

SENSITIVE EDGES

The sensitive edge is a safety component to avoid crashing or cutting risks by sliding doors, automatic moving protections, electrical gates etc. The edges feature a PVC or EPDM coating, inside is a sensor (2 conductive blades, separated by a

non-conductive part). When the edge is pressed, the blades are in contact and close the circuit. The state change of the internal sensor (NO to NC) is processed by the control unit that sends a machine stop signal, eliminating the danger situation.

TYPES OF EDGES

- Type B0
- Type B1N
- Type B2
- Type B2N

Standard solution: length upon customer's request with pre-assembled sensor and aluminium support

- Conductive edge type B1NC 8,2kΩ
- Conductive edge type B1NC-AG B1NC-AGB 8,2kΩ
- Conductive edge type B2C 8,2kΩ
- Conductive edge type B2C-AG B2C-AGB 8,2kΩ
- Conductive edge type B0C B0C-AG 8,2kΩ

Standard solution (upon request) or "do it yourself" (cutting/assembly of accessories by customer/installer)

Edge type "B0"

Profile of black EPDM. The edges feature a sensor on the upper part of the profile to get maximum sensitivity.

Particularly suitable for safety catches or as an alternative to emergency wire micro switching. Supplied with both sides adhesive tape for wall fixing.

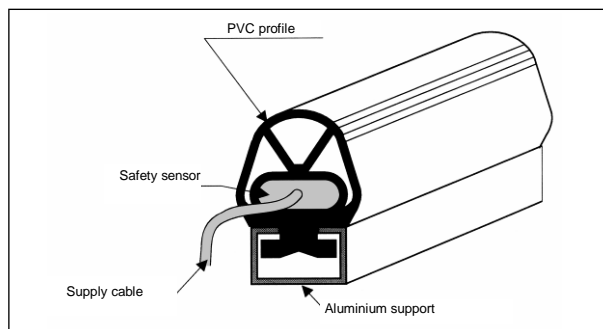
The edges of the profile are sealed with polyurethane resin to perfect watertight.

The outlet cable can be only on head side.

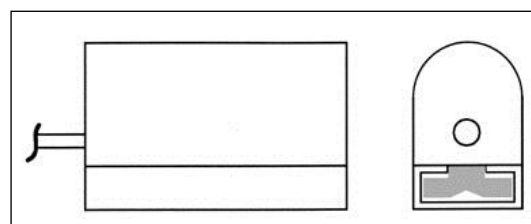
For the B1N-B2-B2N the standard outlet of the cable is at the end of the profile.(Head outlet)
Upon request, the cable outlet can be on the bottom, right or left side (see drawing).

Edge type "B1N" - "B2" - "B2N"

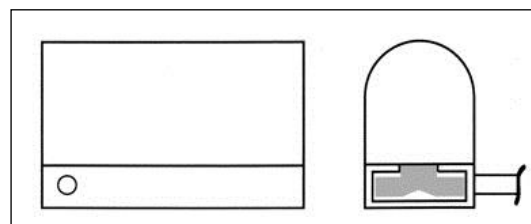
Profile of black PVC for B1N and B2N; material EPDM for type B2. The edges feature a sensor on the bottom of the profile, to get a sensibility with front side operations, as well as with a max. angle of $\pm 45^\circ$. The ends of the profile are closed using polyurethane resin (better tightness). Particularly suitable for bent edges.



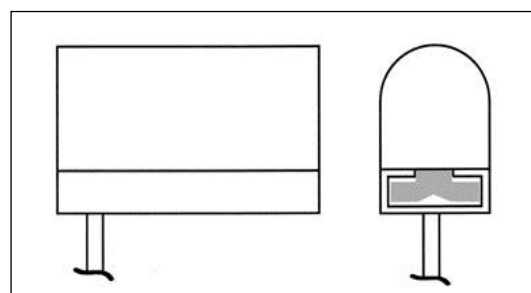
The supply cable is a 4 poles cable 4*0,35mm² FROR 300/500 standard length 3 meters. Different lengths can be supplied upon request.



