CARLO GAVAZZI
Automation Components

Wireless safety system

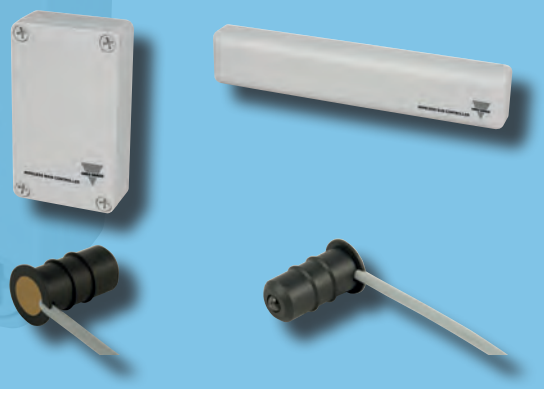
Sensors

WSM/WSS
Wireless safety system

The Carlo Gavazzi wireless safety system for use with safety edges on industrial doors and gates is designed to eliminate traditional spiral cables between the door controller and the door. Instead, the system utilizes a bi-directional radio communication with an operating frecuency of 2.4 GHz making it less susceptible to common radio interference. Incorporating a test signal feature and enhanced battery efficiency, the system makes a highly reliable and safe solution for your wireless door or gate application.

The WSM system is compatible with a large variety of safety edges on the market which reduces the need for new technology investments. Or it can be used with the Carlo Gavazzi low consumption photoelectric safety edge sensors.
The subcontroller is connected to the safety edge and the main controller to the door or gate control panel safety input.

The application can consist of one main controller and up to 4 (door) or 6 (gate) sub controllers which in their turn can control 2 safety edges - a total of 8 (door) or 12 (gate) separate safety edges for each main controller. This wireless safety system is especially well suited to high speed doors with frequent traffic, tall doors and megadoors, doors in public areas, gates - just to name a few applications.



Long battery life
The wireless sub controller is designed for exceptional battery performance, with a minimum of one year for one set of sensors. The number of batteries is optional from one to four, with a higher number corresponding to a longer battery life. With Carlo Gavazzi photoelectric safety edge, 4 batteries and 20 seconds of active time per open and close cycle and 800 cycles per day, the battery lifetime is more than one year.

Long wireless distance
The wireless distance of 10 m (door) or 15 m (gate) between the main controller and the sub controller allows the control of very large doors or gates, where spiral cables would not reach. Opening heights of up to 20 m can be controlled with the main module mounted at a height of 10 m.

Cross talk
Since each submodule and the corresponding photoelectric sensor is synchronized and multiplexed, cross talk among individual sensors cannot occur.

Standards/certifications
The Carlo Gavazzi wireless safety system complies with the safety standards EN13241-1, EN12445, EN12453, EN12978, Machinery Directive 2006/42/EC, amended by Directive 98/79/EC for industrial doors. Low voltage directive 2006/95/EC.
Fulfills the requirements for Radio Equipment and Telecommunication Terminal Equipment (R&TTE) Directive 1999/5/EC.
Fulfills the requirements for America FCC port 15(C) 15.247 FCC ID: Y55WSS0001 as well for Canada IC RSS210.

Wireless safety system for industrial doors

Main controller WSM2BA2D24

With its neutral IP 66 housing design for outdoor use and built-in antenna, the Carlo Gavazzi main controller makes a discreet contribution to the wireless installation. The controller has three SPST relay outputs; one normally closed (NC), one normally open (NO) 8.2 KΩ - and one normally closed output for low battery alarm. One main controller can control up to 4 sub controllers. A test input ensures verification of the sensor safety function and is also used for activating sub modules from battery save mode. Any loss of communication between the main and sub modules will immediately activate the safety output. The sub controllers' active time is adjustable by dip-switch on the main controller and can be set from 10 to 80 seconds. 16 channels are available to eliminate crosstalk.

Sub controller WSS2BA2BAT

This flexible Carlo Gavazzi subcontroller can handle 2 safety edges and 1 door-in-door limit switch. It can control inputs from all standard NO 8.2 KΩ safety edges, all standard NC safety edges and the Carlo Gavazzi photoelectric sensors PB11CNT15WX. The optical safety edge distance is 15 m. The number of batteries is optional; one to four batteries (3.6 lithium AA) are applicable.

Emitter/receiver PB11CNT15WX

Low consumption photoelectric sensors. They can be placed with a maximum distance of 15 m between them.

Safety edge

The Carlo Gavazzi photoelectric safety edge is made for 11 mm rubber profiles.

