➔ Replace sensor

You may also find chapter *Troubleshooting and remedies* in the control unit operating instructions helpful.

Fault still cannot be resolved?

- ➔ Contact Mayser-Support: Tel. +49 731 2061-0.
- ➔ In the event of enquiries, have the information from the type plate to hand.

Type plate A type plate is attached to the cable exit on the underside of the sensor for identification of the type.

Replacement parts

⚠ CAUTION Overall safety at risk

Failure to use original Mayser parts when replacing parts of the product can impair the function of the protective device.

- ➔ Only use original Mayser parts.

Removal

The sensors can be removed following decommissioning.

1. Take the protective device out of operation (see chapter *Decommissioning*).
2. Remove the sensors by following the installation steps in reverse order.

Disposal

The products included in the scope of supply contain the following materials:

- Sensor**
- Plastics
 - Fibreglass (inside the sensor, depending on version)
 - Copper (inside the sensor, cables)
 - Aluminium (inside the sensor, depending on version)

- Installation accessories**
- Steel (screws)
 - Aluminium (ramp edges, Z-profiles, cable conduits)
 - Plastics (connecting elements, sealing plugs)

- Packaging**
- Wood, cardboard, plastics

- ➔ When disposing of the product:
- Ensure compliance with the relevant national disposal regulations and statutory requirements.
 - Ensure that any disposal company you use receives a list of the aforementioned materials along with the product.
 - Ensure that the materials are recycled or disposed of in an environmentally friendly way.

Technical data

Safety mat	SM with GM 1	SM with GM 5	SM11
IEC 60529: sensor degree of protection	IP65		
Actuation forces for signal triggering	In accordance with ISO 13856-1		
Detection of persons Individual sensor Sensor combination	> 20 kg (44 lb) > 35 kg (77 lb)	> 35 kg (77 lb) > 35 kg (77 lb)	> 20 kg (44 lb) > 35 kg (77 lb)
Detection of walking aids	No		
Driving on with industrial trucks	Not suitable		
Behaviour in the event of a fault E.g. with SG-EFS 104/2W	ISO 13849-1:2015 category 3 PL d		
Operating temperature Individual sensor Sensor combination	-5 to +55 °C (+23 to +131 °F) +5 to +55 °C (+41 to +131 °F)	-5 to +55 °C (+23 to +131 °F) +5 to +55 °C (+41 to +131 °F)	-20 to +55 °C (-4 to +131 °F) +5 to +55 °C (+41 to +131 °F)
Storage temperature	-20 to +55 °C (-4 to +131 °F)		
Max. static load (up to 8 h)	800 N/cm ² (1160 lbf/in ²)	1200 N/cm ² (1740 lbf/in ²)	800 N/cm ² (1160 lbf/in ²)
Tensile load, cable (max.)	100 N (22 lbf)		
Sensor Number of /BK-type sensors	24 V DC / max. 100 mA Max. 10 in series		
2006/42/EC and UK S.I. 2008 No. 1597: Emission sound pressure level	< 70 dB(A)		
Sensor weight	17.3 kg/m ² (3.54 lb/ft ²)	23.9 kg/m ² (4.9 lb/ft ²)	12.0 kg/m ² (2.45 lb/ft ²)

This table is an extract of the full table contained in the product information (see *Technical data* in the product information).

Report form

When performing maintenance, repair and servicing work it is beneficial to know which control unit is being used and which sensors are connected to it. Once the sensor has been installed, however, it is not possible to see the type plate attached to it. The evaluating control unit is one of many in the switch cabinet, but which one?

The report form in accordance with ISO 13856 is a great help here. The electrically skilled person performing the installation makes a note of the control unit and sensor types as stated on the type plate. Ideally, the report form should be filled in after the sensors have been laid out and checked.

➔ Fill in a separate report form for each protective device.

Protective device for		
Danger zone:		
Protective device consists of		
Control unit	Model:	Part No.:
Sensor 01	Typ:	Teile-Nr.:
Sensor 02	Typ:	Teile-Nr.:
Sensor 03	Typ:	Teile-Nr.:
Sensor 04	Typ:	Teile-Nr.:
Sensor 05	Typ:	Teile-Nr.:
Sensor 06	Typ:	Teile-Nr.:
Sensor 07	Typ:	Teile-Nr.:
Sensor 08	Typ:	Teile-Nr.:
Sensor 09	Typ:	Teile-Nr.:
Sensor 10	Typ:	Teile-Nr.:
Installed on:	(Date)	
Installed by:	(Name)	