SURROUND YOURSELF with SAFETY

TECHNICAL DOCUMENTATION

RIELLO ELETTRONICA

gamma system

INDEX

GLOBE CERTIFICAZIONI
N. 886
UNI EN ISO 9001:2008

SAFETY MATS

The sensitive mat is a safety component, featuring an electro-pressure sensible element to detect the presence of people.
The presence of people **over 35 kg** closes a contact inside the sensor.

The state change of the internal sensor (NO to NC) is processed by the control unit "control device" that sends a machine stop signal and eliminates the danger situation.

HOW TO DIMENSION A MAT

The minimum distance, *S* , of the dangerous zone shall be calculated in according EN ISO 13855 using the general formula

S = (1600x T) + 1200

Step mounting:
In case the safety sensor is on a step or in a raised platform, in these case we can reduce the minimum distance of 0,4 *h*, where *h* is the height of the step in millimetres (mm). The minimum distance, *S,* from the detection zone to the hazard zone may be calculated using the following formula:

S = (1600 x T) + (1200-0,4 *h*)

where:
S= minimum distance in mm, of the dangerous zone at the point, axis or plan of the detection zone.
T= Global response time in sec.

WARNING: Take note that during the dimensioning of the sensor take note in mind is important to consider that the response time of the sensor is given by sum of the time of actuation and the response of the unit control device.

CALCULATION OF MINIMUM DISTANCE FOR SENSITIVE DEVICE INSTALLED ON THE FLOOR

General method
The choice and use of sensitive devices installed on the floor, activated by foot, depend upon the standard " *C* " appropriates or an evaluation of risks if no " *C* " standard exists (EN ISO 12100)
Examples of sensible device installed on the floor include the sensitive mats, sensitive to pressure, and optoelectric protection device.
The minimum distances derived in this point for sensitive devices installed on the floor require that the approaching speed to the dangerous zone is the walking speed (1600 mm/s). Referring to the risk of bypassing the detection zone, the minimum distance (width) of the mat, must be almost of **mm 750** in order to prevent the possibility to cross the mats without activate it.

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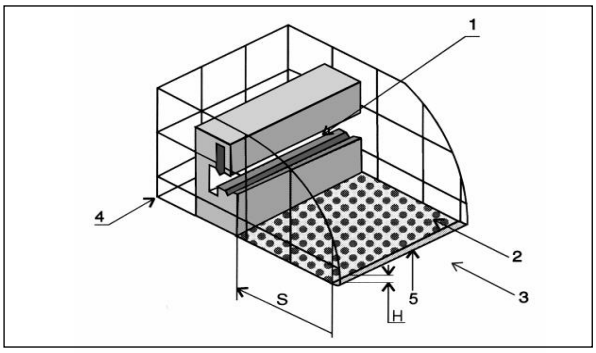


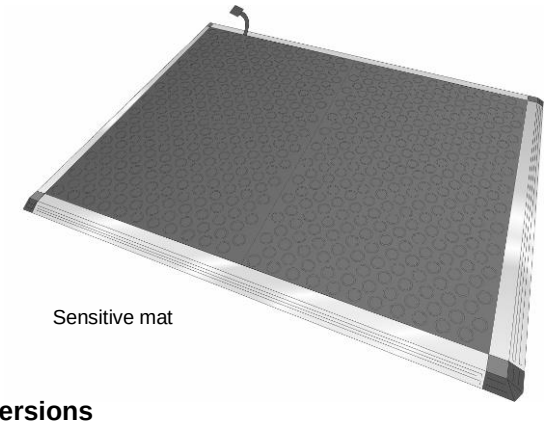
H = Height of measuring zone over reference table.
S = Minimum distance.
1 = Dangerous zone.
2 = Detection zone.
3 = Approach direction
4 = Stationary cover
5 = Start of measuring zone

TYPES OF MATS

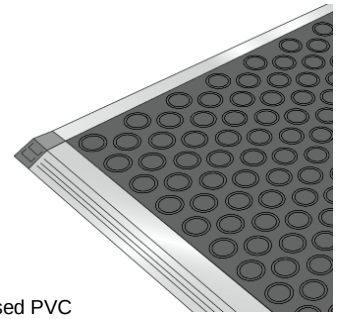
Coating

The mat can be supplied with 2 coatings:

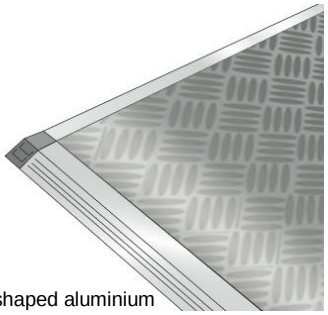
- Black embossed PVC (other colours upon request)
- PVC coated with almond shaped aluminium (ex. machines processing incandescent materials)



Sensitive mat



Embossed PVC



Mandle shaped aluminium
PVC bollato

Versions

The mat is available in 2 versions:

1-"STANDARD MAT"

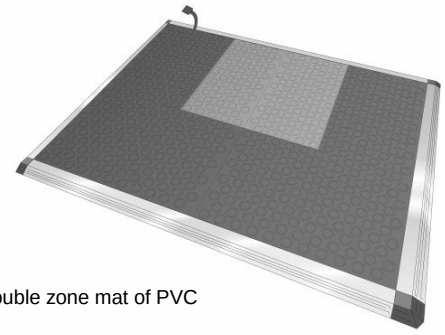
Dimensions upon request, profiles fastened to the mat, with the possibility of PVC or aluminium coating.

Upon request, the aluminium profiles can be supplied loose, tailor-made.

The PVC coated mat can be:

- mounted on plate to give more rigidity to the mat
- with ***2 (two) sensitive zones***, controlled by 2 separate circuits (ex. opening of a door with the presence of a person, or in front of a bank teller). In this case, if the 2 zones are taken simultaneously, the signals stop the system.

Maximum dimensions of single mat: 3000x1500 mm. You can shape larger surfaces using more mats.



Double zone mat of PVC

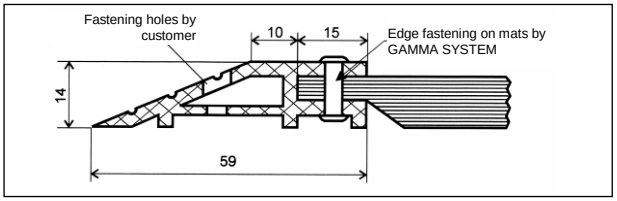
The following profiles are available, to be specified in the order:

For mats with PVC coating:

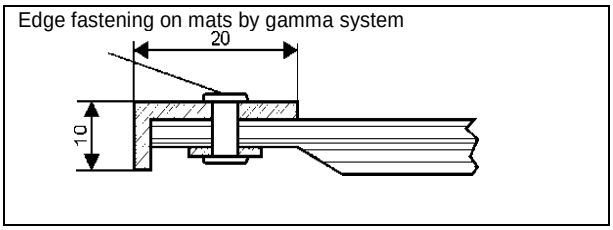
- Type "A" slope profile
- Type "B" 90° profile

For mats with aluminium coating and mat mounted on plate:

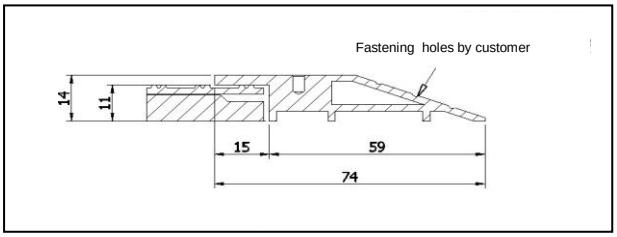
- Type "GSPSA" slope profile
- Type "GSP90A" 90° profile
- Type "GSPCA" profile with cable channel



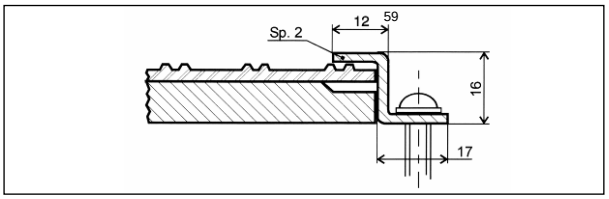
Slope profile type A
Profilo a scivolo tipo A



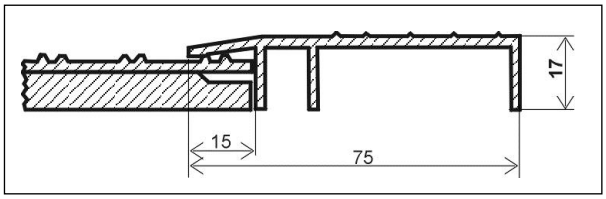
90° profile type B



Slope profile type "GSPSA"



90° profile ° type "GSP90A"



90° profile with cable carrying channel type "GSPCA"

The mat features a 4 poles outlet cable 4*0,35mm^2 FROR 300/500 standard length m 3.

How to order the standard sensitive mat:

The dimension always include the profiles. Always attach a drawing of the mat, indicating the dimensions (L=width x H=length), type of profiles and cable outlet position and length, if different from the standard one.