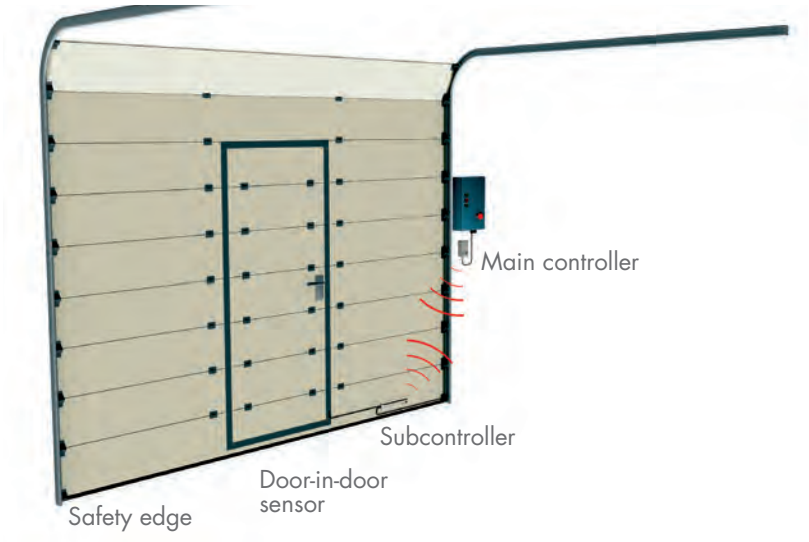
The photoelectric beam is adjusted at each wake up signal from the main controller to assure optimized detection performance.

Alternative safety edges

The Carlo Gavazzi wireless system is compatible with alternative safety edges, for instance:

Conductive rubber normally open safety edge 8.2 kΩ

Mechanical normally closed safety edge



The battery powered subcontroller connects to the safety edge. The main controller connects to the door control panel. This affords a wireless link between the safety edge and the control panel that eliminates the need for a direct wire connection between the safety edge and the door controller.

WSM/WSS
Wireless safety system

Wireless safety system for industrial gates

Main controller
WSM2GAOOD24
WSM2GACCD24

With its neutral IP 66 housing design for outdoor use and built-in antenna, the Carlo Gavazzi main controller makes a discreet contribution to the wireless installation. The controller is in two versions. WSM2GAOOD24 has tre SPST relay outputs; two normally open (NO) 8.2 KΩ - and one normally closed output for low battery alarm. WSM2GACCD24 has tre SPST relay outputs; two normally closed (NC) - and one normally closed output for low battery alarm. One main controller can control up to 6 sub controllers. A test input ensures verification of the sensor safety function and is also used for activating sub modules from battery save mode. Any loss of communication between the main and sub modules will immediately activate the safety output. The sub controllers' active time is adjustable by dip-switch on the main controller and can be set from 15 to 105 seconds or infinite. 16 channels are available to eliminate crosstalk.

Sub controller
WSS2GA2BAT

This flexible Carlo Gavazzi subcontroller can handle 2 safety edges. One for opening and one for closing. It can control inputs from all standard NO 8.2 KΩ safety edges, all standard NC safety edges and the Carlo Gavazzi photoelectric sensors PB11CNT15WX. The optical safety edge distance is 2.5 m. The number of batteries is optional; one to four batteries (3.6 lithium AA) are applicable.

Emitter/receiver
PB11CNT15WX

Low consumption photoelectric sensors. They can be placed with a maximum distance of 2.5 m between them.

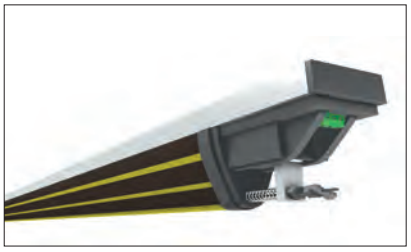
Safety edge

The Carlo Gavazzi photoelectric safety edge is made for 11 mm rubber profiles.
The photoelectric beam is adjusted at each wake up signal from the main controller to assure optimized detection performance.

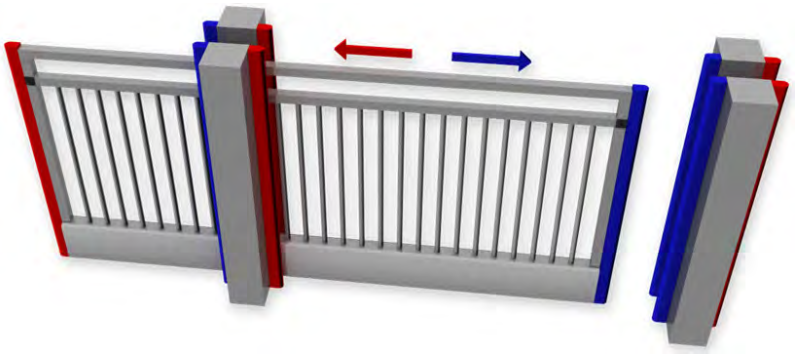
Alternative safety edges

The Carlo Gavazzi wireless system is compatible with alternative safety edges, for instance:

Conductive rubber normally open safety edge 8.2 kΩ



Mechanical normally closed safety edge



Carlo Gavazzi wireless system consists of one main controller that can manage up to 6 sub controllers.
Each sub controller can manage:
One safety edge for opening (red safety edge).
One safety edge for closing (blue safety edge).

Applications

High speed doors

In door applications where speed is important and door movements are frequent, the spiral cable between the moving door and the controller is susceptible to wear and breakage.

