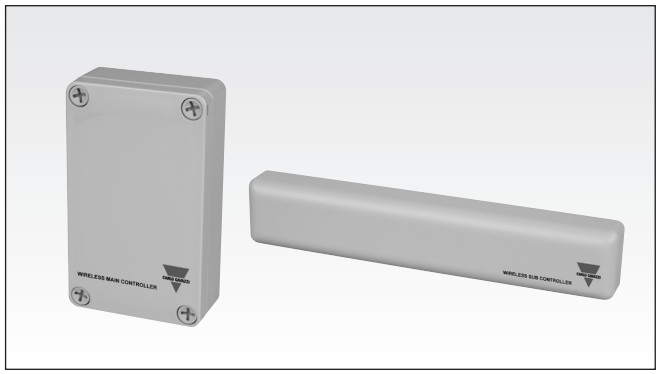
Wireless Entrapment Protection Device For Industrial Doors ESPE Type WSM / WSS ...



- **Wireless Entrapment Protection Device for Industrial Doors**
- **Input for two ESPE (electro-sensitive protective equipment)**
- **Replaces cable between Door controller and ESPE**
- **Input for door-in-door sensor**
- **Output ESPE: 1 x SPST NC, 1 x SPST NO (8,2kΩ)**
- **Output low battery: 1 x SPST NC contact**
- **2,4 GHz duplex communication**
- **Built-in antenna**
- **IP66 ratings**

Product Description

Wireless Entrapment Protection Device (EPD) for Industrial Doors. The system is designed to replace the connection cable between the ESPE (electro-sensitive protective equipment) and the door controller. The sub controller has input for either N.C. ESPE, N.O. 8.2 kΩ ESPE or the Carlo Gavazzi low consumption photoelectric ESPE N.C. contact. The system is designed for high reliability using 2.4 GHz duplex communication between the main controller and sub controller. The main controller can handle up to 4 sub modules i.e. one system can handle 8 ESPEs.
The sub controller is activated by a test signal from the main controller and stays active during the period of time set at the main controller up to 80 seconds.

Ordering Key

WSM 2 B A 2 D24

- **Function**
- **Main/Sub Controller**
- **No of channels**
- **Mute function**
- **Adjustment**
- **Output**
- **Power supply**

Type Selection

Housing W x H x D	Range Wireless	Type	Ordering no.
75 x 125 x 35 mm	10 m	Main Controller	**WSM 2 B A 2 D24**
45 x 214 x 22 mm	10 m	Sub Controller	**WSS 2 B A 2 BAT**

Housing W x H x D	Range S_n	Cable length	Type	Ordering no.
Ø11 x 24.5 mm	15 m	2 m	Emitter	**PB 11 CNT 15 WE**
Ø11 x 24.5 mm	15 m	12 m	Receiver	**PB 11 CNT 15 WR**

Specifications Main Controller (WSM)

Rated operational volt. (U_B)	12 to 24 VAC/DC (-10 +15%)
Ripple (U_{rpp})	≤ 10%
Supply current	< 50 mA
Communication Frequency	2.4 GHz Duplex
Number of channels	16 selectable via DIP switch
Sub Controller live time	10 – 80 sec. Selectable via DIP-switches
Relay	
ESPE NC	SPST
ESPE NO 8.2 kΩ	SPST
Low Battery	SPST
	1 A / 30 VDC
	0,5 A / 30 VAC
	>100.000 AC11 or DC11
Protection	Reverse polarity, transients

Indications Main Controller	
Power supply	Green LED
ESPE 1 or 2 active	2 x yellow LEDs
Low Battery	Red LED
Channels not synchronized	Toggle red & green LED
Test input	
(active high or active low)	Selectable via DIP switch
Active high	12-24 V
Active low	0 V
Test impulse time	
Minimum pulse width	> 100 mS
Maximum pulse width	< 2 sec
Operating frequency	25 Hz per sub controller
Response time	
OFF-ON (t_{ON})	≤ 120 ms
ON-OFF (t_{OFF})	≤ 120 ms

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Specifications Main Controller (WSM) (cont.)

