RIELLO ELETTRONICA

gamma system

INRATO International

focus op veiligheid

Tel +31(0)85-27 36 750
Web www.inrato.com

CONTROL UNITS

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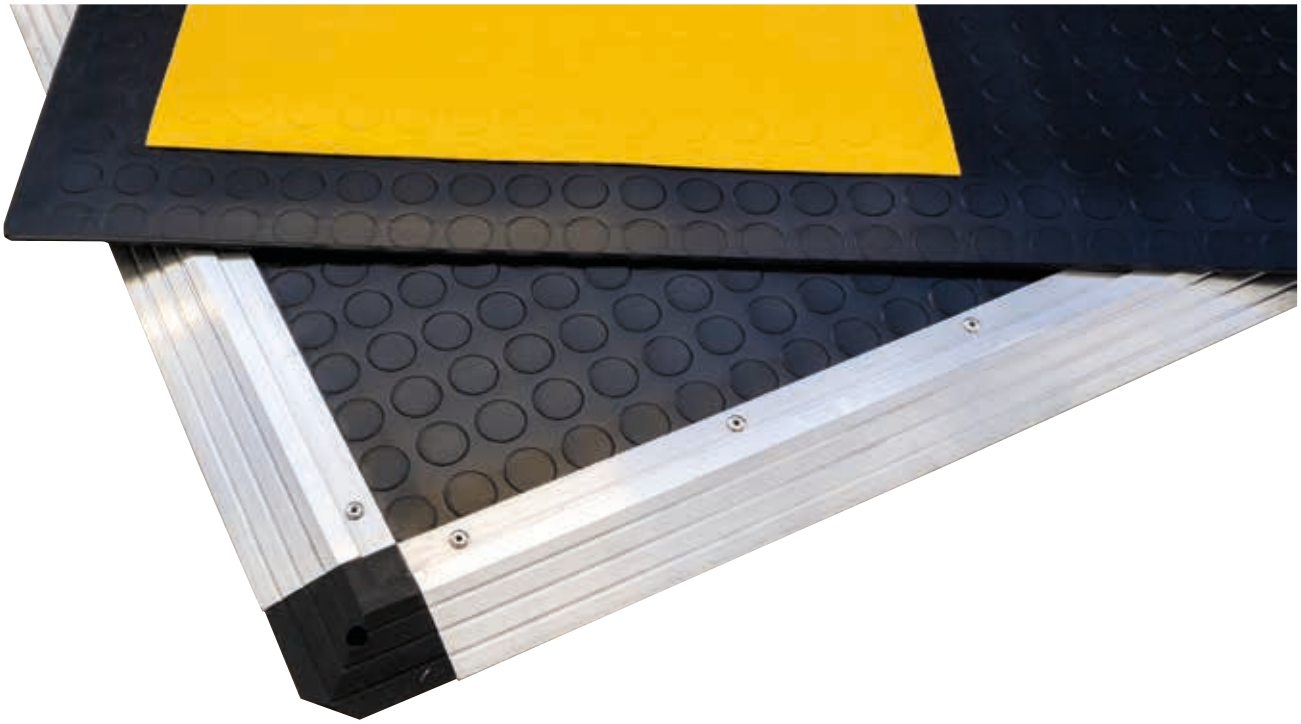

SAFETY MATS

The pressure-sensitive mat is a “safety device” which features an electro-pressure sensible element to detect the presence of persons.
The presence of one or more persons over 35 kg closes a contact inside the sensor.
The change in state of the internal sensor (NO to NC) is processed by the control unit which emits a machine stop signal and removes the hazardous situation.

SENSITIVE EDGES

The sensitive edge is a safety component used to avoid crashing or cutting risks by sliding doors, automatic moving guards, automated moving guards, electrical gates, etc.
The edges feature a PVC coating with an internal sensor, consisting of 2 conductive blades, separated by a non-conductive part. When the edge is pressed, the blades come into contact and make the circuit.
The change in state of the internal sensor (NO to NC) is processed by the “control unit” that emits a stop signal to the machine thereby removing the hazardous situation.