Our solution
Carlo Gavazzi's wireless safety system replaces the cable, thus reducing difficult and costly repairs, and expensive downtime is avoided. Battery lifetime is high and the optional use of 1 to 4 batteries makes it flexible and customizable to fit the user's servicing cycle.

Photo: Nergeco 2010

Tall doors and megadoors

Where very large opening heights are required, for instance hangar doors, spiral cables will not stretch far enough.

Our solution
Carlo Gavazzi's wireless safety system allows for opening heights up to 10 m, and even 20 m with the main module placed at a height of 10 m.

Doors in public areas

Door applications with spiral cables in public places such as car parks and business streets are often exposed to vandalism or accidental damage because of their easily accessible placing.

Our solution
By removing the cables the applications are less exposed to damage and a continuous and reliable operation is secured.

WSM/WSS
Wireless safety system

Applications

Adjacent doors

The Carlo Gavazzi wireless safety system uses 16 different channels in order to avoid cross-talk between adjacent doors.

Door in door

In door-in-door applications the big door has to remain shut when the pedestrian door is open. This safety function is monitored by the sub controller's door-in-door limit switch input.

Sliding gate

Customers need to install a safety system on gates, avoiding to have running cables under the ground for the connection to the safety edges.

Our Solution
By using the wireless safety system for gates only one main module is nedeed to control both the safety edges on the gate and the one on the support pole.

WSM / WSS - specifications

		Industrial doors		Industrial gates		Emitter/r eceiver	
		Main controller	Sub controller	Main controller	Sub controller	Emitter	Receive
Wireless	-		WSS2BA2BAT		WSS2GABAT	-	-
	NC/NO 8K2	WSM2BA2D24					
	NO 8K2			WSM6GAOOD24		-	-
	NC			WSM6GACCD24		-	-
Cable						PB11CNT15WE	PB11CNT15WR
Range Wireless		10 m	10 m	15 m	15 m	-	
Rated operating distance (S_n)		-	-	-	-	15 m (doors) / 2.5 m (gates)	
Hysteresis (H)		≤ 10%				-	-
Rated operational voltage		12 to 24 VAC / DC	1-4 Lithium 3.6 AA batteries	12 to 24 VAC / DC	1-4 Lithium 3.6 AA batteries	From SUB Controller	
Supply current		< 50 mA	< 40 mA	< 50 mA	< 40 mA	-	
Output		-	-	NC or NO 8K2	-	-	
Output function		N.O. (light switching) or N.C. (dark switching)				-	-
Output current (I_e)		≤ 100 Ma (max. Load capacity 100 nF)				-	-
Minimum operational current		≤ 0,5 mA				-	-
Off-State current (I_r)		≤ 100 µA				-	-
Voltage drop (U_d)		≤ 2.5 V DC @ 100 mA				-	-
Sensor protection		Reverse polarity, transients	Reverse polarity	Reverse polarity, transients	Reverse polarity	-	
Response time		≤ 120 ms		15-100 ms	-		
Power on delay (t_v)		-		≤ 500 ms	3 s	-	
Led indications		ESPE1 or 2 active (Yellow LED), Low battery (Red LED) and Power ON (Green LED)				-	
Led indications		2 x Yellow, Red and Green LED	2 x Yellow LED	2 x Yellow, Red and Green LED	2 x Yellow LED	-	
Sensitivity control		Teach-In programming					-
Degree of protection		IP66		IP66		IP67	
Ambient temperature		-25 to +55°C (-13 to +131°F), Storage -40 to +70°C (-40 to +158°F)					-
Ambient humidity		35 to 85 % RH, storage: 35 to 85 % RH					-
Ambient light		≤ 10.000 Lux					-
CE marking		According to EN12445, EN12453, EN12978					-
Approvals		cULus (UL508), FCC (Port 15 B,C), IC (RSS210, RSS GEN, RSS-102)					-
Installation category		III (IEC60664/60664A; 60947-1)					-
Pollution degree		3(IEC60664/60664A; 60947-1)					-
Vibration		10 to 150 Hz, (1,0 mm/15G; IEC 60068-2-6) in X,Y and Z direction					-
Shock		30G /11 mS. 3 positive and 3 negative in X,Y and Z direction					-
Light source		-		-		LED 880 nm	
Light type		-		-		Infrared Modulated	
Material		Light grey PC	Light grey PC; Black PC	Light grey PC	Light grey PC; Black PC	PA6 Glass reinforced	
Cable		PVC, black, 2 m, 4 x 0.14mm², Ø=3.3 mm					-
Connector		4-pin M8					-
Dimensions		75 x 125 x 35 mm	22 x 45 x 214 mm	75 x 125 x 35 mm	22 x 45 x 214 mm	Ø11 x 24.5 mm	
Weight incl. packaging		230 g	220 g	230 g	220 g	-	
Accessories		Mounting bracket: APD30-MB1					-
Accessories, additional		"Mounting bracket: APD30-MB2 Connectors: CONM54NF-... Types"					-

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