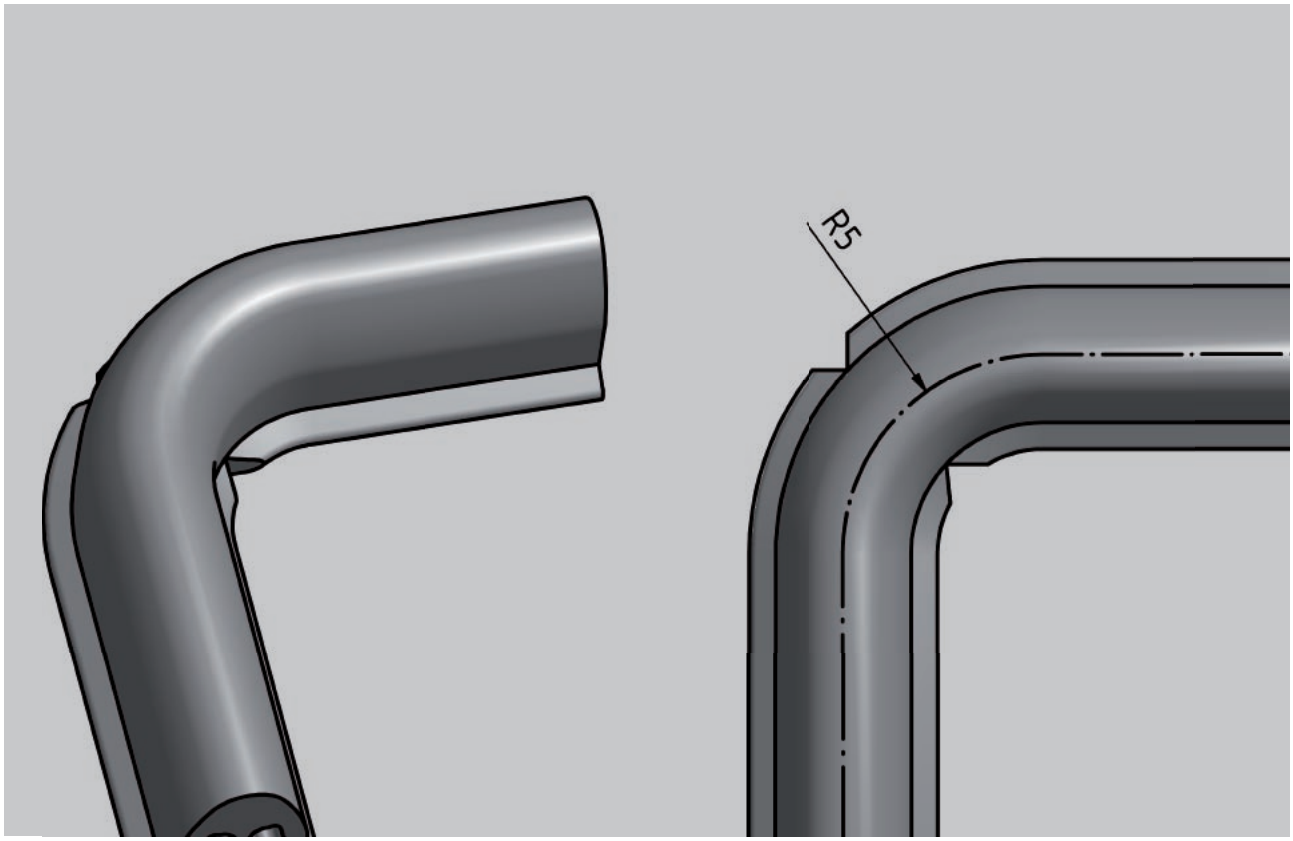
MAYSER®
Polymer Electric

Product Information



Miniature Safety Edge EKS 038

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Content

Definitions

Miniature Safety Edges are sensors for tactile protective devices.
A suitable Control Unit is required for evaluation of the signals.

