

RF COMMAND AND CONTROL SYSTEM

The RF "Command and Control" system consists of wireless communications devices that integrate with the traditional electrical system, allowing the expansion of functionality without recourse to working in walls.
The wireless device's transmission frequency is 868 MHz.

COMBINATION OF THE DEVICES

RF RECEIVERS RF TRANSMITTERS	ACTUATOR 3A GW 10 821 - GW 12 821 GW 14 821	ACTUATOR 16A GW 10 822 - GW 12 822 GW 14 822	MOTOR CONTROL GW 10 823 - GW 12 823 GW 14 823
1-2-3-4 CHANNEL PUSH-BUTTON PANEL/ONE PLATE GW 10 801 - GW 10 802 - GW 10 803 - GW 10 804 GW 12 801 - GW 12 802 - GW 12 803 - GW 12 804 GW 14 801 - GW 14 802 - GW 14 803 - GW 14 804	■	■	■
1-2-3-4 CHANNEL PUSH-BUTTON PANEL/LUX PLATE GW 10 806 - GW 10 807 - GW 10 808 - GW 10 809 GW 12 806 - GW 12 807 - GW 12 808 - GW 12 809 GW 14 806 - GW 14 807 - GW 14 808 - GW 14 809	■	■	■
REMOTE CONTROL GW 20 963	■	■	■
INPUT MODULE GW 10 813 - GW 12 813 - GW 14 813	■	■	■
MOVEMENT DETECTOR ONE PLATE: GW 10 811 - GW 12 811 - GW 14 811 LUX PLATE: GW 10 816 - GW 12 816 - GW 14 816	■	■	
TIMED THERMOSTAT GW 10 841 - GW 14 841 GW 10 851 - GW 14 851	■	■	

The wireless signal repeater (GW 10 831, GW 12 831 and GW 14 831), increase/improve the capacity of the radio connection between the transmitters and receivers that are combined together.

Each single RX actuator/receiver can be associated with up to 16 different input channels; (e.g. 2 GW 14 803 push-button panel channels + 1 channel of a GW 14 811 movement detector and so on to a maximum of 16).

CONFIGURATION OF THE DEVICES

Configuration and operation of the system's devices is easily done with just a few operations:

- The association between the RF transmitters, (command devices, sensors, input modules, timed thermostats) with the RF receivers (output modules/actuators);
- Function configuration of the single device.

Below is an example of the combination between a push-button panel (GW 14 801) and an actuator for general 3A loads (GW 14 821). The receiver/actuator device is set in the "self-learning" mode by positioning the rotary selector in the corresponding position (Fig. 1). The association is made by pressing the button of the push-button panel to be included (Fig. 2). The system becomes operational after turning the actuator's rotary selector on the desired function (fig. 3) according to system needs (e.g. timer, commutation and/or impulse).

Fig. 1
phase 1: self-learning



Selector
in self-learning position

Fig. 2
phase 2: transmission



Pressing of the push-button panel button and
creation of the association

Fig. 3
phase 3: configuration



Selection of the function and positioning into
the desired operating mode

TECHNICAL CHARACTERISTICS

GENERAL DEVICE CHARACTERISTICS

All devices of the range have a maximum RF radio signal free field capacity (an environment free of architectural obstructions and obstacles) of 100 m.

The system conforms to the R&TTE 1999/5/EC European Directive related to radio apparatus and satisfies the following reference standards: EN 60669-2-1; EN 60730-1; EN 60730-2-7; EN 60730-2-9; ETSI EN 301 489-1; ETSI EN 301 489-3; ETSI EN 300 220-1; ETSI EN 300 220-3.

WIRELESS COMMANDS PUSH-BUTTON PANEL

The push-button panel allows to control lights, roller shutters, motors, etc. thanks the wireless communication with the output modules of the RF "Command and Control" system.

The device is wall-mounting (with screws and wall plugs or double sided adhesive tape) or surface-mounting in flush-mounting boxes with 3 modules.



ONE PLATE

GW 10 801 - GW 10 802 - GW 10 803 - GW 10 804
 GW 12 801 - GW 12 802 - GW 12 803 - GW 12 804
 GW 14 801 - GW 14 802 - GW 14 803 - GW 14 804

TECHNICAL DATA	
Power supply:	Batteries (2 x 1,5V alkaline type AAA)
Average battery life:	2 years
Operating temperature:	-5 ÷ +40°C
Protection class:	IP20
Dimensions (BxHxD):	4 channels: 140X90X20 mm 1-2-3 channels: 118x90x20 mm

LUX PLATE

GW 10 806 - GW 10 807 - GW 10 808 - GW 10 809
 GW 12 806 - GW 12 807 - GW 12 808 - GW 12 809
 GW 14 806 - GW 14 807 - GW 14 808 - GW 14 809

REMOTE CONTROL WITH 3 CHANNELS

The wireless remote control allows to control lights, roller shutters, motors, etc. thanks to the (wireless) RF communication with the output modules of the RF "Command and Control" system.