PVC coating mat

GSTS = Gamma System sensitive mat

GSTS - _ (dimensions in mm) - _ -_ - CS

For mounted profile
A = slope profile
B = 90° profile

CS= cable length
standard 3 m
On long side positioned
100mm from right edge

P = Coating of black embossed PVC

For profile loose
GSPS02 = slope profile
GSP90 = 90° profile
GSPC = cable passing profile

PM = Profile mounted
PS = Profile loose

Example:
Mat coated with PVC 1000x500 slope profile (type A) on 4 sides with standard cable outlet.
Ordination code: GSTS-P (L)1000x(H)500-PM-A-CS

Example:
Mat coated with PVC 1000x500 profile loose (type GSPS02), slope on 4 sides, with standard cable outlet.
Ordination code: GSTS-P (L)1000x(H)500-PS-GSPS02-CS

Aluminium coating mat

GSTS = Gamma System sensitive mat

GSTS - _ (dimensions in mm) - _ -_ - CS

For profile loose or mounted profile
GSPSA = slope profile
GSP90A = 90° profile
GSPCA = cable passing profile

CS= cable length
standard 3 m
Positioned 100mm from
the length edge.

A = Coating of almond shaped aluminium
F = Coating of PVC mounted on plate

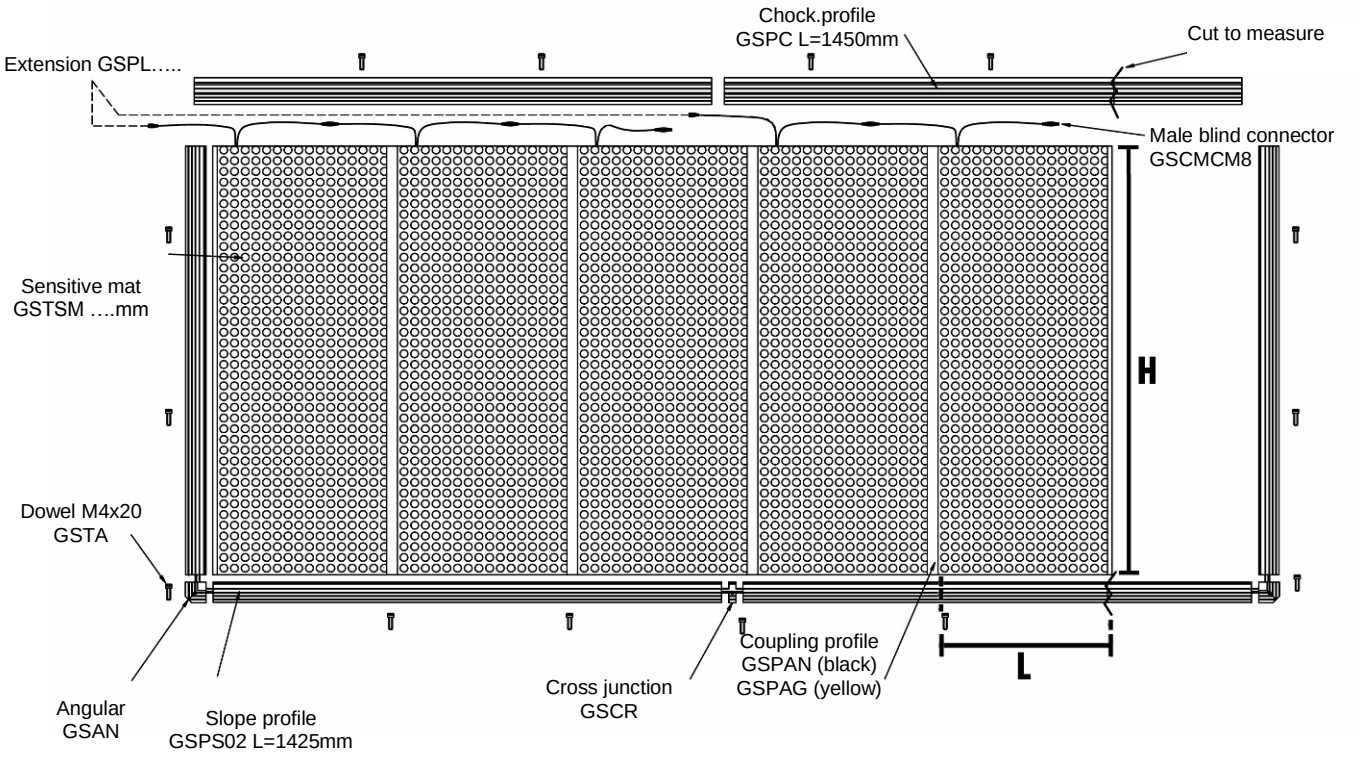
PM = Profile mounted
PS = Profile loose

Example:
Mat coated with ALUMINUM 1000x500 slope profile on 4 sides, with standard cable outlet.
Ordination code: GSTS-A-(L)1000x(H)500-PM-GSPSA-CS

2- "MODULAR MAT"

PVC coating only, standard dimensions and loose profiles.

Solution of transport, handling and installation problems.



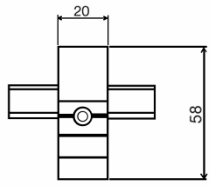
Standard dimensions:
In the modular mat's version the dimension is the sensible part of mats, profile excluded.

Standard Lenght "L" (x): 500, 750, 1000 mm
Standard Width "H" (y): 1000, 1400, 1600 mm

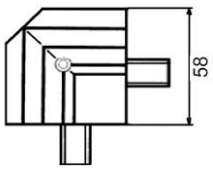
The profiles required to fasten the mat are supplied loose and must be ordered separately.

Four profiles are available:
– cod. GSPS02 slope profile L= mm 1425
– cod. GSPC cable passing profile L= mm 1450
– cod. GSP90 90° profile L= mm 1600
– cod. GSPAN (black) or GSPAG (yellow) PVC coupling profile of 2 mats L= mm 1600

The supply must include:
– cod. GSCR cross junction (pack of 5 pcs)
– cod. GSCRP cross Junction with passing cable
– cod. GSAN angular (pack of 3 pcs)
– cod. GSTA anchorage dowels (pack of 10 pcs)

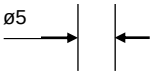


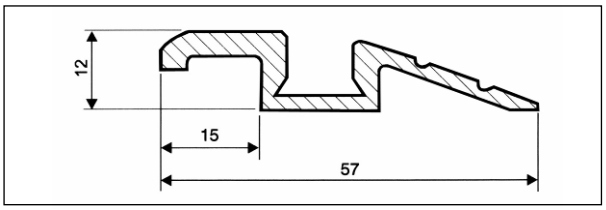
GSCR or GSCRP



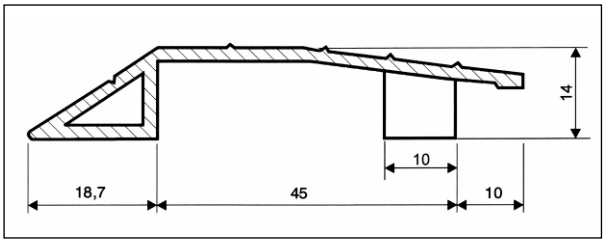
GSAN

GSTA

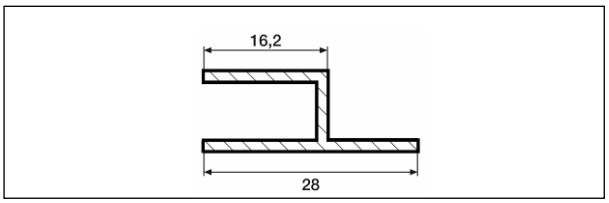




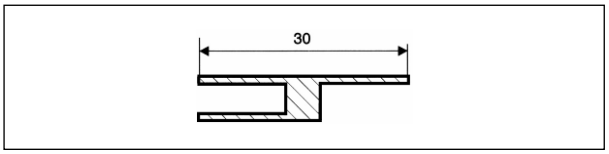
Slope profile cod. GSPS 02



Cable passing profile cod. GSPC



90° profile cod. GSP90



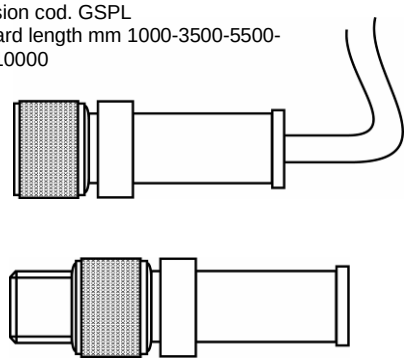
Coupling profile
cod. GSPAN (PVC black)
cod. GSPAG (PVC

The mat is supplied with 2 outlet cables L=600mm 4 poles 4*0,25mm^2 CEI IP65 one with die-cast connector M8 MALE and the other with connector M8 FEMALE for series connection of the mats.

Electrical connection between mat and device
For the electrical connection, order an extension with connector M8 FEMALE (cod. GSPL) and an electric circuit closing connector (cod. GSCMCM8).

How to order a modular sensible mat
Example of a mat 2 zones, dimensions of the zone to be covered 2500 x 1000 mm (fig. page 5).