Head outlet (standard)

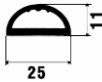
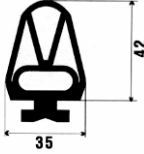
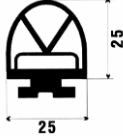
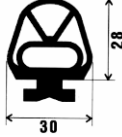


Side outlet right(see picture) or left



Bottom outlet

TECHNICAL FEATURES

Sensor	Type B0	Type B1N	Type B2	Type B2N
				
Operating distance	3 mm	5 mm	5 mm	5 mm
Overrun operation	2 mm	20 mm	8 mm	10 mm
Operating thrust	30N	30N	30N	10N
Material	EPDM	PVC	EPDM	PVC
Length *	max15 m upon request	max 6 m upon request		
Fastening material	Double-sided adhesive tape	Alu profile		
Chemical resistance	Acids, atmospheric agents	Oils, hydrocarbons	Acids, atmospheric agents	Oil, hydrocarbons
Degree of protection	IP54			
Operating temperature	-5°C to +50°C			
Storage Temperature	-5°C to +50°C			
Power cord**	4*0.35mm			
Output contact	NO			
Max contact voltage	30 V			
Max contact current	30 mA			
B _{10D}	190000			
Part of human body which can be detected***	Hand, limb, body			
Reference Standard	EN ISO 13856-2 : EN ISO 13849-1			
Safety Parameters: Sensor + Control Unit	Sensor + GP02/E		Sensor + GP02R.T	
Category	3		3	
PL	d		d	
PFH _d [1/h]	8,58*10 ⁻⁸		8,58*10 ⁻⁸	
No. of operations/year	14000		18000	
Usage categories	DC13 – 1,5A , AC1– 1,5A		AC15 – 1,2 A	
T _{10D} [years] control unit *	9,25		9,7	
Max controllable length	12 m		20 m	
Others European Directives				
2012/19/UE	RAEE			
2011/65/UE	ROHS			
Regulation (EC) n°1907/2006	REACH			

*The max length for the edge assembled is 6000mm

**For length more than m 20 use wires with section of mm² 1

***Not suitable to detect fingers.

How to order a sensitive edge type B0-B1N-B2-B2N:

Example: ordering a sensitive edge, length 1 m.

For a correct order, always specify:

- type of sensitive edge... (ex. **B1N**)
- length (mm) of the sensor (ex. 1000 mm)
- length of the cable and outlet (ex. CS standard 3 m with head outlet.

Specify if different for type B1N-B2-B2N.only.
-the fastening profile (ex."SAC25" or "SAI25" or "SAL25" see drawing)

The complete description for the order is:
Sensitive edge type B1N L=1000 mm-CS-SAC

The conductive edges 8,2k Ω

Featuring a thermoplastic profile TPV with 2 co-extruded parts of conductive material (sensor) and 2 copper wires, to stabilize the resistive value of the contact on the length of the edge.

Particularly suitable for external use, with any environment and temperature (-15°C +55°C).

It can be supplied as a **"do it yourself" solution**, with a series of accessories allowing to the customer/installer to implement the edge directly on the machine.

Upon request, the edge can be tailor-cut and supplied complete with all accessories.

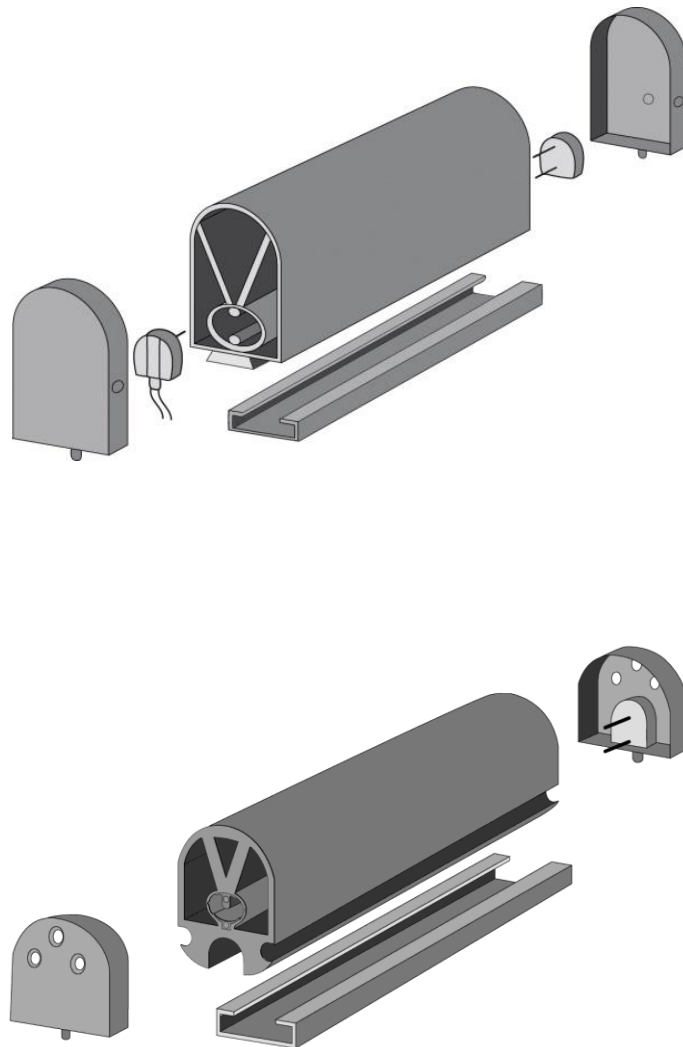
The supply of the system is made by electric cable 2 wires 2*0,35 mm² CEI 20-22 with die-cast