The device is portable. The pack includes wall support.



GW 20 963

TECHNICAL DATA	
Power supply:	Batteries (2 x 1,5V alkaline type AAA)
Average battery life:	2 years
Operating temperature:	-5 ÷ +40°C
Protection class:	IP20
Dimensions (BxHxD):	120x45x20 mm

TECHNICAL CHARACTERISTICS

WALL-MOUNTING WIRELESS TIMED THERMOSTAT (GW 10 841 - GW 14 841)

The timed thermostat allows to automatically control, on a weekly basis, the temperature and timing inside the installation environment in combination with the heating and air conditioning systems.

- Powered by alkaline batteries (3 x 1,5V AAA type);
- Weekly programming (program with an hourly profile that can be independently configured for each day of the week);
- Times setting on a 24 hour basis with 3 different temperature levels (T1, T2, T3) and display of the profile;
- Programming of times with a resolution of 15 minutes without any limits on the number of daily changes;
- Settable and differentiated adjustment residual current circuit breaker for HEATING and AIR CONDITIONING;
- PARTY and HOLIDAY functions to program the special operating times of different lengths;
- Activatable operating modes: AUTOMATIC / MANUAL / OFF;
- Possibility of selecting the system's thermal gradient self-learning function. This function optimises the advance of heating (up to 2 hours) in order to guarantee the set temperature from program start;
- A serial connection can be made to the GSM repeater (GW 90 821) that permits the remote control via SMS;
- The device is wall-mounting (with wall plugs or double sided adhesive tape) or surface-mounting in flush-mounting boxes with 3 modules.

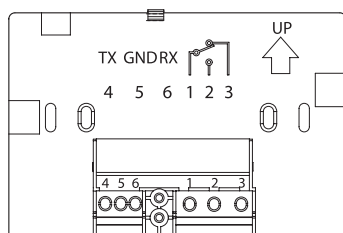


GW 10 841 - GW 14 841

TECHNICAL DATA

Power supply:	Batteries (3 x 1,5V alkaline type AAA)
Average battery life:	minimum 1 year
Dimensions:	130x92x23 mm
Output contact:	1NO NC with contact without potential 5A(AC1) / 2A(AC15) 250V ac
Operating temperature:	-5 ÷ +45° C
Temperature reading display range:	0 ÷ +45°C
Adjustment range:	+5 ÷ +40°C
Tolerance:	± 0,5°C at 20°C

Base for wall fixing with terminal block



Wiring terminal

Serial line:
4 - TX
5 - GND (common)
6 - RX

TECHNICAL CHARACTERISTICS

WIRELESS LIGHT SENSITIVE AND MOVEMENT DETECTOR

The detector is battery powered and equipped with an IR presence sensor and a photoelectric cell with threshold adjustable by a potentiometer.

The device allows the electrical loads to be activated and deactivated by the radio transmission of messages to the output modules present in the RF "Command and Control" system.

The device has three freely configurable operating modes:

- 1) Movement sensor;
- 2) Movement and light sensitive sensor;
- 3) Light-sensitive sensor.

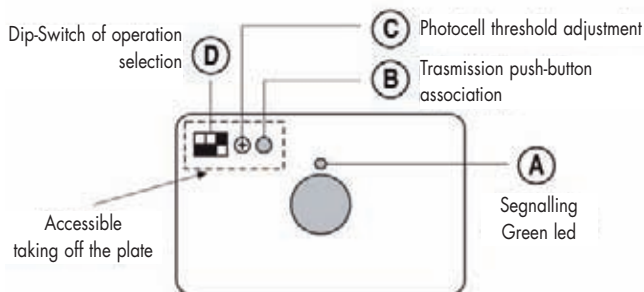
This means that it can send differentiated messages to three groups of actuators; for example, the detector can be used at the same time as a movement sensor to manage some RX output modules, and as a light sensitive and movement sensor to manage the others.

The device can be wall-mounted (fixed with plugs) or installed on a 3 module flush-mounting box.