Extension cod. GSPL
Standard length mm 1000-3500-5500-6500-10000



cod. GSCMCM8
Connector for electric circuit closing

GSTSM= Gamma System modular sensitive mat

N° _ GSTSM (L x H dimensions in mm)

Quantity/number of mats

Example:
n. 5 GSTSM (L)500x(H)1000 mm

Edges with relative quantity
– cod. GSPS02 slope profile L= mm 1425
– cod. GSPC chock profile L= mm 1450
– cod. GSP90 90° profile L= mm 1600
– cod. GSPAN (black) or GSPAG (yellow) coupling PVC profile of 2 mats L= mm 1600
(Es. n.04 GSPS02 + n.02 GSPC +n.02 GSPAN + n.01 GSPAG)

Accessories for profiles
– cod. GSCR cross junction (pack of 5 pcs)
– cod. GSAN angular (pack of 3 pcs)
– cod. GSTA anchorage dowels (pack of 10 pcs)
(Es. n.01 pack. GSCR + n. 01 pack. GSAN + n. 02 pack. GSTA)

Accessories for electrical connections
– cod. GSCMCM8 male blind connector for circuit closing.
– cod. GSPL (mm 1000 - 3500 - 5500 - 6500 - 10000) extension of mat connection to safety device
(Ex. n. 02 GSCMCM8 + n. 02 GSPL3500)

TECHNICAL FEATURES OF THE SENSOR GSTS

Sensor	***Mat with PVC coating***	**Coating with PVC+ALUMINUM**
Max thickness	10 mm	14 mm
Weight/m2	15 Kg (approx.)	22 Kg approx
Operating pressure	< 300 N Ø mm 80 / < 600 N Ø mm 200	
Max admissible load	2000 N / 80 Ø mm (avoid manoeuvres with heavy means such as lift trucks, motor vehicles and like).	
Response time with Gamma System control units	Single sensor: ≤ 60 ms Combination of sensors: ≤ 124 ms	
Mechanical life of internal contact	2,000,000 operations	
PFH (sensor)	$4{,}29*10^{-8}$	
Max operating voltage	24 Vdc/ac	
Max operating current	60 mA / 24 V	
Electric resistance of sensor/m2	1,7 Ω/m2	
Linear resistance of cable	0,056 Ω/m	
Max connection length	100 m	
Connection cable section	min. 0,35 mm^2 For cables with L>20 m min. 1 mm^2.	
Output contact	NO	
Operating temperature	+5°C to 60°C	
Storage temperature	+5°C to 60°C	
Degree of protection	IP65	
Chemical resistance	Oils, hydrocarbons	
Reference Standards	EN ISO 13856-1 : EN ISO 13849-1	
B_{10D}	2.000.000	
Max dimensions of each safety mat	1500 x 3000 mm	
Dead zone	Welding peripheral zone 15mm	
Safety Parameters: Sensor + Control Unit	GSTS01 + GP02/E	GSTS01 + GP02R.T
Category	3	3
PL	d	d
PFH_D	$9{,}23*10^{-8}$	$9{,}23*10^{-8}$
No. of operations/year max.	80000	100000
Usage categories	DC13 – 1,5 A AC1 – 3 A	AC15 – 1,2A
T_{10D} [years] control unit *	9,25	9,7
Max controllable surface	5	10
CE - Declaration	16CMAC0042	16CMAC0043
Others European Directives		
2012/19/UE	RAEE	
2011/65/UE	ROHS	
Regulation (EC) n°1907/2006	REACH	

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

SENSITIVE EDGES

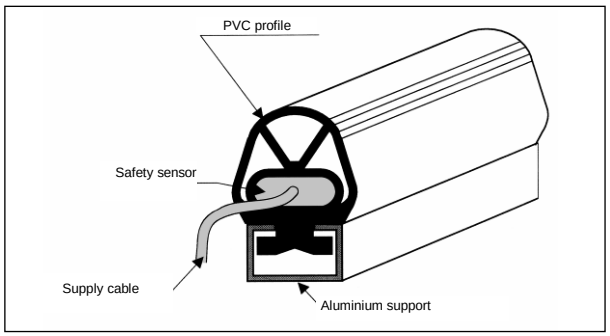
The sensitive edge is a safety component to avoid crashing or cutting risks by sliding doors, automatic moving protections, electrical gates etc.
The edges feature a PVC or EPDM coating, inside is a sensor (2 conductive blades, separated by a non-conductive part). When the edge is pressed, the blades 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 *8,2k*Ω Conductive edge type B1NC-AG B1NC-AGB *8,2k*Ω Conductive edge type B2C *8,2k*Ω Conductive edge type B2C-AG B2C-AGB *8,2k*Ω Conductive edge type B0C B0C-AG *8,2k*Ω	Standard solution (upon request) or "do it yourself" (cutting/assembly of accessories by customer/installer)

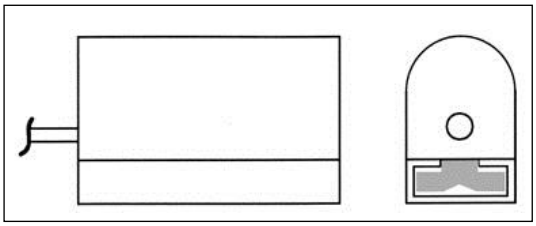
Edge type "B0"
Profile of black EPDM. The edges feature a sensor on the upper part of the profile to get maximum sensitivity.
Particularly suitable for safety catches or as an alternative to emergency wire micro switching.
Supplied with both sides adhesive tape for wall fixing.
The edges of the profile are sealed with polyurethane resin to perfect watertight.
The outlet cable can be only on head side.

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 ±45°. The ends of the profile are closed using polyurethane resin (better tightness). Particularly suitable for bent edges.

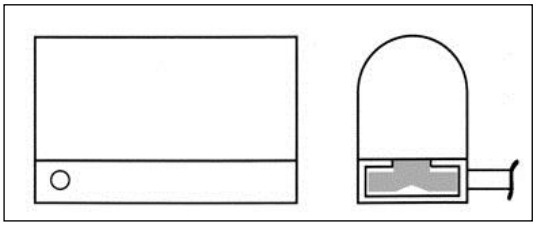


The supply cable is a 4 poles cable 4*0,35mm^2 FROR 300/500 standard length 3 meters.
Different lengths can be supplied upon request.

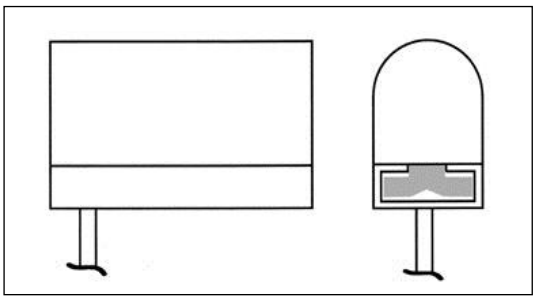
For the B1N-B2-B2N the standard outlet of the cable is at the end of the profile.(Head outlet)
Upon request, the cable outlet can be on the bottom, right or left side (see drawing).



Head outlet (standard)

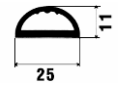
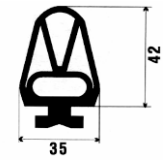
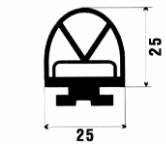
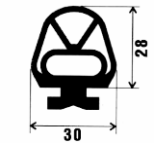


Side outlet right(see picture) or left



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 mm^2 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.

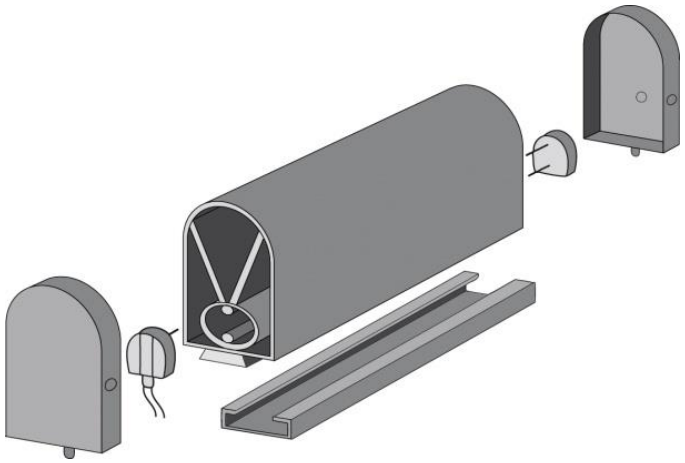
For a correct order, always specify:
-type of sensitive edge… (ex. **B1N**)
-length (mm) of the sensor (ex. 1000 mm)
-length of the cable and outlet (ex. CS standard 3 m with head outlet.