needle connector to allow an easy insertion into the chamber containing the copper cable. Standard length of cable 3 meters.

The electric circuit is closed by a needle connector containing an electric resistance 8,2kOhm.

The ends of the edge are sealed by means of special plugs that, stuck with a special stick, have a better tightness to water.

The standard outlet of the supply cable is at the end of the profile. If the outlet is lateral or on the bottom, please communicate at the order. For the "do it yourself" solution, the cable outlet is made by drilling the cable hole into the terminal plug.



Type Available:

<p>Type B1NC (roll m 25)</p>	<p>Type B1NC-AG Universal foot (roll m 25)</p>	<p>Type B1NC-AGB Universal foot with lips (roll m 25)</p>
<p>Type B2C (roll m 25)</p>	<p>Type B2C-AG Universal foot (roll m 25)</p>	<p>Type B2C-AGB Universal foot with lips (roll m 25)</p>
<p>Type B0C (roll m 100)</p>	<p>Type B0C-AG Universal foot (roll m 50)</p>	<p>Pack in roll</p>

TECHNICAL FEATURES

Sensor	Type B1NC	Type B1NC-AG Type B1NC-AGB	Type B2C	Type B2C-AG Type B2C-AGB
Max operating angle α	90°			
Pre-run (test piece $\varnothing 80$ - 100 mm/sec)	5,05 mm		5,40	
Overrun (test pieces $\varnothing 80$, 10 mm/sec)	15,639 mm - 250N 17,939 mm - 400N 20,237 mm - 600 N		3,28 mm - 250N 4,18 mm - 400N 6,88 mm - 600N	
Max operating force (test piece $\varnothing 80$ - 100 mm/sec)	146 N (-15°C)		84 N (-15°C)	
Response time with Gamma System control units	50 ms		54 ms	
Material	TPE black colour			
Length*	Mounted version, max 6 m or 25 m-long roller			
Max length of sensor	25 m (can be controlled via control unit)			
Max sensors connectable with control unit	10			
Weight kg/m	0,6		0,4	
Mounting orientation	All			
Fastening material	aluminium profile standard Length = 6 m			
Dimensions of non-sensitive surface	40 mm from each end			
Operating temperature	-15°C +55°C			
Storage temperature	-15°C + 55° C			
Chemical resistance	See Table			
Max applicable thrust	500 N			
Degree of protection (EN 60529)	IP65		IP67	
Power cord**	2*0.35 mm ²			
Output contact	NO			
Max. length of connection CABLES	100 m.			
Rated supply voltage	24 VDC			
Max contact voltage	30 V			
Max contact current	30 mA			
B _{10D} sensor	192000			
Part of human body which can be detected***	Hand, limb, body			
Reference standard	EN 13856-2, EN ISO 13849-1, EN ISO 12978:2003+A1:2009			
Safety Parameters: Sensor + Control Unit	Sensor + GP02R	Sensor + GP02R-C	Sensor + GP02R	Sensor + GP02R-C
Category	3			
PL	d			
PFH	8,58*10 ⁻⁸			
No. of operations/year	14000	18000	14000	18000
Usage categories	AC15 – 4 A	AC15 – 4 A DC13 – 3A	AC15 – 4 A	AC15 – 4 A DC13 – 3A
T ₁₀ Control unit	10****	20	10****	20
EC Declaration	16CMAC0044		16CMAC0045	
Others European Directives				
2012/19/UE	RAEE			
2011/65/UE	ROHS			
Regulation (EC) n°1907/2006	REACH			

*The max length for the edge assembled is 6000mm

**For length more than m 20 use wires with section of mm² 1

***Not suitable to detect fingers.

****Consider the number max of operations. After the time indicated on the data sheet above, contact the Gamma System office.