SAFETY BUMPERS

The pressure-sensitive safety bumper is used to protect personnel from collision against vehicles or moving parts of an industrial machine such as AGV, stacker cranes, wire-guided vehicles, automatic warehouses, etc…
When minimum compression is applied to the bumper, after a pre-run, the internal contact of the sensor closes and changes its state (from NO to NC). The “control unit” immediately emits a stop signal indicating that a change in the sensor state has occurred and removes the hazardous situation.
After the pre-run, the bumper still allows for a compression called “overrun”, which varies according to the bumper depth, and such to further soften the impact.

CONTROL UNIT OR CONTROL DEVICE FOR SAFETY MATS, SAFETY EDGES AND SAFETY BUMPERS

The control unit is an apparatus conceived and used to constantly check proper operation of a sensor (safety mat, safety edge or safety bumper).
Pressure exerted on the sensor causes the output contact of the control device to break.
The control unit constantly verifies good operation of both the sensor and the connecting circuit.
A control device is capable of supervising and controlling several sensors but it cannot perform the self-diagnosis to detect which of the sensors is faulty.
If several sensors are installed, it is a good practice to use one control unit every 3 or 4 sensors.

Models available:
GP02/E
GP02R.T - GP02R.T1
GP04T - GP04R
GP02R and GP02R-C only for edges with electric resistance, 8.2 kΩ

DESCRIPTION

Emergency stop circuit of the sensor used to manage and control the sensor and equipped with two safety relays with forced opening contacts.

The relays, which are usually activated, deactivate if the following conditions arise:

- Power failure
- Activation of the safety mat, edge and bumper.
- Internal faults to the control unit;
- Breaking of the circuit inside the safety mat, safety edge and safety bumpers or interruption of connecting cables between the control unit and the sensor (safety mat, edge and bumper).

The devices are supplied with automatic reset function. Manual reset function also available.
In case the control unit is used without reset function, this option may be supplied through the control system of the machine (please refer to EN 13849-1 Standard).

OPERATION

Two separate channels detect voltage at the ends of sensor terminals (safety mat, edges, bumper) and each channel switches a safety relay with forced opening contacts.

MODELS:

GP02/E GP02R.T (automatic reset) - **G02R.T1** (manual reset)

Supply voltage is limited by a current limiting switch and relevant piloting circuit in order to prevent short-circuit currents to arise during the closing phase of the sensor (safety mat, edge and bumper). The control unit performs a self-control cycle each time a cycle or a putting into operation is executed. Input terminals are provided for:

- Test signal which activates/deactivates the circuit of the control device by stimulating the activation of the sensor and verifying the system efficiency;
- Manual/Feedback reset signal.

The two modules differ in the number of output contacts: model GP02/E has one NO safety contact whereas model GP02/E-S2 and GP02R have two safety NO contacts.

GP04T

Safety unit for 4-wire sensor with 2 static outputs type OSSD (PNP).

GP02R AND GP02R FOR SAFETY EDGES WITH ELECTRIC RESISTANCE 8.2 KΩ

Two symmetrical circuits detect the current circulating in the edge set for the 8.2 KΩ resistance.

When a variation resulting from a fault or an edge activation is detected, the output relays are de-energized. They break the safety contacts.

GP04R

Safety control units for 2-wire resistive sensor, 8.2 KΩ, with 2 static outputs OSSD (PNP).