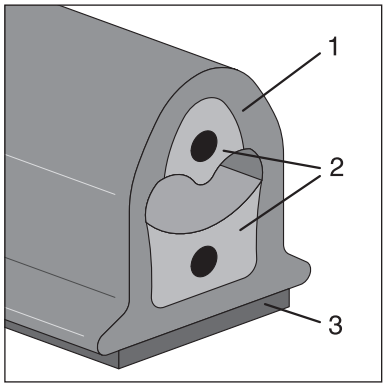
Intended use

A Miniature Safety Edge detects a person or part of the body when pressure is applied to the actuation area. It is part of a linear tripping device. The task of the protective device is to avoid potential hazardous situations for a person within a danger zone such as shearing or pinching edges. Typical application areas are automatic windows, covers on machines, medical diagnostic equipment and height-adjustable furniture.
Safe operation of a Miniature Safety Edge depends entirely on
- the surface condition of the mounting surface,
- the correct selection of the size and resistance,
- correct installation as well as
- selection of the suitable Control Unit according to ISO 13849-1.

Limits

A maximum of 5 Miniature Safety Edges may be connected to one Control Unit.

Design



The Miniature Safety Edge EKS 038 consists of
(1) insulating TPE-covering,
(2) conductive contact layers with embedded wires and
(3) self-adhesive acrylic foam on the base of profile.

Subject to technical modifications.

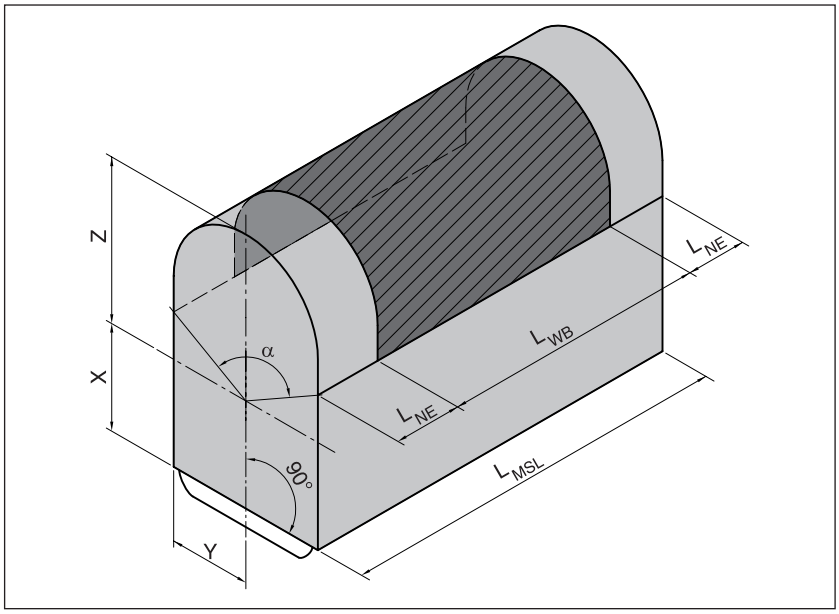
Effective actuation area

The parameters X, Y, Z, L_{NE} and angle α describe the effective actuation area.
For the effective actuation area, the following applies:

$$L_{WB} = L_{MSL} - 2\times L_{NE}$$

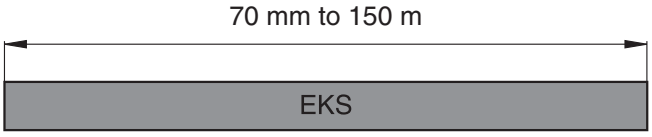
Parameters:

- L_{WB} = effective actuation length
- L_{MSL} = overall length of the Miniature Safety Edge
- L_{NE} = non-sensitive length at the end
- α = effective actuation angle



MSL	EKS 038			
α	60°			
L_{NE}	10 mm			
X	2 mm			
Y	2,55 mm			
Z	2,9 mm			

Available lengths

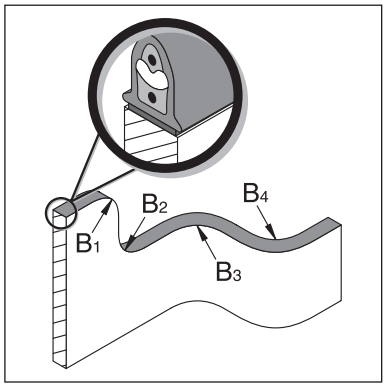


Subject to technical modifications.