How to order a sensitive edge type B1NC

Always specify the following:

- Type of sensitive edge... (ex. **B1NC**)
- Length (mm) of the profile.. (ex. 1000 mm)
- Length of the supply cable and outlet ... (ex. CS standard 3 m, head outlet. If different, specify the length and the outlet.
- Type of fastening support (ex. "SAC29" or "Sal29" or "SAL29")

The complete order is therefore:

Sensitive edge type B1NC L=1000 mm-CS-SAC

For the " Do it yourself " solution, order according to the following details:

- n. 1 package profile type **B1NC** (roll 25 m)
- n. 1 package connector kits type **KC** (n. 1 connector with resistance type KCR + n. 1 connector with electric cable type KCC)
- n. 1 package standard length 6 m support of aluminium type **SAC29 – SAL29 – SAI29** for profile fastening
- n. 1 Kit package with 2 closing plugs type: **TC1** for profile B1NC,
- n. 1 bottle 10 ml of primer cod. **PR**
- n. 1 bottle 10 ml of glue cod. **CY**

How to order a sensitive edge type B1NC-AG, B1NC-AGB (universal foot)

The edge B1NC-AG is different than the B1C type only for the anchorage foot studied for replacing in total the other product present into the market and for its accessories.



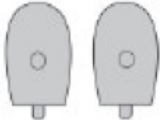
For ordering this type specify the following:

- Type of sensitive edge... (ex. **B1NC-AG**)
- Length (mm) of the profile.. (ex. 1000 mm)
- Length of the supply cable..(CS standard 3 m), *The outlet cable can be only bottom side.*



For the " Do it yourself " solution, order according to the following details:

- n. 1 package profile type **B1NC-AG** (roll 25 m)
- n. 1 package connector kits type **KC1AG** (n. 1 closing/connector with resistance type KC1AGR + n. 1 closing/connector with electric cable type KC1AGC)
- n. 1 bottle 10ml of primer cod. **PR**
- n. 1 bottle 10ml of glue cod. **CY**

Single items to order B1NC in case of " Do it yourself " solution

Single connector with cable length m 3(B1NC) type KCC code GSB1NCKCC	
Single connector with resistance (B1NC) type KCR code GSB1NCKCR	
Closing stopper (B1NC) type TC1 cod. GSB1NCTC1 (pack 2 pcs.)	

Single items to order B1NC-AG, B1NC-AGB in case of " Do it yourself " solution

Closing connector with cable length m 3 (B1NC-AG or B1NC-AGB) type KC1AGC code GSB1NCAGKC1AGC	
Closing connector with resistance (B1NC-AG or B1NC-AGB) type KC1AGR code GSB1NCAGKC1AGR	

How to order a sensitive edge type B2C or B2AC-AG

Always specify the following:

- Type of sensitive edge... (ex. **B2C**)
- Length (mm) of the profile.. (ex. 1000 mm)
- Length of the supply cable (CS standard 3 m)

The outlet cable can be only bottom side.

Type of fastening aluminium support (see page 15)
The complete order is following:

Sensitive edge type B2C L=1000 mm-CS-SAC



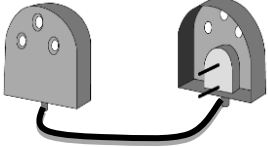
For the “ Do it yourself ” solution, order according to the following details:

- n. 1 package profile type **B2C** (standard roll 25 m)
- n. 1 package connector type **KC2** (n. 1 closing/connector with resistance type KC2R + n. 1 closing/connector with electric cable type KC2C)

Type of fastening aluminium support (see page 15)

- n. 1 bottle 10 ml of primer cod. **PR**
- n. 1 bottle 10 ml of glue cod. **CY**