Environmental	
Installation category	III (IEC 60664/60664A; 60947-1)
Pollution degree	3 (IEC 60664/60664A; 60947-1)
Degree of protection	IP66
Rated insulation voltage	50 VDC
Temperature	
Operating Temperature	-25° to +55°C (-13° to +131°F)
Storage Temperature	-40° to +70°C (-40° to +158°F)
Size	75 x 35 x 125 mm
Material	
Housing	Light Grey ABS
Top	Light Grey ABS
Weight	230 g
Approvals	**cULus** UL508 **FCC** port 15 B,C FCC-ID: Y55WSM0001 **IC** RSS210, RSS GEN, RSS-102 IC-ID: 7188C-WSM0001
CE-marking	EN12445, EN12453, EN12978 Radio Equipment and Telecommunications Terminal Equipment (R&TTE) Directive 1999/5/EC Low Voltage Directive 2006/95/EC Electromagnetic Compatibility Directive 2004/108/EC Machinery Directive 2006/42/EC, amended by Directive 98/79/EC For industrial doors only See EN13241-1

NOTE: Changes/modifications not approved by Carlo Gavazzi could void the user's authority to operate the equipment.

Specifications Sub Controller (WSS)

Rated operational volt. (U_B)	1 to 4 ER14505 3.6 VDC size AA Lithium batteries ≥ 2700 mAh
Supply current	< 40 mA
Communication Frequency	2.4 GHz Duplex
Number of channels	16 selectable on DIP switch
Sub Controller live time	10 – 80 Sec. Selectable on DIP-switches at the main controller
ESPE inputs	
ESPE NC	Standard NC ESPE
ESPE NO 8.2 kΩ	Standard NO, 8.2 kΩ
Photoelectric ESPE	Carlo Gavazzi Low current ESPE PES for wireless applications
Door in door input	NC input from Limit Switch
Response time	
OFF-ON (t_{ON})	≤ 120 mS
ON-OFF (t_{OFF})	≤ 120 mS
Wake time after sleep mode	≤ 400 mS
Protection	Reverse polarity
Indications Sub Controller	
ESPE 1	Yellow LED
ESPE 2	Yellow LED shines in 20 sec. after a short activation on the pushbutton
Test input	The submodule wakes up after the test input of the main controller
Antenna	Built in
Environmental	
Installation category	III (IEC 60664/60664A; 60947-1)
Pollution degree	3 (IEC 60664/60664A; 60947-1)
Degree of protection	IP66
Rated insulation voltage	50 VDC
Temperature	
Operating Temperature	-25° to +55°C (-13° to +131°F)
Storage Temperature	-40° to +70°C (-40° to +158°F)
Size	22 x 45 x 214 mm
Material	
Housing	Light Grey PC
Bottom	Black PC
Weight	220 g
Approvals	**cULus** UL508 **FCC** port 15 B,C FCC-ID: Y55WSM0001 **IC** RSS210, RSS GEN, RSS-102 IC-ID: 7188C-WSM0001
CE-marking	EN12445, EN12453, EN12978 Radio Equipment and Telecommunications Terminal Equipment (R&TTE) Directive 1999/5/EC Low Voltage Directive 2006/95/EC Electromagnetic Compatibility Directive 2004/108/EC Machinery Directive 2006/42/EC, amended by Directive 98/79/EC For industrial doors only See EN13241-1

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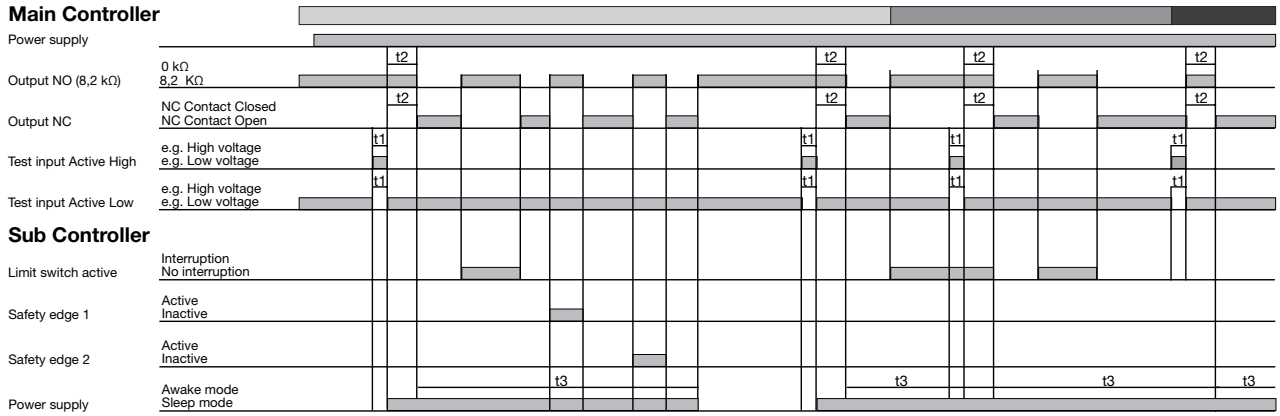
Specifications Photoelectric Sensors ESPE (PB11)