ONE PLATE: GW 10 811 - GW 12 811 - GW 14 811

LUX PLATE: GW 10 816 - GW 12 816 - GW 14 816

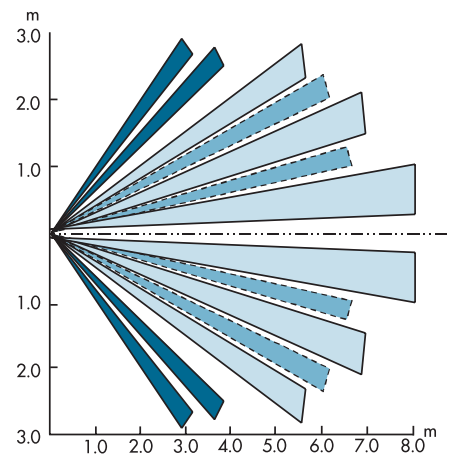


TECHNICAL DATA

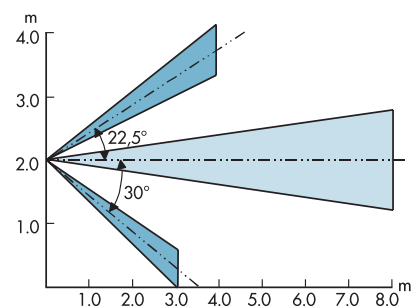
Power supply	Batteries (3 x 1,5V alkaline type AAA)
Average battery life	2 years
Operating temperature	-5 ÷ +40°C
Protection rating	IP20
Dimensions (BxHxD)	118x90x20 mm
Light-sensitive threshold adjustment	5 ÷ 1000 lux
Horizontal bearing angle	105°
Vertical bearing angle	52,5°
IR operating range	8 m

COVERAGE DIAGRAM

Horizontal Cover



Vertical Cover



WIRELESS 2 CHANNELS INPUT MODULE

The 2 channel interface module permits to send 2 on/off or relay actuator adjustment commands of the RF Command and Control system, to control the electrical load (lights, motors, roller shutters, doors, gates, awnings, etc...).

The mains powered device reads the input signals coming from the potential free contacts of traditional equipment (push-buttons, switches, sensors, timers, etc...) and sends commands using the built-in wireless transmitter.

The input signals are connected by two pairs of wires.

With the rotary selector the following function modes can be set:

- Combined inputs mode (logic identical to pushbutton control or RF remote control, with the two channels connected with the same RX receiver);
- Status mode (periodical sending of input status);
- Inversion mode (inversion of relay status);
- ALWAYS ON mode (sending of ON command only);
- ALWAYS OFF mode (sending of OFF command only).

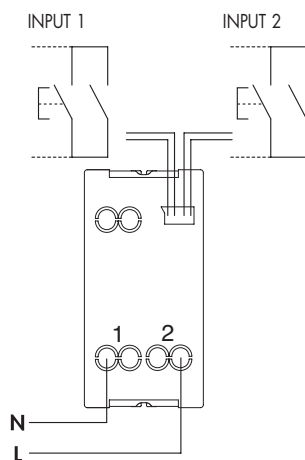
Both channels follow the same operating logic in the STATUS, ALWAYS ON and ALWAYS OFF operating mode (both channels operate in the same mode) and can be associated to two different actuators.



GW 10 813 - GW 12 813 - GW 14 813

TECHNICAL DATA	
Power supply	230V ac
Operating temperature	-5 ÷ +40°C
Protection rating	IP20
Dimensions	1 module CHORUS
Section of supply cables	max 2,5 mm ²
Characteristics of input cables	section 0,75 mm ² length 200 mm

Traditional command equipment inputs
(switches, push-buttons)



TECHNICAL CHARACTERISTICS

OUTPUT MODULES - 1 CHANNEL ACTUATORS 3A AND 16A - 250V

When combined to transmitter devices (push-button panel, remote control, IR + light sensitive sensor, 2 channel interface module, timed thermostat (RF) of the RF "Command and Control" system, the output module receives commands and activates the electrical load by means of the relay output.

The actuations, selectable using the rotary selector, are of the following types:

- Bistable (e.g. for normal light management);
- Timed (e.g. for stair light);
- Monostable (e.g. for doorbell).

The relay can also be activated by the local key or by an input (two-wire) made available for reading of contact without potential.