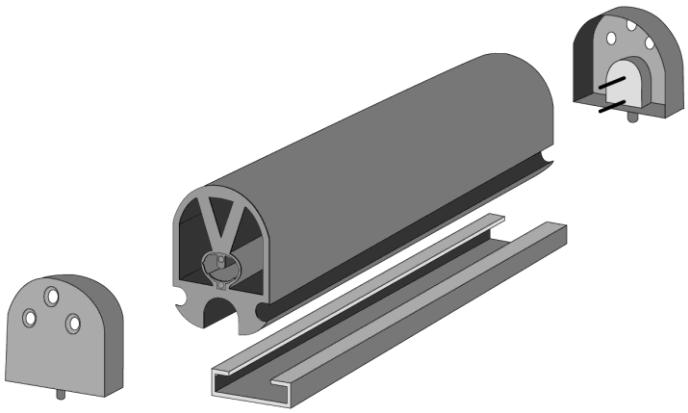
Specify if different for type B1N-B2-B2N.only.
-the fastening profile (ex.”SAC25” or “SAI25” or “SAL25” see drawing)

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

The conductive edges *8,2kΩ*

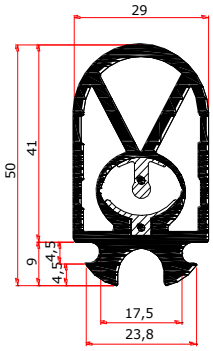
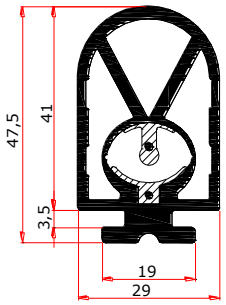
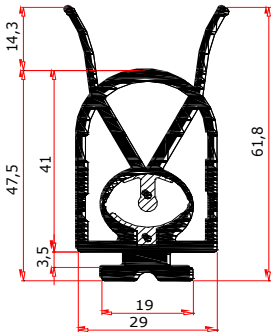
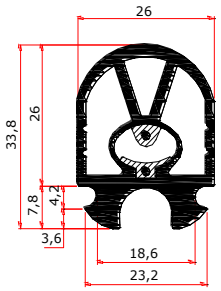
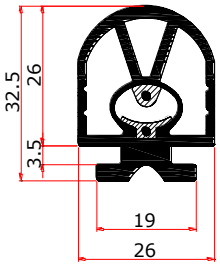
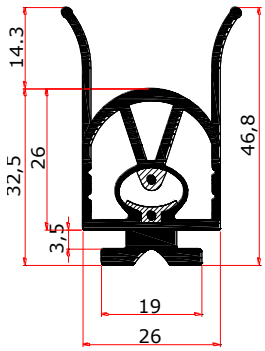
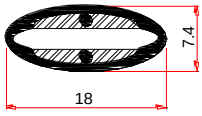
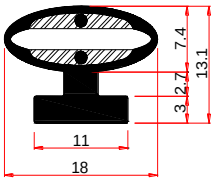
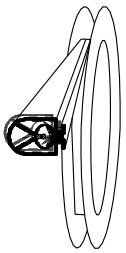
Featuring a thermoplastic profile TPV with 2 co-extruded parts of conductive material (sensor) and 2 copper wires, to stabilize the resistive value of the contact on the length of the edge.
Particularly suitable for external use, with any environment and temperature (-15°C +55°C).
It can be supplied 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 mm^2 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.





SENSITIVE EDGES

Type Available:

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

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 ø80 - 100 mm/sec)	5,05 mm		5,40	
Overrun (test pieces ø80, 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 ø80 - 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 mm^2 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.

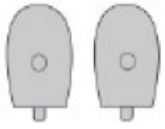
For ordering this type specify the following:

-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

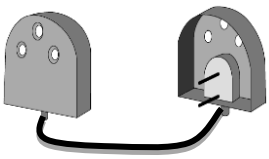
For the " Do it yourself " solution, order according to the following details:

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

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

TECHNICAL FEATURES

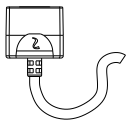
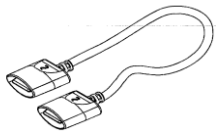
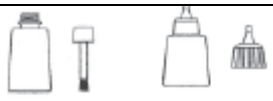
Sensor	*Type B0C*	*Type B0C-AG*
Max operating angle α	90°	
Pre-run	2,2	
Overrun (test piece ø80, 10 mm/sec)	0,9 mm - 250N 1,0 mm - 400N 1,3 mm - 600N	
Max operating force (test piece ø80 - 100 mm/sec	16 N (-15°C)	
Response time with Gamma System control units	< 54 ms	
Material	TPE black colour	
Length*	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:

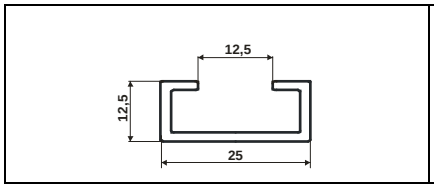
n. 1 package profile type **B0C** (standard roll 100 m)
n.1package connector type **KC0AG** (n.1Closing/connector with resistance type GSB0CKCR + n. 1 closing/connector with electric cable type GSB0CKCC)
n. 1 bottle 10 ml of primer cod. **PR**
n. 1 bottle 10 ml of glue cod. **CY**

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

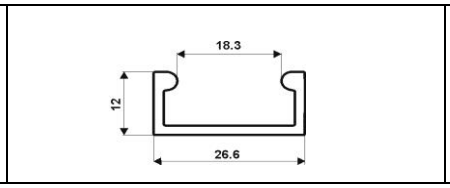
EDGE FASTENING

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

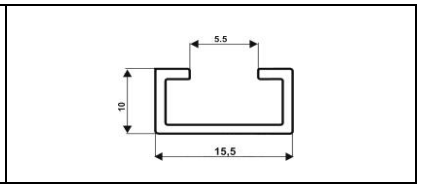
Types of aluminium supports available:
– support " C " fastening cod. SAC
– support " L " fastening cod. SAL
– support " I " fastening cod. SAI



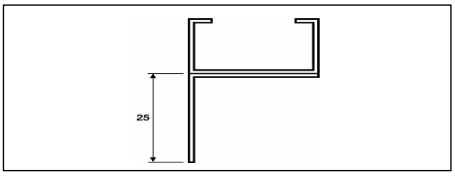
Support fastening type SAC25
Suitable for edge type: B1N-B2-B2N-BNCAG



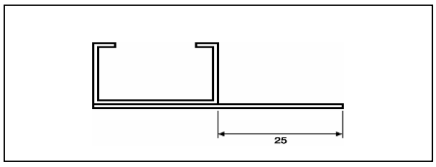
Support fastening type SAC29
Suitable for edge type: B1NC-B2C



Support fastening type SAC15
Suitable for edge type B0C-AG



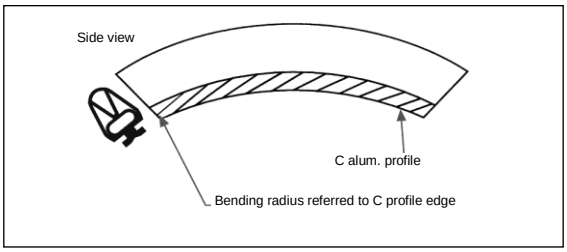
Support fastening " L " type SAL



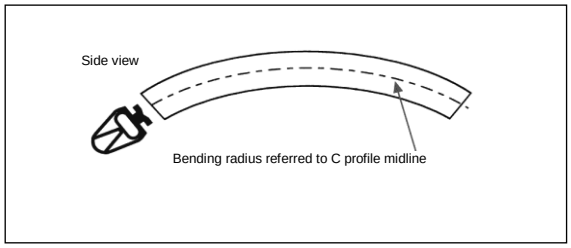
Support fastening " I " type SAI

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

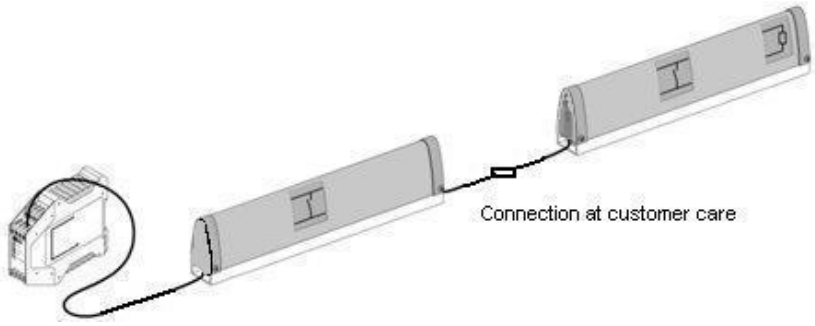


Picture A: minimum bending radius



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:

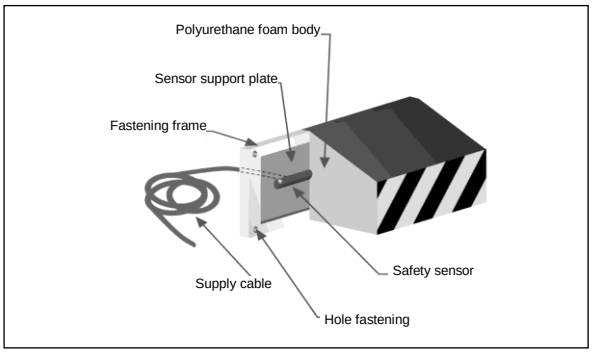
- ***For type B1NC*:**
N.03 Needle connector with cable type KCC code GSB1NCKCC
N.01 Needle connector with resistance type KCR code GSB1NCKCR
N.02 Closing plug type TC1 cod. GSB1NCTC1

- ***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

SENSITIVE SHOCK ABSORBER

The sensitive shock absorber is used to protect people from shocks against vehicles or moving parts, such as AGV, elevators, fork lifts, automatic stores…
With a minimum compression of the shock absorber, after a pre-run, the internal contact of the sensor closes (NO to NC) and the control unit produces immediately a stop signal eliminating the danger situation. After the pre-run, the shock absorbers allows an "overrun" compression, variable according to the shock absorber depth, to release the shock.
The shock absorbers are made of polyurethane foam, stuck onto a frame, and covered by a protection fabric. Inside, a sensitive element "sensor" is present, on a supporting plate.
The supply cable is a 4 poles cable 4*0,35mm^2 FROR 300/500 standard length 3 m. We can supply different lengths, upon request.



The shock absorber coating can be:
1 Fabric (standard)
2 PVC (for externals)
3 Anti-spark (fire protection)
In the standard version, the shock absorber is supplied with a black fabric coating, front side with yellow and black stripes. Upon request, other colours or coatings can be supplied.