Rated operational volt. (U_B)	From Sub Controller	**Degree of protection**	IP67
Rated operational dist. (S_n)	15 m	**Housing size**	Ø11 x 24.5 mm
Light source	LED 880 nm	**Housing Material**	PA6 Glass reinforced
Light Type	Infrared Modulated	**UL-Approvals**	UL508
Ambient light	>20,000 lux	**CE-marking**	EN12978

Operation Diagram

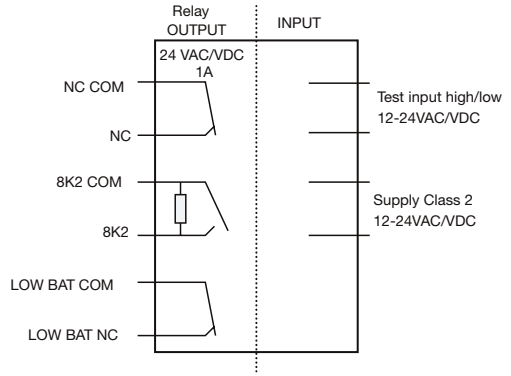


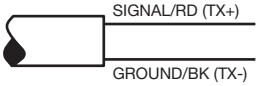
t1 = 100 mS
t2 = ≤ 2 S
t3 range from 10 to 80 S (t3 always starts/restarts after t2)