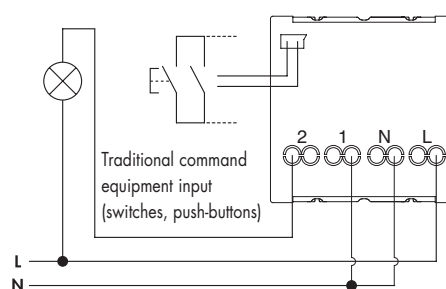
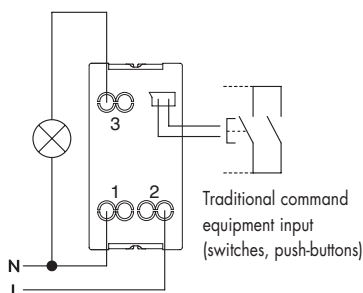
TECHNICAL DATA		
Code	GW 10 821 - GW 12 821 - GW 14 821	GW 10 822 - GW 12 822 - GW 14 822
Power supply	230V ac	230V ac
Operating temperature	-5 ÷ +40°C	-5 ÷ +40°C
Protection rating	IP20	IP20
Dimensions	1 module Chorus	2 modules Chorus
Section of supply cables	max 2,5 mm ²	max 2,5 mm ²
Characteristics of input cables	section 0,75 mm ² length 200 mm	section 0,75 mm ² length 200 mm
Operating elements	1 rotary selector, 1 local relay command button, 2 cables (potential free input)	
Type of output	230V ac potential contact	Potential free contact
Output contact	3A(AC1) / 2A(AC15) 250V ac	16A(AC1) / 10A(AC15) 250V ac
Fluorescent lamp command	non adap	max. 4A



GW 10 821 - GW 12 821 - GW 14 821



GW 10 822 - GW 12 822 - GW 14 822



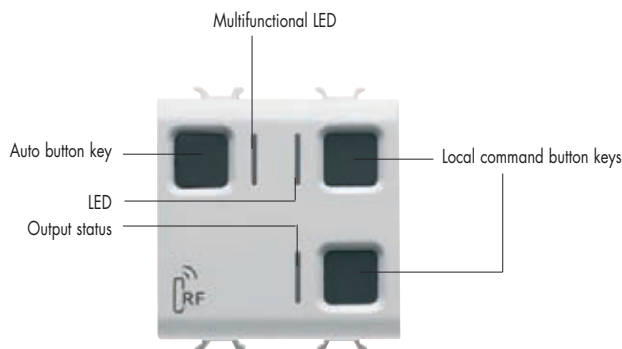
OUTPUT MODULE - WIRELESS 1 CHANNEL MOTOR COMMAND 8A 250V

When combined to transmitter devices (push-button panel, remote control, 2 channel interface module) of the RF "Command and Control" system, the output module receives commands and activates the relay for the activation of the roller shutters, awnings and similar.

The output module provides for three operating states:

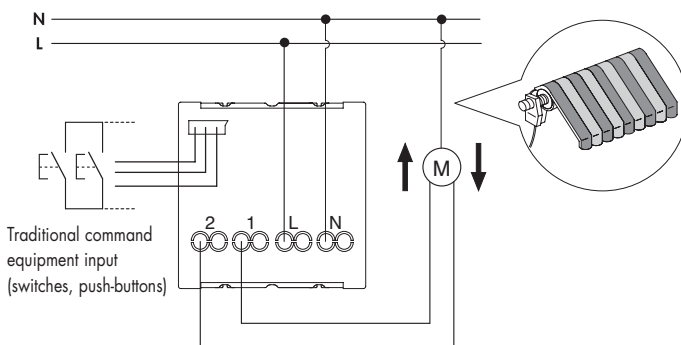
- UP position (corresponding to lifting in the case of roller shutters, etc.);
- DOWN position (corresponding to lowering in the case of roller shutters, etc.);
- STOP position (no output fed).

There is an operation time limit during UP and DOWN status (settable by means of the rotary selector), after which the device always goes to STOP status with both outputs not fed.