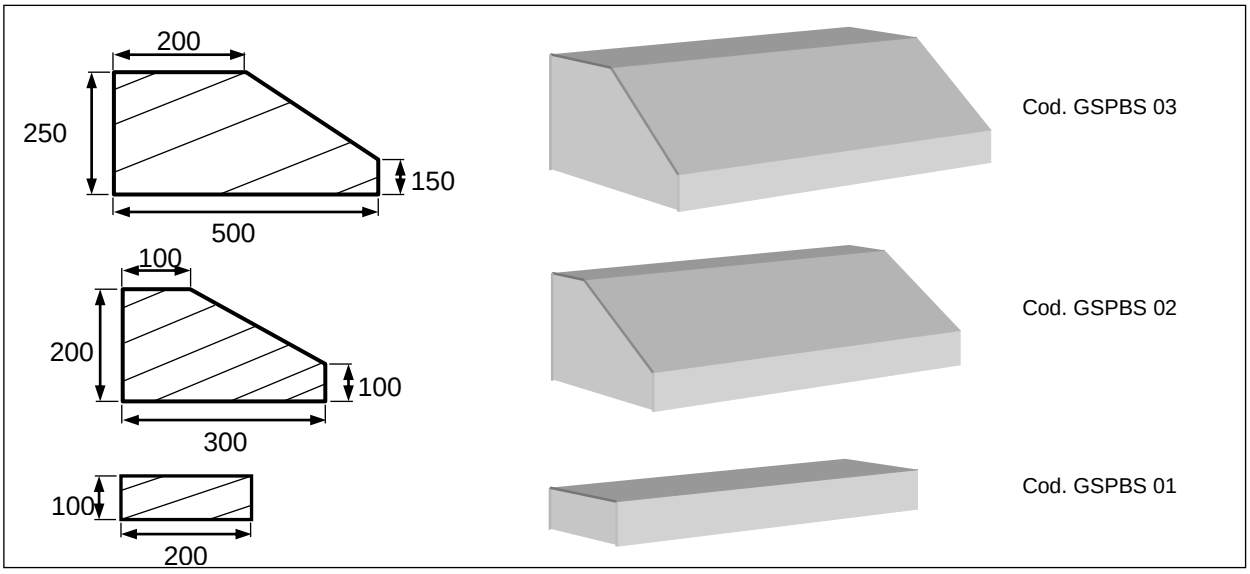
DIMENSIONING OF THE SENSITIVE SHOCK ABSORBER

To find out the correct depth of the shock absorber, see the following data:
Pre-run (up to commutation point)**:**
S_B= 20% of shock absorber depth
Overrun (max. deformation)**:**
S_v = 50% of shock absorber depth

Part not to be deformed: 30% of shock absorbed depth

The choice of the shock absorber depth is made considering the stop space and the overrun **S_v** if required.

Available shapes



Upon request, different shapes and dimensions are available. For shock absorbers with special shape, contact our technical Office.
The shock absorbers are available with max. length 3000 mm. For larger size, they can be divided into several parts.

TECHNICAL FEATURES

Sensor	**Bumper GSBPS01**	**Bumper GSBPS02**	**Bumper GSBPS03**
Pre-run	< 20% depth of shock absorber		
Overrun without deformation	50% depth of shock absorber 30% depth of shock absorber		
Actuation force with Φ80mm at 10 mm/s	32N	56N	24N
Actuation force with Φ80mm at 100 mm/s	48N	56N	32N
Max admissible load	500N	500N	500N
Max length of sensor*	3000 mm		
Weight in kg / m	5,5	8	11
Max response time (constant speed 100 mm/s specimen 1, point 3)	<200 ms with Gamma System devices		
Max operating speed	100 mm/s		
Min operating speed	10 mm/s		
Mechanical life	10000 operations		
PFH (bumper)	$4{,}29*10^{-8}$		
Max operating voltage	24 Vdc/ac		
Max operating current	30 mA		
Power cord**	4x0,35mm^2 standard length 3 m 4x1 mm^2 length >20 m (max 100 m)		
Output contact	NO		
Operating temperature of sensor	-10°C + 50°C		
Type of coating	*Yellow/black tissue, PVC and anti-spark*		
Degree of protection (according to EN 60529) of sensor	IP 54 **(*)**		
$B10_D$	260000		
Reference standard	EN ISO 13856-3, EN ISO 13849-1		

Safety parameters Sensore + Control unit	**GSBPS0x + GP02/E**	**GSBPS0x +GP02R.T**
Category	3	3
PL	d	d
PFH_D [1/h]	$8{,}58*10^{-8}$	$8{,}58*10^{-8}$
No. of operations/year	12000***	
Usage category	DC13 – 1,5 A ; AC1 – 1,5 A	AC15 – 1,2 A
T_{10D} [years] control unit***	20	20
EC-type certificate	16CMAC0046	16CMAC0047
Others European Directives		
2012/19/UE	RAEE	
2011/65/UE	ROHS	
Regulation (EC) n°1907/2006	REACH	

*Max length of sensor 3 m. For bigger dimensions, they can be divided into several parts and then connecting sensors in series.
** For length more than m 20 use wires with section of mm^2 1
***Consider the number max of operations. After the time indicated on the data sheet above, contact the Gamma System office.

Recovery after deformation:
For a deformation equal to the running stroke to a force of 250 applied during 24 hours, the depth variation is less than 20% after 30s, 10% after 5 min. and 5% after 30 min.

(*) IP 65 in case of coating welding PVC

FASTENING OF SENSITIVE SHOCK ABSORBER

The shock absorber is fastened to the machine by a frame, featuring one of the three configurations :

A- Plate protruding from the shock absorber, holes Ø 8,5 mm for fastening to the machine through screws and bolts;
Plate width upon customer's request (drawing A)

B- Plate along the shock absorber, with threaded holes (specify the thread) for fastening through screws from inside (drawing B). **The type "B" fastening is not suggest for the external application.**

C- Plate long the shock absorber, with bolt screws M6 length 30 mm, for fastening through nuts from inside (drawing C)

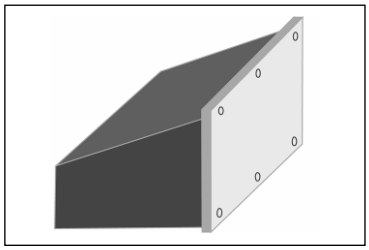


FIGURE A

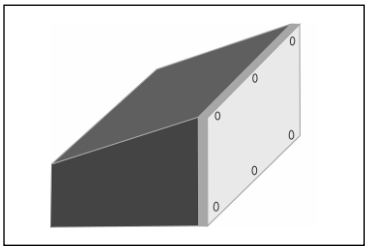


FIGURE B

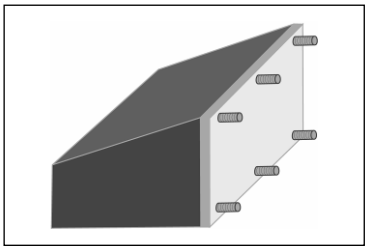


FIGURE C

HOW TO ORDER A SENSITIVE SHOCK ABSORBER

When ordering, always supply a drawing of the shock absorber: In addition specify the following information:

- Height,
- Width,
- Depth.
- The coating material (ex. fabric),
- Type of fastening plate (ex. version B)
- Cable length, if different from the standard one.

CONTROL UNIT/DEVICE TO CONTROL MATS EDGES AND SHOCK ABSORBERS

The control unit is a device to control the function of a sensor (mat, edge or shock absorber) by blade contacts.
The blade contact is a NO contact that closes, causing the opening of the outlet contact of the control unit.
The control unit controls the operation of the sensor and the connection circuit, and allows to transform the NO signal of the blade contact into a NC safety signal.
A control device can control several sensors, but cannot perform the auto-diagnose indicating which sensor is faulty. If more sensors are used, use a control unit every 3-4 sensors.

MODELS AVAILABLE:

GP02/E
GP02R.T – GP02R.T1
GP02R *and GP02R-C Only for edges with electrical resistance 8,2k*Ω

CONTROL UNIT

Description
Emergency stop circuit, used to manage and control a sensor, having two safety relays terminals with forced opening contacts.
The two relays, normally excited, are deenergized in the following conditions:

– No supply
– Operation of mat, edge, shock absorber.
– Internal faults
– Interruption of the internal circuit of mat, edge, shock absorber or connection cables between control unit and sensor (mat, edge, shock absorber).

The devices are supplied with **automatic reset** but they can be transformed into **manual reset.**
If a control unit is used **without rearming** the function must be supplied by the control system of the machine (see std. EN 13849-1).

Operation
Two separate channels detect the voltage at the end of the safety terminals of the mat, and each channel commutes a safety relay with forced opening contacts.

Models GP02/E- GP02R.T(automatic restart**)- GP02R.T1(**manual restart)
The supply voltage is limited by a specific group and the pilot circuit, to avoid short circuit currents while closing the sensor (mat, edge, shock absorber). The control unit controls itself, as well as any other operation.
Inlet terminals are foreseen for:

– Test signal activating/deactivating the circuit of the control device simulating the operation of the sensor and checking the system efficiency.
– Signal of manual reset/ feedback-action.

The two modules are differentiated by the number of outlet contacts: model GP02/E has a NO safety contact, whereas model GP02/E-S2 and GP02R.T has two NO safety contacts.

Model GP02R and GP02R-C *only for edges with electrical resistance 8,2k*Ω
Two symmetric circuits detect the current in the edge, adjusted for a resistance of 8,2 kΩ. When the circuits detect a variation of ± 4 kΩ, caused by a fault or operation of the edge, they desexcite the outlet relays, that open the safety contacts.