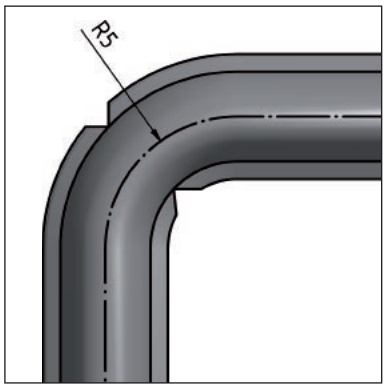
Bend angles and bend radii

Bend angles
Bend angles are not possible on the Miniature Safety Edge.

Bend radius



Bend radius min.	EKS 038
B_1	500 mm
B_2	300 mm
B_3	15 mm
B_4	15 mm



Small 90° bends can also be implemented: Small bend radii up to 5 mm are possible for B3 and B4 with two opposite cuts in the protruding parts of the profile base.

Installation position

The installation position can be selected as required.

CAUTION
No pressure must be exerted on the Miniature Safety Edge in non-operative mode.

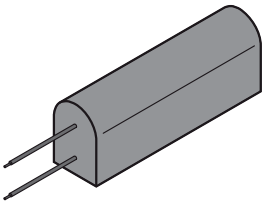
Subject to technical modifications.

Connection

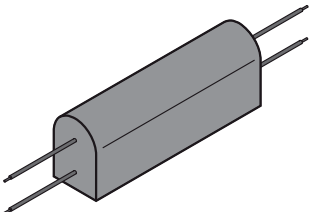
Cable exits

Tip
With more than one sensor connected one behind the other, we recommend the BK versions.

Axial exit



Version: EKS 038/W



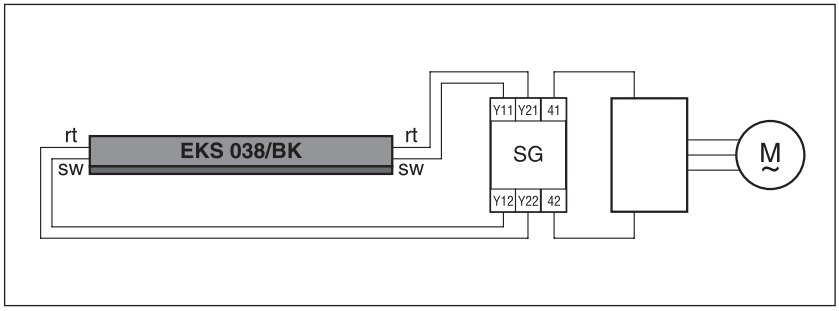
Version: EKS 038/BK

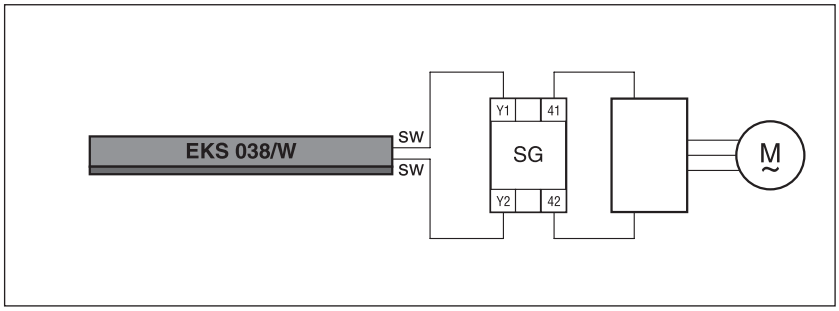
Cable connection

CAUTION
The cables must be laid free of tension.