GW 10 823 - GW 12 823 - GW 14 823

TECHNICAL DATA	
Power supply	230V ac
Operating temperature	-5 ÷ +40°C
Protection rating	IP20
Dimensions	2 module CHORUS
Section of supply cables	max 2,5 mm ²
Characteristics of input cables	section 0,75 mm ² length 200 mm
Operating elements	1 rotary selector, 1 key for AUTO function, 2 relay local control keys
Output contact	8A(AC1) / 3A(AC15) 250V ac

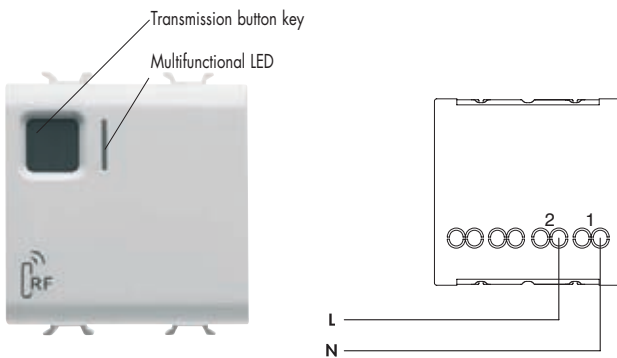


WIRELESS SIGNAL REPEATER

The wireless repeater is used to resolve installation problems in which direct radio connections are not possible between the command device and an activation device, due to excessive distance or obstacles (reinforced concrete structures, metal sheeting, etc...) that limit the transmission of the radio signal.

In this case the distance should be divided into shorter parts, or following a different course, placing a RF repeater capable of receiving the messages sent by the command device and send them on to the activation device.

The device can manage up to 8 different radio connections (paths with several repeaters can be executed for covering long distances).



GW 10 831 - GW 12 831 - GW 14 831

TECHNICAL DATA

Power supply	230V ac
Operating temperature	-5 ÷ +40°C
Protection rating	IP20
Dimensions	2 module CHORUS
Section of supply cables	max 2,5 mm ²
Operating elements	1 key to send messages in the learning phases 1 rotary selector with 10 position
Reception distance	100m
Transmission distance	100m
No. of reception and transmission channels	8

RF BURGLAR ALARM SYSTEM

EXAMPLE OF RADIO BURGLAR ALARM SYSTEM

To execute a radio burglar alarm system, the position of the single devices must necessarily be appraised to guarantee optimum radio signal reception.

Before fixing the devices to the walls, the test procedure must be carried out from the station in order to determine the signal intensity.

Particular attention must be paid to positioning the station and the siren for optimum coverage; the control unit must be placed near the centre of gravity of the building, and the siren in a visible zone not too close to metal bodies, such as gutters and garrets, which would screen the radio communication signal.



If communication between the devices cannot be guaranteed because of the particular size of the premises to be controlled or the type of building structures, a signal repeater (GW 20 480) can be used.

Thereby enabling the coverage range offered by the station to be expanded.

All the system's devices are designed to work on replaceable batteries. The need of battery change is always indicated by the system. Control unit and siren, the "central elements" of the system, have a buffer battery with specific characteristics: to guarantee high reliability. To guarantee high reliability the control unit houses a rechargeable battery connected to the 230V supply, that has an autonomy of more than 24 hours in case of a power failure; for the siren there is a high performance long-life lithium battery (7.2V - 13Ah type LSH20).

For all the other devices the batteries are of the conventional type, readily available on the market, and very easy to replace (nearly all the batteries used are of the alkaline type), lasting an average of 2-3 years.

TECHNICAL CHARACTERISTICS

DEVICE DESCRIPTION

Common characteristics

All the devices in the range provide for a max. signal range of 100 m in free field (environment free of architectural obstacles and hindrances). The system meets following reference standards: EN 50131-1, EN 50131-5-3, EN 300 220, CEI 79-2.

Control units

The control unit is produced in two models: both are supplied with rechargeable lead battery and have an indoor siren.

Control unit (GW 20 470): a max. of eight connection devices and sixteen sensors can be configured; all information relevant to "system status" is readable by the lighting of LEDs; the alarm is switched off with the mechanical emergency key.

Control unit for telephone dialler (GW 20 471): a max. of sixteen connection devices and thirty two sensors can be configured; all information relevant to "system status" is readable on the LCD display; the integrated telephone dialler allows eight phone numbers to be stored; the alarm is deactivated by entering the secret code.



GW 20 470



GW 20 471

TECHNICAL DATA

Power supply	230V ac 50Hz
Battery	Pb 6V 1,2Ah
Operating temperature	+5 ÷ +40°C
Protection rating	IP3X
Dimensions (BxHxD)	244x204x58 mm
Indoor siren acoustic output	90dB at 3 m
Output contacts	1NA + 1NC 2A 24V
Max. no. of control devices per system (*)	8-16 ^(*)
Max. no. sensors for system	16-32 ^(**)

(*) Total of remote control, keyboard, electronic key.

(**) 8 devices for GW 20 470; 16 devices for GW 20 471.

(***) 16 sensors for GW 20 470; 32 sensors for GW 20 471.