TECHNICAL FEATURES

Reference Standards: EN ISO13849-1 :2000, EN13856:2013 EN60947-5-1 EN 50205 (type A) *UE COMPLIANCE DECLARATION* 2014/35/UE - 2014/30/EU 2011/65/UE(ROHS)-2012/19/UE (RAEE)	TYPE GP02/E 	TYPE GP02R.T 	TYPE GP02R ***8,2kΩ*** 	TYPE GP02R-C ***8,2kΩ*** 
PL	e			
Category	3			
PFH (1/h)	$4,94*10^{-8}$		$4,29*10^{-8}$	
No. of operations/year	80000	100000	14000	18000
T_{10D}	9,25*	10*	10*	22*
Usage categories	DC13 – 1,5 A AC1 – 3A	AC15 – 1,2 A	AC15 -4 A	AC15 – 3A DC13 – 3A
Electrical data				
Supply voltage	24 VDC ± 10%			
Current consumption with mat activated (24VDC)	15 mA	12 mA	15 mA	
Current consumption with reset module (24VDC)	90 mA	110 mA	≤120 mA	
Internal protection of power supply	YES (1 A)			
Inputs				
Input short-circuit detection	YES			
Input connection interruption detection	YES			
Max length of connection cables	100 m			
Min section of connection cables	0,35 mm^2 (1mm^2 L>20m)			
Max resistance of sensor	40 ohm	100 ohm		
Voltage applied to inputs	24 VDC			
Max current (peak value)	200 mA			
Safety outputs				
Number of safety outputs	1 NO	2 NO		
Rated voltage/Max switchable voltage [VAC/VDC]	250/400	230/300		
Rated current in AC15 230 VAC/DC13 24VDC [A]	6 A in DC	1,5A/1,2A	4/2	
Material of standard contacts	AgNi	$AgSnO_2$		
Rated supply voltage VAC50/60Hz	-			
Rated supply voltage VDC	24			
Rated power AC/DC VA (50 Hz)/W	-/0,7	-/0,25		
Delay to energizing (reset)	25 ms (typical)	12 ms		
Delay to de-energizing (trip)	10 ms (typical)	13 ms		17 ms
Protection against over-current	6 A quick-action/2 A delayed		4 A quick-action/2 A delayed	
Mechanical life	10^7	10^7		
Signal outputs				
Number of signal outputs	1			
Max operating voltage VAC	125			
Max operating voltage VDC	30			
Max current 110VAC	0,2A			
Max current 24VDC	0,5A			
Environmental characteristics				
Operating temperature [°C]	0 / 55	-25 /+50		
Storage temperature [°C]	-20 /+70	-25 /+70		
Max relative humidity	85%			
Degree of protection of terminals	IP20			
Degree of protection of casing	IP30			IP65
Dimensions				
Width [mm]	35	22,5		120
Height [mm]	90	114		75
Depth [mm]	70	99		155
Weight [g]	150	140		410
Material of the casing	ABS	PA66-FR		GW PLAST 75
Installation	ON 35 mm Omega rail			By screw
EC-TYPE CERTIFICATION	16CMAC0048	16CMAC0050		16CMAC0049

CONTROL UNIT WIRELESS SYSTEM (RADIOSAFE) FOR CONDUCTIVE EDGE 8,2 KΩ

IN ACCORDANCE TO THE SAFETY STANDARD EN ISO 12978

"TRANSCEIVER" INTERFACE FOR SAFETY EDGES

SAFESRCT – 868 MHz "FM"
SAFETY EDGE SIGNAL INPUT 8.2kΩ

SAFEPRC4 – 433 MHz "FM"
SAFEPRC8 – 868 MHz "FM"
SAFETY EDGE SIGNAL INPUT NC/8.2kΩ

STATIONARY WIRELESS "TRANSCEIVER" SAFETY SYSTEM

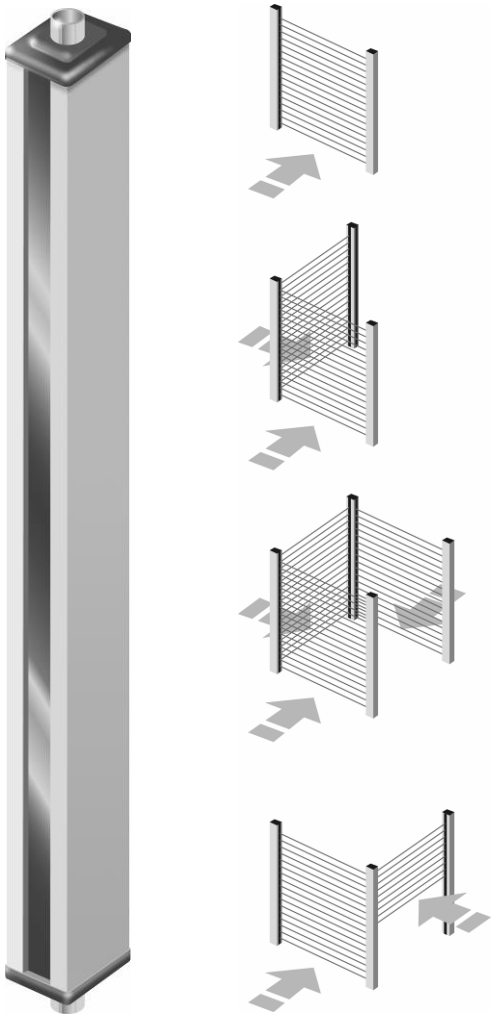
SAFESRCRX – 868 MHz "FM"
SAFETY OUTPUTS 2 NC/8.2 kΩ

SAFEDECX4 – 433 MHz "FM"
SAFEDECX8 – 868 MHz "FM"
SAFETY OUTPUTS 3 NC/8.2kΩ

SAFETY DEVICES 8
MAXIMUM RANGE 30 m
PROTECTION GRADE IP65
OPERATING TEMPERATURE – 20…+55°C

Radiosafe is made up of high technology appliances, protected by robust and practical enclosure with an elevated degree of protection against environment condition.
The transmission via radio between the "transceiver" interface (safety edge interface) and the stationary "transceiver" eliminates the need for one or more safety edges to be connected to the control unit by wires. This allows a more manageable and secure application of the safety edge directly onto the gate in movement.
Radiosafe is a highly professional safety device that in combination with Gamma System's safety edges it is conform to the European safety standard ENI ISO 12978:2003+A1:2009
The stationary "transceiver" is able to manage up to 8 security device via radio and is fitted with 3 safety outputs NC/8.2kΩ settable by jumpers. The semi - transparent cover allows to verify the status of the safety device and the level of batteries charge visualized by LEDs.
Each radio controlled safety device can be associated with one of the three safety outputs by a dip-switch.
The 3V Lithium battery is reliable under all weather conditions and furnishes a high level of safety and top performance in all environments.
Battery Alkaline for type SAFESFRCT
Note: The choice of operating frequency for the safety edge should be made after taking into consideration the operating frequency of the other units in the installation.
E.g. If the command units are working at a frequency of 433 MHz it is good practice to use a safety radio on the edge that works at a frequency of 868 MHz and vice-versa.

SAFETY BARRIERS



The safety optical barriers feature photoelectric systems with one or more optic radiuses, emitted by a transmitter and received by a receiver, to create an unpassable barrier.

The choice of the barrier must be made considering the following parameters:

Safety category
Two safety categories are available: 2 or 4, according to Machine Directive EN 13849-1.

Resolution
The resolution represents the minimum dimension of an object, able to darken a beam and to release the device. Practically, resolution 14 means that objects of dimensions equal or higher than 14mm diameter activate the protection intervention of the barrier.
The choice of the resolution must be made considering which part of the human body must be protected. The following pages illustrate the human parts and facilitate the choice of the barrier.

Capacity
Represents the minimum and maximum distance at which the element shall be positioned: emitter and receiver.

Response time
Indicates the time elapsing since the interruption of the beam until the activation of the alarm.

Controlled height
Represents the maximum height controlled by the barrier. Is the barrier is positioned horizontally, the value represents the depth of the protected zone.

Total barrier height
Indicates the total dimension of the barrier.

Radium number
Represents the number of optical beams present in each barrier.

Supply
Represents the nominal voltage for the correct operation of the barrier. In some types of barriers, also following optional functions are present, that must be activated only with a maximum safety, according to the applicable standards.

Muting
The muting function is the temporary exclusion, in safety condition, of the barrier as a function of the machine cycle. This function is essential when the working cycle involves the passage of the barrier by the material, without stopping the machine (ex. outlet of material on pallets).

Blanking
Blanking is the definite exclusion of a part of the barrier beam. This functions is necessary when the working cycle involves the loading of the machine in a zone crossing the barrier (ex. automatic loading of the belt in a bending press).