- Cable: Ø 1.4 mm per strand, 2× 0.35 mm²
  Wire colours type W: black, black
  Wire colours type BK: red, black
- Cable length: 2.0 m
  Option: to max. 200 m
- Cable ends: strands stripped
  Option: cable ends available with plug and coupling

Connection example





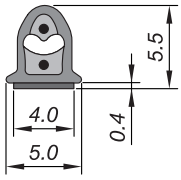
Colour coding:
rt red
sw black

Key:
SG Control Unit

Subject to technical modifications.

Profiles

Dimensions and operating paths

EKS 038	
	
Actuation force: < 50 N Actuation distance: < 1.2 mm	

Physical resistance

Miniature Safety Edges EKS	TPE
Degree of protection (IEC 60529)	IP65
Hardness as per Shore A	50 ±5
Behaviour in fire (DIN 75200)	approx. 40 mm/min

Subject to technical modifications.

Chemical resistance

The Miniature Safety Edge is resistant against normal chemical influences such as diluted acids and alkalis as well as alcohol over an exposure period of 24 hrs.

The values in the table are results of tests carried out in our laboratory to the best of our knowledge and belief. The suitability of our products for your special area of application must always be verified with your own practical tests.

Explanation of symbols:
+ = resistant
± = resistant to a certain extent
- = not resistant

Miniature Safety Edge EKS	TPE
Acetone	-
Formic acid	-
Armor All	+
Car shampoo	+
Buraton	+
Butanol	-
Sodium hypochlorite	-
Disinfectant	+
Acetic acid 10 %	-
Ethanol	+
Ethyl acetate	-
Ethylene glycol	+
Window cleaner	
Alcohol-based	+
Alkaline cleaner	+
Neutral cleaner	+
Greases	±
Volatile softeners	-
Anti-frost agent	+
Skin cream	+
Icidine	+
Incidine	+
Incidine plus	+
Plastic cleaner	+
Lyso FD 10	+
Metal working oil	-
Microbac	+
Microbac forte	+
Minutil	+
Saline solution 5 %	+
Spirit (ethyl alcohol)	+
Terralin	+
UV-resistance	+
Centring oil	-

Note:
Tests are carried out at room temperature (+23 °C).

Subject to technical modifications.

Attachment

Using acrylic-foam adhesive tape

Requirements

For ideal bonding, the bonding surface must be

+ clean
+ dry
+ smooth.

Avoid

- very uneven
- sharp-edged bonding surfaces.

Note:
Check with adhesion tests before serial use whether bonding is possible on the selected installation surface.

Bonding with ... on ...	Primer 4298	Primer 4297	Multi-primer
ABS	+	-	-
Aluminium: natural	+	-	-
Aluminium: anodised	+	-	+
Aluminium: powder-coated	+	-	-
Glass	-	-	-
PA66	-	-	+
PE, HDPE	-	-	-
PMMA	-	-	-
PP, SAN	+	-	-
PVC	-	+	-
Steel, stainless steel	+	-	+

Explanation of symbols:
+ = OK
- = not OK

Note:
Tests are carried out at room temperature(+23 °C).

Preparation

Only applies to bend radii < 15 mm.

1. Measure bend locations and mark on both sides.
2. Carefully cut in at markings on both sides. Only the protruding part of the base of the profile may be cut!

CAUTION
Damage to the rest of the TPE-covering renders the Miniature Safety Edge unusable. Dispose of faulty Miniature Safety Edge.

Bonding

3. Clean and degrease bonding surface (e.g. with isopropanol).
4. Apply primer to complete bonding surface with brush.
5. Air dry primer for approx.10 minutes.
6. Remove 10 to 15 cm of liner from acrylic foam.
7. Place sensor on bonding surface and press on firmly.
8. Repeat items 6. and 7. until EKS is completely bonded.
9. Maximum adhesion is achieved after 24 hrs.