Normal test
Test while safety edge active
Test while safety edge inactive

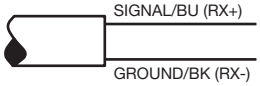
Wiring Diagrams

WSM2BA2D24
WIRELESS MAIN CONTROLLER





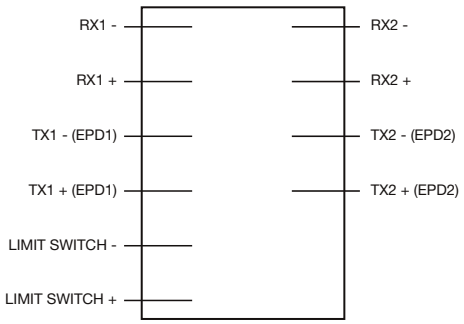
Photoelectric Transmitter



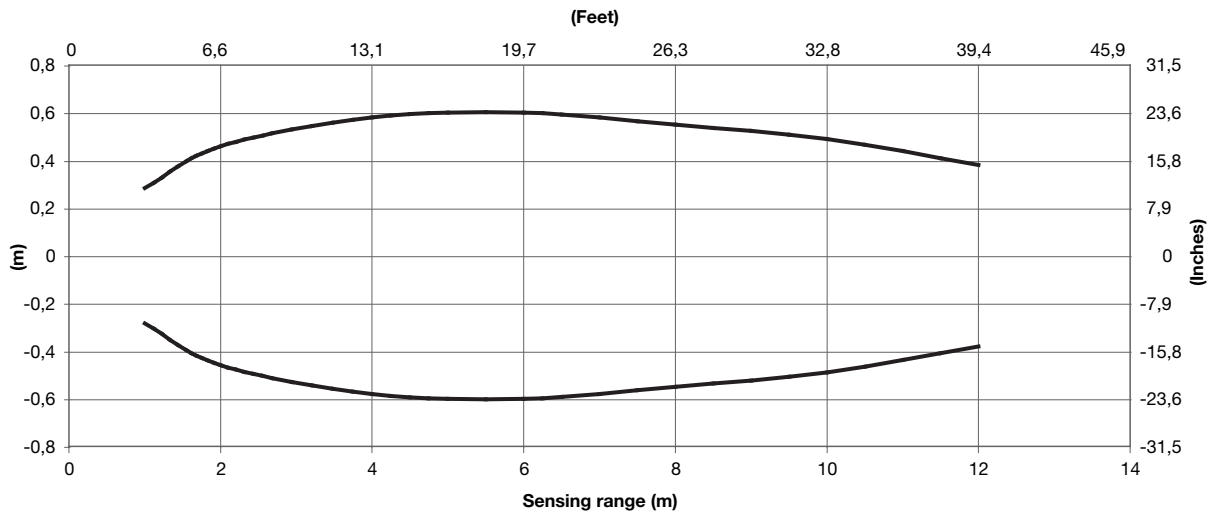
Photoelectric Receiver

WSS2BA2BAT
WIRELESS SUB CONTROLLER

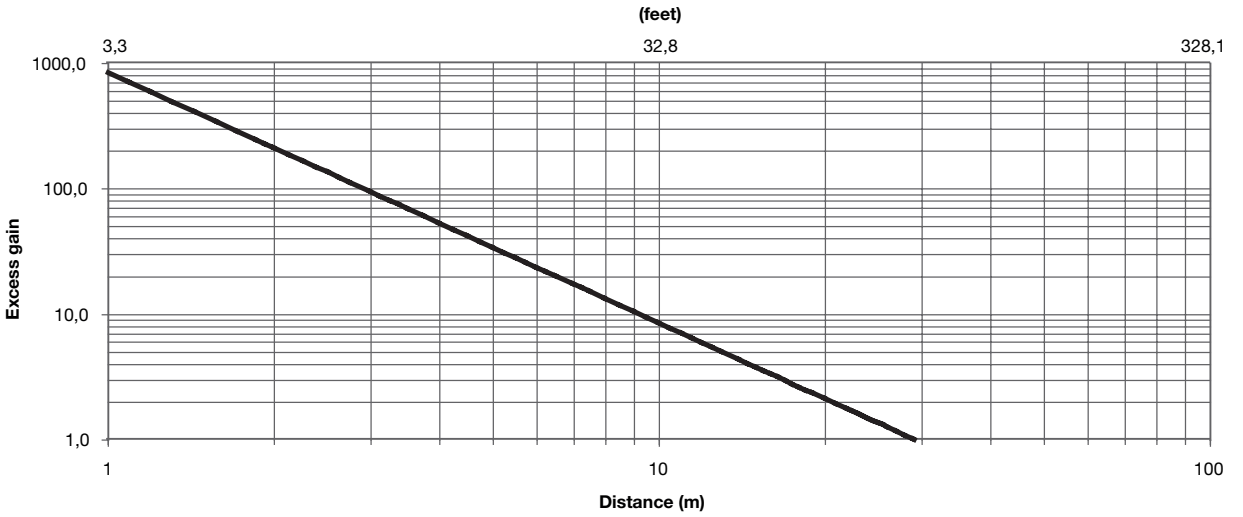
RX1: PHOTELECTRIC RECEIVER 1
RX2: PHOTELECTRIC RECEIVER 2
TX1: PHOTELECTRIC EMITTER 1
TX2: PHOTELECTRIC EMITTER 2



Detection Diagram

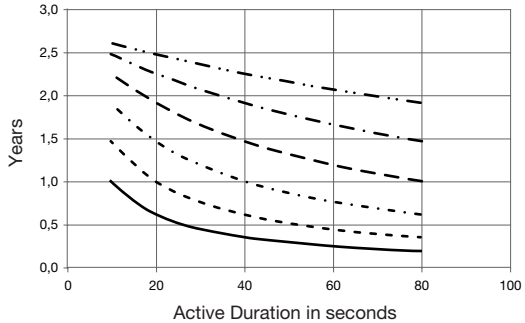


Excess Gain

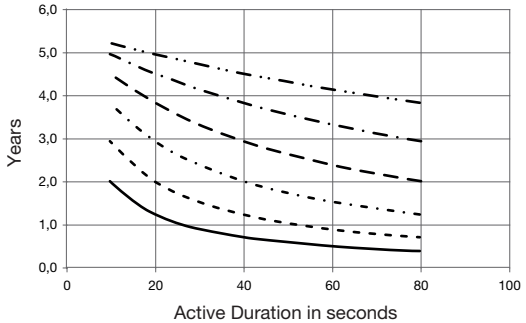


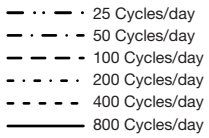
Battery Lifetime

2 x ER14505 3.6 VDC size AA, ≥ 2700 mAh Lithium batteries. Ambient temperature 20°C