TYPES OF BARRIERS

The proposal of Gamma System includes seven types of barriers:

1- Safety barriers, capacity 0.1 to 5 meters

Safety category 2 and 4 with resolution 14, 20, 30, 35, 40, 50 mm (EN ISO 13849-1)

2- Safety barrier, capacity 0.3 to 17 meters

Safety category 2 and 4 with resolution 14, 20, 30, 35, 40, 50 mm EN ISO 13849-1)

3-Safety barriers, capacity 0.2 to 5 meters (low number of rays)

Safety category with 1,2,3 and 4 rays EN ISO 13849-1)

4-Safety barriers, capacity 4 to 60 meters (Low number of rays)

Safety category 2 and 4 with 1,2, 3 and 4 rays (EN ISO 13849-1)

REDUCED VERSION (without muting and blanking)

5-Safety barrier, capacity 0.1 to 5 meters

Safety category 2 and 4 with resolution14, 20, 30, 35, 40 and 50 mm EN ISO 13849-1)

6-Safety barriers, capacity 0.3 to 17 meters

Safety category 2 and 4 with resolution 14, 20, 30, 35, 40, 50 mm EN ISO 13849-1)

7-Safety barriers, capacity 0.2 to 5 metri (Low number of rays)

Safety category 2 and 4 with 1,2, 3 and 4 rays EN ISO 13849-1)

For further information please contact our technical department.

SAFETY LIMIT SWITCHES
(IEC 947-5-1; EN 60947-5-1)

Mechanical safety limit switches for sliding doors and protections, interrupting the circuit when the door or protection are opened.

– Version with cover of techno polymer or metal
– Outlet thread for electrical connection type PG 13.5
– Visibility of operation
– Contact electrically separated type Zb
– Exact intervention points
– Immunity from EM troubles
– Contact locks with positive opening operation on NC contacts.

General features
Technical data

– Operating temperature: -25°C to + 70 °C
– Protection against electric shocks (according to IEC 536): TECHNOPOLYMER Class II
METALLIC Class I
– Nominal isolation voltage (according to IEC 947-1): TECHNOPOLYMER 690 V
METALLIC 400 V
– Nominal voltage against shock (according to IEC 947-1): 6 KV impulsive
– Protection against short circuits: Fuse 10 A type gG
– Category of use: TECHNOPOLYMER A600 – Q600
METALLIC A300 – Q300
– Nominal operating current (according to IEC 947-5-1): AC-15: 24V = 10A; 230V = 3,1A; 400V = 1,9A
– Protection degree: TECHNOPOLYMER IP65
METALLIC IP66

Models available

Type of cover	***Type of auxiliary contact***	***Key switch, head adjustable 90°***	***Key switch, rotating head***	***Shaft switch***	***Lever switch***
					
Cover TECHNOPOLYMER Width 30 mm 1 cable inlet	Release contact 1 N.O. + 1 N.C.	GSP1K20Z11	GSP1K120Z11	GSP1K71Z11	GSP1K61Z11
	Release contact 2 N.C	GSP1K20Z02	GSP1K120Z02	GSP1K71Z02	GSP1K61Z02
Cover METAL Width 30 mm 1 cable inlet	Release contact 1 N.O. + 1 N.C	GSM1K20Z11	GSM1K120Z11	GSM1K71Z11	GSM1K61Z11
	Release contact 2 N.C	GSM1K20Z02	GSM1K120Z02	GSM1K71Z02	GSM1K61Z02
Safety keys	Angle key, interaxis 13 mm	GS5 			
	Flat key, interaxis 13 mm	GS6 			
	Articul. adjustable key, interaxis 40 mm	GS9 			

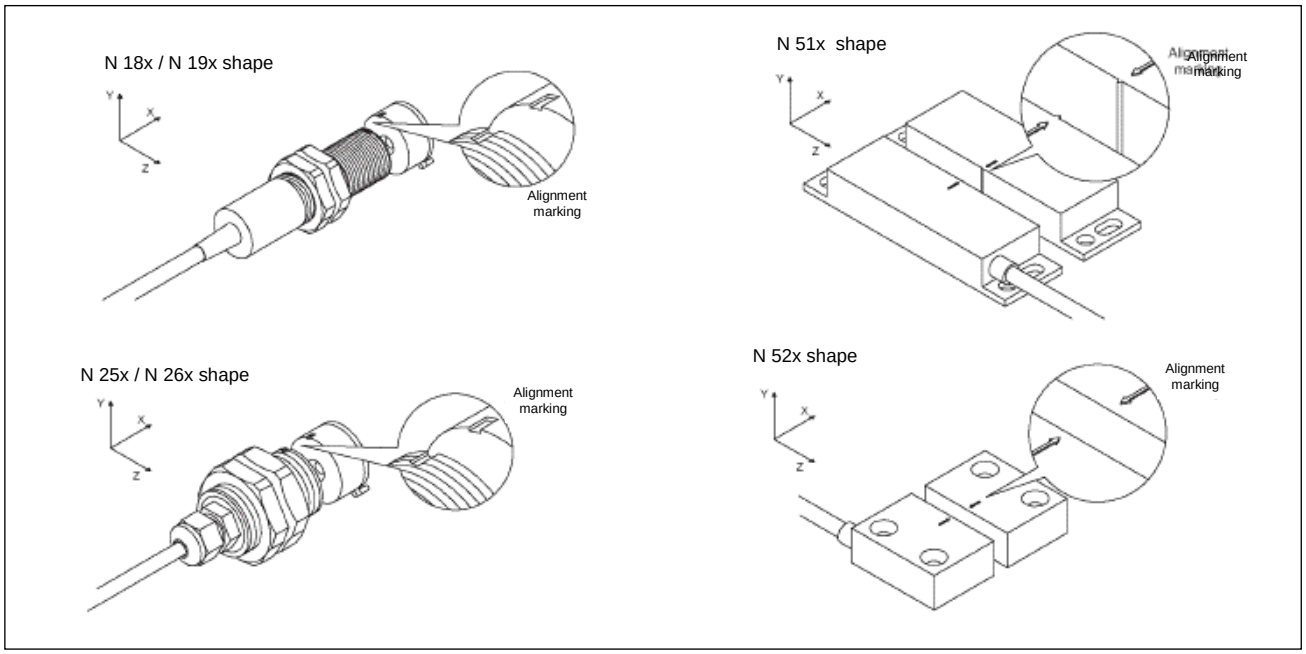
Options

– Special auxiliary contacts, slow operation (simultaneous/escalade)
– Safety relay inlet 2 N.O. type GSNC86
– Safety relay inlet 1 N.O. + 1NC type GSNC62

MAGNETIC SAFETY SENSORS WITHOUT CONTACT

Magnetic safety sensors are used to control the closing of doors and protections on systems and machines. The safety system includes a magnetic sensor and a magnetic unit, connected to a control unit. The magnetic sensor is the part detecting the presence or absence of the coded magnetic unit in the active zone, by the change of the magnetic field, and transforms it into the corresponding signal to be sent to the control unit. This latter transforms the signal supplied by the sensor into a safety signal.
The advantages of using a safety sensor without mechanic contact are the total absence of wearing and the protection against fluids and dust.

The sensor can be positioned behind plastic or diamagnetic walls, without drilling or changing the distance of activation.
The use of this system makes impossible to bypass the sensor by means of a non coded sensor. The corresponding magnets are coded to be activated in an univocous way. Serigraphic and mechanical references are present, to indicate the exact assembly position. The activation of the sensor is made approaching the magnetic unit according to the arrow direction on the sensor, and the magnetic unit, along the 3 axes “X”, “Y” and “Z” (see figure).



Technical data

- Material of body: SPS glass loaded
- Operating temperature -30°C to + 100 °C
- Protection degree: IP67
- Resistance to vibration and shocks: according **to EN60947-5-2**
- Outlet cable: Quadri-polar black AWG22 6 mm^2 of 200 cm length
- Activation magnet with aligning mark

Models available

Type	*Number and type of outlet contact*	*Shape and dimension*	*Nominal voltage (V)*	*Nominal power (W)*	*Nominal voltage (A)*	*Distance*			*Magnet*
						Activation	*Deactiv.*	*Reset*	
GSN255 	1 N.O. + 1 N.C.	Cylindrical diam. 25mm threaded M25	24	10	0,5	< 6	> 13	> 15	GSM110 round
GSN514 		Rectangular dimension 87×25mm				< 6	> 14	> 31	GSM144 rectangular
GSN520 		Rectangular dimension 36×26mm				< 3	> 9	> 12	GSM120 rectangular

Options

– Safety relay for 1 sensor, category 4 , and up to 2 sensors category 3 type GSNC62

– Safety relay for 1 sensor category 4 and up to 6 sensors category 3 type GSNC66

EMERGENCY BUTTONS

The emergency board proposed by Gamma System is one of the latest and reliable solutions on the market of industrial safety. Several solutions are available, as follows.
Loose emergency button, to be completed by the user for direct assembly on the machine. This solution must be implemented using the following products:

GS020PTAR
Red emergency operator, diam. 33 mm of thermoplastic resin. Rotation release. Side belt to control the operator's state – EN418.


GS020PTAR

GS020G
Connection flange, to connect the operator to various contacts. The connection to the operator is made by a screwdriver, whereas the connection/release of the contacts takes place through insertion .


GS020G

GS020E10
Normally Open contact (green).


GS020E10

GS020E01
Normally Close contact, positive action (red).

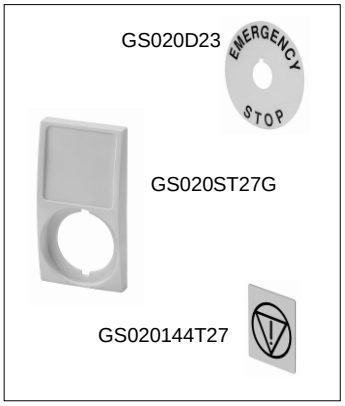

GS020E01

Main technical features:
– Nominal current (see IEC 947-5-1):
AC-15 24V=10A; 230V=3A
DC-13 24V=2,5A; 110V=0,6A
– Isolation class: 660 VAC/DC
– Contact resistance: 25 mΩ

GS020GE01S
Safety system for emergency or stop operators, including a connection flange and 2 contacts (1 NC contact controlled by the operator and 1 NO contact closing when the lock is connected to the operator) connected in series and mechanically solidal. This system assures the efficiency of the stop control, and operates automatically opening the circuit when external events are present, that might remove any component.