Single items to order B2C in case of “ Do it yourself “ solution

<p>Closing connector with cable length m 3(B2C, B2C-AG, B2C-AGB,) type KC2C code GSB2CKC2C</p> <p>*Upon request m. 0,5 m.1 m. 5 m.10</p>	
<p>Closing connector with resistance 8.2 kohm (B2C, B2C-AG, B2C-AGB) type KC2R code GSB2CKC2R</p>	
<p>Double closing connector with cable length m. 0,4 Cod.GSB2CKCCD040</p>	

TECHNICAL FEATURES

Sensor	Type B0C	Type B0C-AG
Max operating angle α	90°	
Pre-run	2,2	
Overrun (test piece $\varnothing 80$, 10 mm/sec)	0,9 mm - 250N 1,0 mm - 400N 1,3 mm - 600N	
Max operating force (test piece $\varnothing 80$ - 100 mm/sec)	16 N (-15°C)	
Response time with Gamma System control units	< 54 ms	
Material	TPE black colour	
Length*	Roll 100 m	Mounted version, max 6 m 100 m roll
Max sensors connectable with control unit	25 m (can be controlled via control unit)	
Weight kg/m	0,08	0,12
Mounting orientation	All	
Fastening material	NO	aluminium profile standard Length = 6 m
Dimensions of non-sensitive surface	20 mm from each end	
Operating temperature	-15°C +55°C	
Storage temperature	-15°C + 55° C	
Chemical resistance	See Table	
Max applicable thrust	500 N	
Degree of protection (EN 60529)	IP 65	
Power cord**	2*0.25 mm ²	
Output contact	NO	
Rated supply voltage	24 VDC	
Part of human body which can be detected***	Hand, limb, body, finger	
Reference standard	EN 13856-2, EN ISO 13849-1, EN ISO 12978:2003+A1:2009	

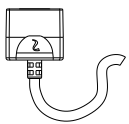

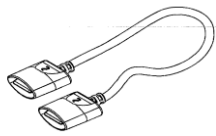

How to order a sensitive edge type B0C

Always specify the following:

- Type of sensitive edge... (ex. **B0C**)
 - Length (mm) of the profile.. (ex. 1000 mm)
 - Length of the supply cable (CS standard 3 m)
- The outlet cable can be only STANDARD.*

For the “ Do it yourself ” solution, order according to the following details:

- n. 1 package profile type **B0C** (standard roll 100 m)
- n.1package connector type **KC0AG**
(n.1Closing/connector with resistance type GSB0CKCR + n. 1 closing/connector with electric cable type GSB0CKCC)
- n. 1 bottle 10 ml of primer cod. **PR**
- n. 1 bottle 10 ml of glue cod. **CY**

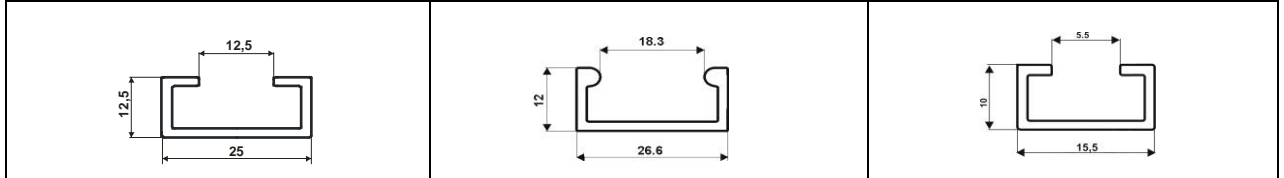
<p>Closing connector with cable Length m 3 (B0C, B0C-AG) type B0CKCC code GSB0CKCC</p> <p>Upon request m.05 or m.1</p>	
<p>Closing connector with resistance 8.2 kohm (B0C, B0C-AG) type B0CKCR code GSB0CKCR</p>	
<p>Double closing connector with cable length m. 0,7 Cod.B0CKCCD017</p> <p>Double closing connector with cable length m. 0,5 Cod.B0CKCCD050</p>	
<p>Primer bottle 10 ml type PR cod. GSBPR</p> <p>Glue bottle type CY cod. GSBCY</p>	

EDGE FASTENING

The edge fastening is made assembling the profile on the aluminium support, to be specified in the order.