Remote control

The remote control has four keys: two for turning the alarm system on/off and two for partial turning on (e.g.: LIVING area and SLEEPING area). The antipanic function (voluntary alarm activation) is obtained by pressing the system shutting keys at the same time.



GW 20 472

TECHNICAL DATA

Power supply	12V alkaline battery MN21
Average battery duration	2 years
Dimensions (BxHxD)	35x68x15 mm
No. channels	4
Max. no per system	8-16 (remote controls+keyboards)

Keyboard

All the remote control functions are also obtainable with the keyboard, but the system only switches on after entering the security code. All the operations are supported by a confirmation acoustic signal.



GW 20 473

TECHNICAL DATA

Power supply	9V 6LR61 Alkaline battery
Average battery duration	2 years
Dimensions (BxHxD)	166x136x33 mm
Operating temperature	+5 ÷ +40°C
Max. no per system	8 - 16 (remote controls+keyboards)

TECHNICAL CHARACTERISTICS

PUSH-BUTTON PANEL FOR CONNECTION AND SLICING

The wireless connection and slicing push-button panel allows to control and command the status of the burglar alarm system. The system can be completely connected/disconnected by means of the four push-buttons on the front section or can be sliced in order to differentiate the day and night modes.

The device has buttons to activate the anti-opening and anti-wrenching tampering functions. The electronic key must be positioned close to the reader to activate/deactivate the push-button panel functions.



ONE PLATE: GW 10 862 - G W 12 862 - GW 14 862
LUX PLATE: GW 10 867 - GW 12 867 - GW 14 867

TECHNICAL DATA

Power supply	Batteries (3 x 1,5V alkaline type AAA)
Average battery life:	2 years
Operating temperature	-5 ÷ +40°C
Protection rating	IP20
Dimensions	118x90x20 mm

Electronic proximity key

The electronic proximity key (transponder technology) avoids having to introduce the secret code when positioned close to the GW 20 473 keyboard, while it permits the activation when used in association with the connection and slicing push-button panel.



GW 20 474

Display module

A module with radio receiver for displaying (LED) the system status; in addition to this function it is possible to manage six supplementary outputs for displaying some of the functions visible from the control station.



GW 20 475

TECHNICAL DATA

Power supply	12/24V ac	12/24V dc
Supply variation	from 9 to 36V dc	from 11 to 27V ac
Absorption when idle	13mA	13mA
Absorption with all outputs active	47mA	100mA
Electronic outputs	6x3mA or 2x10mA	
Dimensions (BxHxD)	47x100x30 mm	

RF signal repeater

A secondary radio unit, with Transmitter/Receiver function, used whenever the range of some radio devices is reduced due to environmental disturbance or architectural barriers. Cable connection to the control unit.



GW 20 480

TECHNICAL DATA

Power supply	From control station
Connection to control station	2x0,75 + 4x0,22 mm ² cable
Maximum distance from the control unit	100 m
Protection rating	IP3X
Dimensions (BxHxD)	270x47x30 mm

External siren

Activated from the control unit by means of radio impulse. White plastic shell and orange flasher protective cap.

In addition to the classic functions, such as switching the siren off after a minute in case of fault and/or tampering with the system, it has an external on/off check function and the information is given by the orange flasher.



GW 20 490

TECHNICAL DATA

Power supply	Lithium battery 7,2V type LSH20
Average duration of batteries	3 years
Operating temperature	-25 ÷ +45°C
Protection rating	IP34
Sound intensity	92 dB at 3 m
Sound	Two-tone
Indicator light	Bright LED
Dimensions (BxHxD)	253x290x85 mm

TECHNICAL CHARACTERISTICS

Wall-mounting infrared volumetric movement detector

Passive infrared volumetric detector, with RF transmitter module, in a white plastic case, suitable for fixed installation, adjustable and angle installation.

A special lens, with 18 sectors, divided in four levels, guarantees optimum white light protection and an operating range of 15 metres.



GW 20 477

TECHNICAL DATA

Power supply	Alkaline battery 9V type 6LR61
Average duration of batteries	2,5 years
Operating temperature	-10 ÷ +45°C
Protection rating	IP3X
Direction adjustment	With articulated bracket supplied
Stand-by between two signals	from 30s to 5 minutes
Dimensions (BxHxD)	64x110x48 mm

Wall-mounting infrared volumetric movement detector

Passive infrared volumetric detector with wireless transmitter module suitable for wall mounting installation.