TECHNICAL FEATURES

		GP02/E	GP02R.T	GP02R 8,2kΩ	GP02R-C 8,2kΩ
PL		e			
Category		3			
PFH_D (1/h)		$4.94*10^{-8}$	$4.94*10^{-8}$	$4.29*10^{-8}$	
No. of operations/year		80000	40000	40000	18000
T_{10D} [years]		9.25*	>20	>20	>20
Usage categories		DC13 – 1.5 A AC1 – 3A	DC13 – 1A	DC13 – 1A	AC15 – 3A DC13 – 3A
Electrical data					
Supply voltage		24 Vdc ± 10%			
Current consumption with sensor activated (24Vdc) [mA]		15			
Current consumption with reset module (24Vdc) [mA]		90	≤ 120	≤ 120	15
Internal protection of power supply		YES (1 A)	YES (280 mA)	YES (280 mA)	
Inputs					
Connectable sensor		4 wires		Resistive 8.2kΩ 2 wires	
Input short-circuit detection		YES			
Input connection interruption detection		YES			
Max length of connection cables [m]		100			
Min section of connection cables		0.35 mm^2 (1mm^2 L>20m)			
Max resistance of sensor/s, activated [Ω]		40	100	40	
Voltage applied to inputs		24 Vdc			
Max current (peak value) [mA]		200			
Safety outputs					
Number of safety outputs		1	2	2	
Rated voltage/Max switchable voltage [Vac/Vdc]		250/400	230/300	230/300	
Rated current in AC15 230 Vac/DC13 24 Vdc [A]		64 in DC	1.5 A / 1.2 A	1.5 A / 1.2 A	
Material of standard contacts		AgNi	$AgSnO_2$	$AgSnO_2$	
Rated current in Vdc		24			
Rated power AC/DC VA (50 Hz)/W		-/0.7	-/0.25	-/0.25	
Delay to energizing (reset)		25 ms (typical)	12 ms	12 ms	
Delay to de-energizing (trip)		10 ms (typical)	< 25 ms	17 ms	
Protection against over-current		6 A quick-action / 4 A delayed	4 A quick-action / 2 A delayed		
Mechanical life		10^7			
Signal outputs					
Number of signal outputs		1			
Max operating voltage	Vac	125			
	Vdc	30			
Max current 110 Vac [A]		0.2			
Max current 24 Vdc [A]		0.5			
Environmental characteristics					
Operating temperature [°C]		0 / +50	-25 / +50	-25 / +50	-25 / +55
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 screws
EC Declaration		16CMAC0048	16CMAC0050	16CMAC0049	
Other European Directives					
2012/19/UE		RAEE			
2011/65/UE		ROHS			

TECHNICAL FEATURES

		Type GP04 R	Type GP04 T
PL		e	
Category		3	
Diagnostic covering [%]		86.2	
PFH_D (1/h)		$5*10^{-8}$	
Usage categories		DC13	
Electrical data			
Supply voltage		24 Vdc ± 10%	
Current consumption with sensor activated (24VDC) [mA]		15	
Current consumption with reset module (24VDC) [mA]		15	
Inputs			
Connectable sensor		4 wires	2 wires (resistive)
Input short-circuit detection		Yes	
Input connection interruption detection		Yes	
Max length of connecting cables (m)		100	
Min section of connecting cables		0.35 mm^2 (1mm^2 L>20m)	
Max resistance of sensor/s, activated [Ω]		100	
Voltage applied to inputs		24 Vdc	
Max current (peak value) [mA]		2	
Safety outputs			
Number of safety outputs		2	
Type of outputs mode		Static	
Type of output control		PNP Source	
Rated supply voltage/ Max switchable voltage [Vac/Vdc]		24/30	
Rated current in AC15 230 Vac/DC13 24 Vdc [A]		0.4 DC	
Rated power supply voltage Vdc		24	
Rated power AC/DC VA (50 Hz)/W		-/0.25	
Delay to energizing (reset)		< 10 ms	
Delay to de-energizing (activation)		< 10 ms	
Protection against over-currents		1 A quick-action	
Mechanical life		10^7	
Signalisation outputs			
Number of signalisation outputs		1	
Max operating voltage	Vac	125	
	Vdc	30	
Max current 110Vac [A]		0.2	
Max current 24Vdc [A]		0.5	
Environmental characteristics			
Operating temperature [°C]		-10 / +55	
Storage temperature [°C]		-20 / +70	
Max relative humidity		85%	
Degree of protection of terminals		IP20	
Degree of protection of casing		IP30	
Dimensions			
Width [mm]		22.5	
Height [mm]		98	
Depth [mm]		56,4	
Weight [g]		60	
Material of the casing		PA - UL94V0	
Installation		On Omega rail, 35 mm	
EC Declaration		20CMAC0023	
Other European Directives			
2012/19/UE		RAEE	
2011/65/UE		ROHS	

N. 886

INRATO International
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Tel +31(0)85-27 36 750
Web www.inrato.com

RIELLO ELETTRONICA
gamma system

10044 Pianezza - TO - Via Torino, 24/I - ITALY
Tel. +39 011 968 24 66 r.a. - Fax +39 011 967 42 11
e-mail: info@gammasystem.com
www.gammasystem.com