Tip:
For long straight sections, an extended try square may be useful for alignment.

Subject to technical modifications.

Installation accessories

Part no.	Designation	PE
7500462	Primer 4298 Typ 3M, 125 ml, in can	1 pce.
7501995	Primer 4297 Typ 3M, 125 ml, in can	1 pce.
1003360	Multiprimer, 250 ml 24-P	1 pce.

Subject to technical modifications.

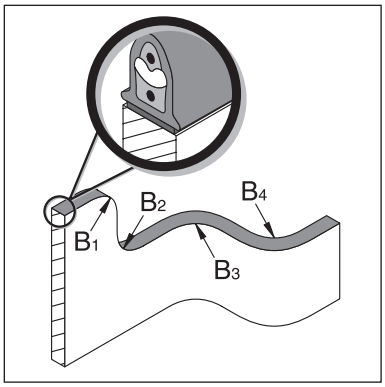
Technical data EKS 038

Miniature Safety Edge EKS 038 cut-to-size
with resistor (Type W) or
without resistor (Type BK).

1:1

Switching characteristics at v_{test} = 50 mm/s		
Switching operations	> 1× 10^5	
Actuating force	**+23 °C**	**-25 °C**
Test piece (rod) Ø 4 mm	< 15 N	< 25 N
Test piece (rod) Ø 200 mm	< 35 N	< 50 N
Actuating distance		
Test piece (cylinder) Ø 80 mm	< 1.2 mm	
Actuation angle		
Test piece (cylinder) Ø 80 mm	< 60°	
Safety classifications		
B_{10d} as per ISO 13849-1	2× 10^6	
Mechanical operating conditions		
Sensor length (min./max.)	70 mm / 150 m	
Cable length (min./max.)	2 / 200 m	
Attachment	Using acrylic-foam adhesive	
Peel force	15 N/cm	
Bend radii, minimum		
B_1 / B_2 / B_3 / B_4	500 / 300 / 15 / 15 mm	
IEC 60529: Degree of protection	IP65	
Operating temperature	-25 °C to +80 °C	
short-term	-40 °C to +100 °C	
Electrical operating conditions		
Terminal resistance	1k2 ± 5%	
Output	max. 250 mW	
Contact transition resistance	< 400 Ohm (je Signalgeber)	
More than one sensor	5 in series max.	
Electrical rating		
Voltage	max. 24 V DC	
Current (min./max.)	1 mA / 10 mA	
Connection cable	Ø 1.4 mm per strand 2× 0.35 mm^2	
Control Unit (recommendation)		
ISO 13849-1 Kat. 3	SG-EFS 104/2W (Typ W)	
ISO 13849-1 Kat. 3	SG-EFS 104/4L (Typ BK)	
Chemical resistance		
The sensor is resistant against normal chemical influences over a period of exposure of 24 hrs (see p. 8).		
Dimensional tolerances		
Length as per	ISO 3302 L2	
Profile section as per	ISO 3302 E2	

Bend radii:



Subject to technical modifications.

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Request for quotation

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From:

Company

Department

Name, first name

P. O. Box | Post code | City

Street | Post code | City

Phone | Fax | E-mail

⇩ Please keep free! ⇩
For internal use only

Area of application

(e.g.. window construction, medical technology, machine closing edges, public transport, ...)

Mechanical conditions

EKS _____

❍ Type BK
❍ Type W with resistor _____ kΩ

length: _____ m

Packing unit: _____ units

attachment per:

❍ Bonding
❍ T-foot mount

❑ Angle piece construction: ____ × per EKS

❑ Cable length: ____ m (standard: 2.0 m)

❑ Number of monitoring circuits: ____

❑ SG- _____

Pinching and shearing edges to be protected:

(Diagram incl. mounting possibility and cable routing)