A special lens, with 18 sectors, divided in four levels, guarantees optimum white light protection and an operating range of 15 metres.

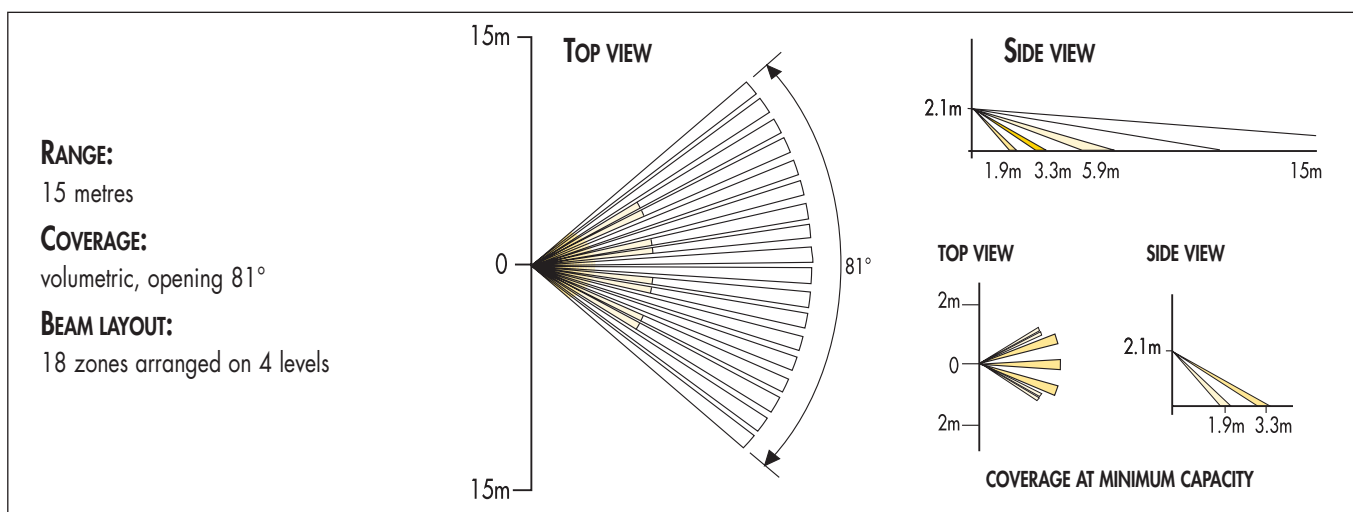


ONE PLATE: GW 10 861 - GW 12 861 - GW 14 861
LUX PLATE: GW 10 866 - GW 12 866 - GW 14 866

TECHNICAL DATA

Power supply	Batteries (3x1,5V AAA type)
Average duration of batteries	2 years
Operating temperature	-10 ÷ +45°C
Protection rating	IP3X
Stand-by between two signals	from 30s to 5 minutes
Dimensions (BxHxD)	118x90x40 mm

Diagram of coverage of lens with white light protection



TECHNICAL CHARACTERISTICS

Perimetric detector with magnetic contact for doors and windows

A transmitter with built-in detector, used for signalling the opening of doors and windows and equipped with two bulbs with REED contact (one for each side of the circuit) for facilitating magnet positioning. The device transmits when the magnet, fixed to the movable part of the fixture, is moved away of brought near the contact placed on the fixed part of the fixture.



GW 20 478

TECHNICAL DATA

Power supply	3 Lithium batteries 3V type DL2430
Average duration of batteries	3 years
Operating magnet	In plastic case
Protection rating	IP3X
Dimensions (BxHxD)	77x40x26 mm

Detector for conventional row contacts

A transmitter with two NC inputs with terminal: the first is used for signalling intrusion when doors and windows are opened; the second has a circuit for the connection of wire contacts for roller shutters.



GW 20 479

TECHNICAL DATA

Power supply	Alkaline battery 9V type 6LR61
Average duration of batteries	4 years
Protection rating	IP3X
Dimensions (BxHxD)	100x47x30 mm
No. channels	2 independent
No. inputs	2 (1 dedicated for roller shutters)
Type of cable for connections	2 x 0,22 mm ²
Max. length	100 m for magnetic contacts 1 m for roller shutters

Optical smoke detector

The smoke detectors work on the reflection of the smoke that enters in the analysis chamber; an alarm is generated when the safety threshold is exceeded.