4 x ER14505 3.6 VDC size AA, ≥ 2700 mAh Lithium batteries. Ambient temperature 20°C

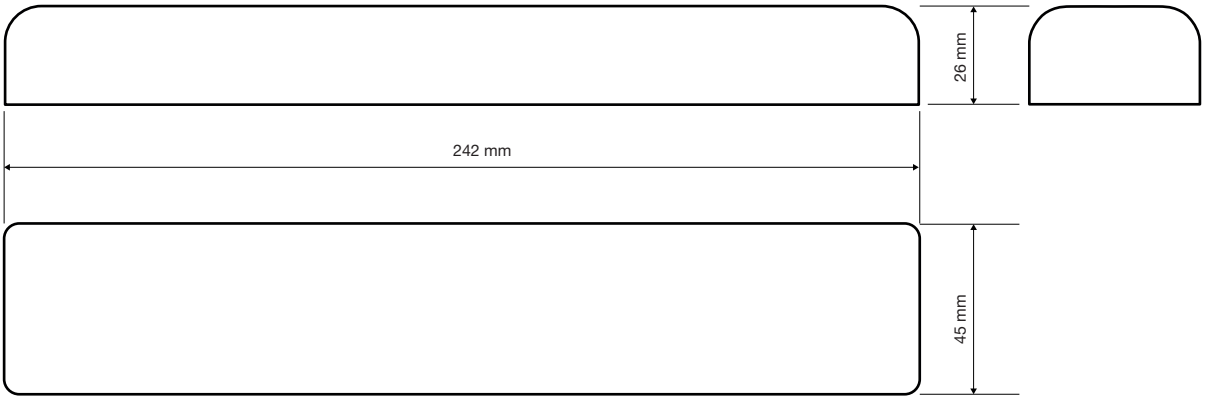




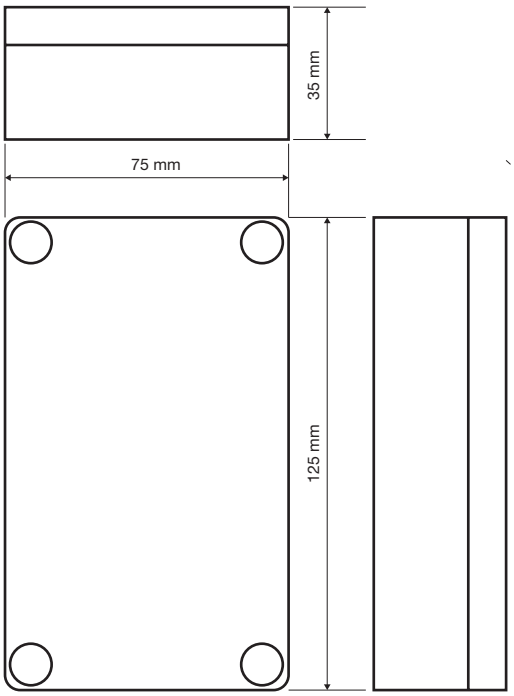
Typical lifetime of battery with PB11 sensors and door width 4 m (Operation with NO 8.2KoHm or NC safety edge will a have longer lifetime)

Dimensions

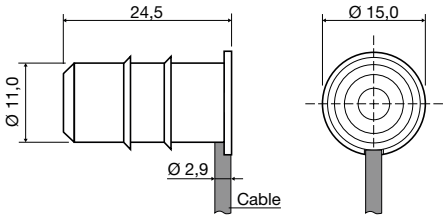
Wireless Sub Controller



Wireless Main Controller



Emitter / Reciever



Delivery Contents Main Controller

- Wireless Main Controller: WSM2BA2D24
- Manual
- 4 x SCREW M4.5X45 MM BOSSARD BN615
- 4 x RAWLPLUG SX8 NYLON
- **Packaging:** Cardboard box

Delivery Contents Sub Controller

- Wireless Sub Controller: WSS2BA2BAT
- Manual
- 2 x ER14505 3.6 VDC size AA ≥ 2700 mAh Lithium batteries
- 4 x SCREW M4X10 MM BOSSARD BN1023
- **Packaging:** Cardboard box

Delivery Contents Receiver

- Receiver: PB11CNT15WR
- **Packaging:** Plastic bag

Delivery Contents Emitter

- Emitter: PB11CNT15WE
- **Packaging:** Plastic bag

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