GS020GE01S

The button can have also a plate support, with the corresponding plate (yellow, round) according to the models:



GS020D23
Emergency plate, round, yellow, diam. 60 mm text “EMERGENCY STOP”.

GS020ST27G
Plastic support for plate, yellow, rectangular, dimensions 27×27mm.

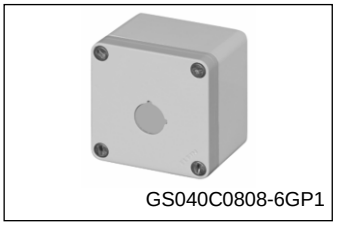
GS020144 T27
Adhesive plate, yellow, dimensions 27×27mm symbol IEC 5638 “EMERGENCY STOP”.

Containers of thermoplastic material or aluminium are available, featuring a hole to insert the emergency button:

GS080C0606-5GP1
Thermoplastic container, dimensions 65×65 mm depth 57 mm IP66, yellow cover with hole diam. 22mm, for operator up to 2 coupled contacts.


GS080C0606-5GP1

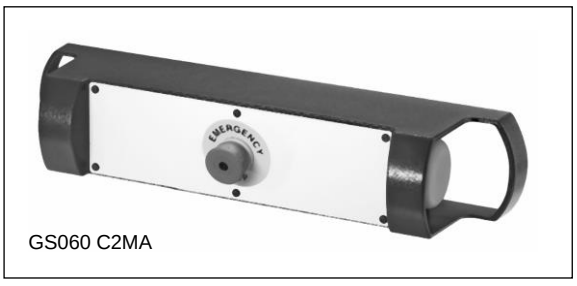
GS040C0808-6GP1
Aluminium container, dimensions 85×85 mm depth 65 mm IP66, yellow cover with hole diam. 22mm, for operator up to 2 coupled contacts.


GS040C0808-6GP1

GS080CS0606-5GA.
Thermoplastic container, dimensions 65×65 mm depth 57 mm IP66, yellow cover with serigraphy “EMERGENCY STOP”, complete of n°1 mushroom button GS020PTAR with flange and NC contact, positive action.

GS080CS0606-5GA

Bi-manual GS060 C2MA
Bi-manual control, to implement the function of simultaneity, of aluminium RAL 7016 complete operation and emergency button, central release by rotation GS020PTAR with flange and 2 NC normaly close contact, positive action. The two laterals buttons are provided with 1 NO+1NC.
The maximum encumbrance of the control, up to 480×90×110 mm allows its use also on small machines.



GS060 C2MA

Options
– Safety relay inlet 2 NO type GSNC86
– Safety relay for simultaneous control (bi-manual) type GSNC92

SAFETY CONTROL UNITS

GSNC62

Control unit for simultaneous control up to **two** sensors having a NO contact and a NC contact (**magnetic sensors, emergency button, mechanical limit switches**).

Technical features

SAFETY CATEGORY (EN ISO 13849-1:2008)	**4** with one sensor	**3** with more sensors	
Classification(EN60947-5-3:2005)	PDF-M	PDF-S	
PL	e	d	e
nop (Number of operations/year) AC-15 ; I=0,9 A DC-13 ; I= 1 A	 29500 75000	 65000 128000	 29500 75000
MTTFd	100	56	100
PFHd	$2,47x10^{-8}$	$1,03x10^{-7}$	$4,29x10^{-8}$
Mechanical life	10^{-7}		
Resistance to vibrations	EN 60068-2-6:EN60947-5-3:2005		
Operating temperature	from 0 to 55°C		
Storage temperature	from -25 to 70°C		
Degree of protection	Terminals IP20; Casing IP40		
Degree of contamination	2		
Material of the casing	PA 66		
Dimensions (LxHxP)	114,5 x 99 x 22,5 mm; Peso 220 g		
Mounting	DIN rail, 35 mm standard (EN50022)		
Type of connection	Scre-type		
Supply voltage	24 VAC/DC ± 10%		
Safety outputs	2 N.O. contacts		
Internal fuse on power supply	750 mA PTC fuse		
Current consumption (mA)	@24Vdc:10min,110max;@Vac:30min,150max		
Outgoing switching voltage	240VAC (max)(safe outputs)		
Usage category/Electrical life	AC-15:0,9A,230/240 V/3,5x10^6 cycles DC-13:1,5A,24V/1x$10^{6\ cicli}$		
Response time to OFF status	20ms		
Approvals	TUV		

GSNC66

Control unit for simultaneous control up to **six** sensors having a NO contact and a NC contact (**magnetic sensors, emergency button, mechanical limit switches).**

Technical features

SAFETY CATEGORY (EN ISO 13849-1:2008)	**4** with one sensor	**3** with more sensors	
Classification(EN60947-5-3:2005)	PDF-M	PDF-S	
PL	e	d	e
nop (Number of operations/year) AC-15 ; I=0,9 A DC-13 ; I= 1 A	 29500 75000	 65000 128000	 29500 75000
MTTFd	100	56	100
PFHd	$2,47x10^{-8}$	$1,03x10^{-7}$	$4,29x10^{-8}$
Mechanical life	10^{-7}		
Resistance to vibrations	EN 60068-2-6:EN60947-5-3:2005		
Operating temperature	from 0 to 55°C		
Storage temperature	from -25 to 70°C		
Degree of protection	Terminals IP20; Casing IP40		
Degree of contamination	2		
Material of the casing	PA 66		
Dimensions (LxHxP)	114,5 x 99 x 45 mm; Peso 300 g		
Mounting	DIN rail, 35 mm standard (EN50022)		
Type of connection	Scre-type		
Supply voltage	24 VAC/DC ± 10%		
Safety outputs	2 N.O. contacts		
Internal fuse on power supply	750 mA PTC fuse		
Current consumption (mA)	@24Vdc:10min,110max;@Vac:30min,150max		
Outgoing switching voltage	240VAC (max)(safe outputs)		
Usage category/Electrical life	AC-15:0,9A,230/240 V/3,5x10^6 cycles DC-13:1,5A,24V/1x$10^{6\ cicli}$		
Response time to OFF status	20ms		
Approvals	TUV		

GSNC86

Control unit for simultaneous control of 2 NC contacts (**magnetic sensors, emergency button**, **mechanical limit switches**).The safety output is activated once pressed the button and if contacts turn to be closed.

Technical features

SAFETY CATEGORY (EN ISO 13849-1:20008)	**4** PL e	
nop (Number of operations/year)	61320	17520 n. cycles for year
MTTFd	30	100 years
PFHd	$2,47x10^{-8}$	$9,54x10^{-8}$
Mechanical life	10^{-7}	
Resistance to vibrations	EN 81-1/2: EN69947-5-3:2005	
Operating temperature	from 0 to 55°C	
Storage temperature	from -25 to 70°C	
Degree of protection	Terminals IP20	
Degree of contamination	2	
Material of the casing	PA 66	
Dimensions (LxHxP)	115 x 105 x22,5 mm; Peso 180 g	
Mounting	DIN rail, 35 mm standard (EN50022)	
Type of connection	Scre-type	
Supply voltage	24 VAC/DC ± 10%	
Safety outputs	2 N.O. contacts	
Internal fuse on power supply	750 mA PTC fuse	
Current consumption (mA)	DC:out =off :50 OUT=on:100;AC:out=off:50 OUT=on	
Outgoing switching voltage	240VAC (max)(safe outputs)	
Usage category/Electrical life	AC-1:3A ,250 V;AC-15:0,9A 250V DC-13:1,8A,24V/	
Response time to OFF status	30ms	
Approvals	TUV	

GSNC92

Control unit for control, by **bi-manual consoles**, of the simultaneous closing (delay not over 0,5 sec.) of 2 buttons, each featuring 1 contact NO + 1 contact NC.

Technical features

SAFETY CATEGORY (EN ISO 13849-1:2008)	**4** PL e	
nop (Number of operations/year)	201480	61320 n. cycles for year
MTTFd	30	100 years
PFHd	$2,47x10^{-8}$	$9,54x10^{-8}$
Mechanical life	10^{-7}	
Resistance to vibrations	EN 81-1/2: EN69947-5-3:2005	
Operating temperature	from 0 to 55°C	
Storage temperature	from -25 to 70°C	
Degree of protection	Terminals IP20	
Degree of contamination	2	
Material of the casing	PA 66	
Dimensions (LxHxP)	99 x 114,5 x 22,5 mm; Peso 207 g	
Mounting	DIN rail, 35 mm standard (EN50022)	
Type of connection	Scre-type	
Supply voltage	24 VAC/DC ± 10%	
Safety outputs	2 N.O. contacts	
Internal fuse on power supply	750 mA PTC fuse	
Current consumption (mA)	DC:out =off :50 OUT=on:100;AC:out=off:50 OUT=on	
Outgoing switching voltage	240VAC (max)(safe outputs)	
Usage category/Electrical life	AC-1:3A ,250 V;AC-15:0,9A 250V DC-13:1,8A,24V/	
Response time to OFF status	30ms	
Approvals	TUV	

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