GW 20 483

TECHNICAL DATA

Power supply	3 alkaline batteries 9V type 6LR61
Average duration of batteries	2 years
Protection rating	IP3X
Dimensions (BxHxD)	104x35 mm (base 50)
Operating temperature	-10 ÷ +50°C
Humidity without condensation	10 ÷ 93%

Cable contact for roller shutters and exposed magnetic contact



GW 20 493



PLASTIC: GW 20 494
METAL: GW 20 495

GW 20 493: for the protection of roller shutters, detects the raising and lowering movement from the start position. This sensor is equipped with a wire wound around a reel the end of which is connected to the base of the roller shutter. The cyclic opening of the contact is caused by the rotation of the reel. To avoid false alarms caused by accidental movements, vibrations, gusts of wind, slow sliding, etc, the analysis card, selected for this type of detector, must be positioned between the wire detector and the circuit's input.

GW 20 494; GW 20 495: plastic or metal magnetic contacts. To be wired to the detector for traditional wire contacts GW 20 479.

REFERENCE LAWS AND STANDARDS TO MAKE THE ELECTRICAL SYSTEM IN WORKMANLIKE FASHION

Current legislation in Italy requires all user electrical systems to be made in workmanlike fashion using components likewise made in workmanlike fashion.

Standard CEI 64-8 V edition (*)

The main reason that led to drawing up the V edition of the system standard should be sought in the constant work of adaptation to the international regulations, especially European ones, so as to provide a sector operators in the Single European Market with a single homogeneous rule for electrical systems.

The new 64-8 is divided into seven parts contained in separate files which on the left columns give the corresponding texts of the international reference regulations and on the right columns, where necessary, comments and interpretations of the articles of the regulations. The seven files form the entire regulation and should be used together.

The V edition contains various innovations in technical content that state this complex subject better.

It is advisable to remember the connections of the CEI standards with the IEC standards and the European CENELEC standards.

As is known, the IEC is the organization appointed to study and prepare technical standards at an international level in the electric and electronic sector.

CENELEC, on the other hand, is a technical organization composed of Electro-Technical Committees of 28 European countries (EEC and EFTA countries).

Its purpose is to prepare a consistent body of electrotechnical standards to be used as a basis to create a European Economic Market with no frontiers.

The most important sources of reference for CENELEC are the standards issued by IEC; the publications coming out of the CENELEC work destined to be applied as is in all member countries and are called EN European standards.

EN standards will therefore be the same in all EEC and EFTA countries and it will therefore no longer be necessary to refer to national standards.

It may then be stated that also reference to a CEI standard means conformity with CENELEC standards, finally in conformity with international standards.

Law No. 186/68

This law comprises just two articles:

Article 1 establishes that all electrical systems must be made in a workmanlike fashion using components made in workmanlike fashion.

Article 2 establishes that systems made in compliance with the following CEI standards must be considered in workmanlike fashion.

(*) CEI 64-8 Standards

"Electrical user systems with nominal voltage no higher than 1000 V in alternating current and 1500 V in direct current".

CEI 0-2 Guide**Guide to define the design documentation of electrical systems**

This guide is prepared by CEI and lists and describes the documents necessary to draw up a project in workmanlike fashion in conformity with the provisions of Italian law no. 46/90.

In particular, the design of a system for a house or a typical commercial activity must be accompanied by the following documents:

- specialist's report
- graphic printouts
- executive protection co-ordination calculations, tables and diagrams
- metric calculation
- estimative metric calculation
- special contract specifications

Law 5 March 1990, N° 46 "Standards for system safety"**Major considerations**

- The law is applied to all technical systems of civil buildings, but for the electrical systems it also concerns production, trade, commerce and other uses.
- The activities governed by the law must only be carried out by accredited subjects.
- Where necessary, the systems must be designed by registered professionals.
- Every system must be made in workmanlike fashion and accompanied with the relative statement of conformity signed by the person in charge of the installation firm.
- The statement of conformity of the system must be delivered to the customer as per the model envisaged by Italian Ministerial Decree of 20th February 1992 and must also have attached a report giving the type of materials used and their suitability for the place of installation.

This information may be taken from the manufacturer's catalogue which is a formal statement of the characteristics of the products put onto the market for their use in accordance with system standards.

CEI 0-3 Guide**Guide for compiling the statement of conformity.**

This guide also clarifies the contents of the enclosures to the statement of conformity.

In particular, in the report with the types of material used, either the trademarks or the markings on the products must be given.

If there are no trademarks or CE marking, the installer must quote the compliance with standards of the installed materials declared by the manufacturer.

For this purpose, the statements contained in the manufacturer's catalogue hold.