Types of aluminium supports available:

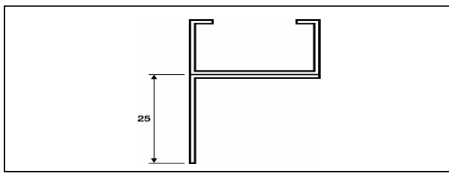
- support " C " fastening cod. SAC
- support " L " fastening cod. SAL
- support " I " fastening cod. SAI



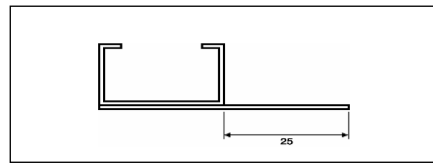
Support fastening type SAC25
Suitable for edge type: B1N-B2-B2N-BNCAG

Support fastening type SAC29
Suitable for edge type: B1NC-B2C

Support fastening type SAC15
Suitable for edge type B0C-AG



Support fastening " L " type SAL



Support fastening " I " type SAI

All edges listed in this documentation can be supplied in bent version, with the following radiuses:

-Edge type B1N

Picture A: minimum bending radius 800 mm

Picture B: Not recommended

-Edge type B2, B2N

Pictures A + B: Not recommended

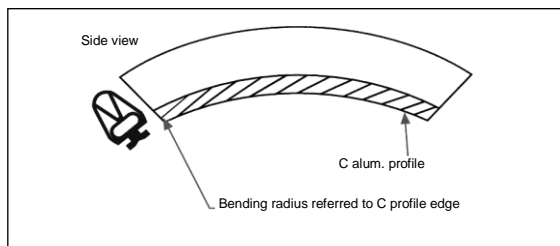
-Edge type B1NC, B1NC-AG, B2C, B2C-AG

Picture A: minimum bending radius 500 mm

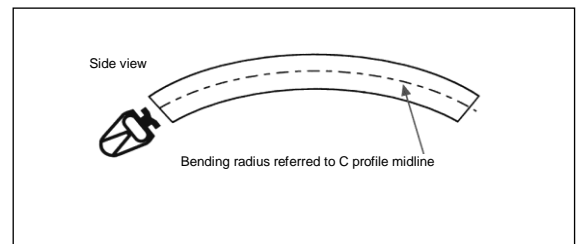
Picture B: minimum bending radius 500 mm

-Edge type B0C, B0C-AG

Pictures A + B: Not recommended

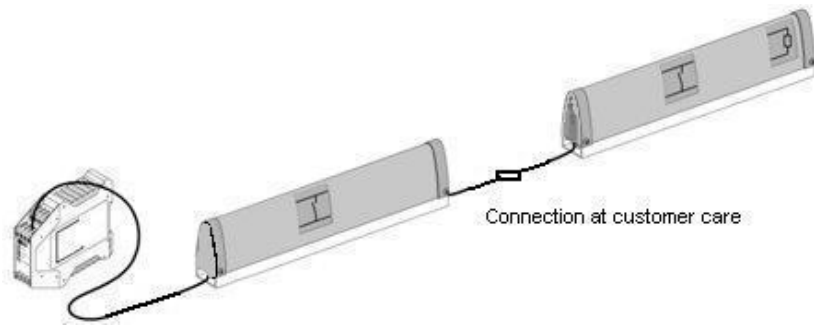


Picture A: minimum bending radius



Picture B: minimum bending radius

Series connection of two or more sensitive resistive edges 8.2 kohm



For applications with two or more resistive sensor in “series “, for a proper connection must be provided the first sensor with input-output cable and the last of the series with the input cable and resistor (see above picture).

In case of solution “ **Do it yourself** “ for the series connection between more resistive edges following the accessories here after write:

Example of order for connecting of two sensor:

- For type B1NC:

N.03 Needle connector with cable type KCC code GSB1NCKCC
N.01 Needle connector with resistance type KCR code GSB1NCKCR
N.02 Closing plug type TC1 cod. GSB1NCTC1

- For type B2C

N.03 Needle plug with cable type KC2C code GSB2CKC2C
N.01 Needle plug with resistance type KC2R code GSB2CKC2R

- For type B0C

N.03 Needle plug with cable type KC0C code GSB0CKCC
N.01 Needle plug with resistance type KC0R code GSB0CKCR