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– Security Systems –

G-OP-DPIR W | G-OP-DPIR U

OUTDOOR VOLUMETRIC DETECTOR WITH DOUBLE ADJUSTABLE HEADS CABLED AND WIRED VERSION

INSTALLATION AND USE MANUAL

V.G2018-10-24

G-OP-DPIR W & G-OP-DPIR U is an innovative passive infrared sensor for outdoor use, which has two completely independent and individually adjustable detection heads. This allows obtaining a great functioning versatility and at the same time, if correctly installed, an excellent decreasing of false alarms.
The sensor operates with the IR heads in “OR” or “AND” modes: the last one generates alarm only when both IR heads detect intrusion. It is possible to select the priority of the head which causes alarm.
The different versions are identical concerning functionality and optical settings. They differ from each other just for the alarm transmission mode:

- G-OP_DPIR W : WIRED version, with OptoMOS outputs (NC electronic relay)
- G-OP-DPIR U: UNIVERSAL version as it is a low absorption version that can be connected by wire to any wireless transmitter located in the appropriate case at the bottom of the sensor.

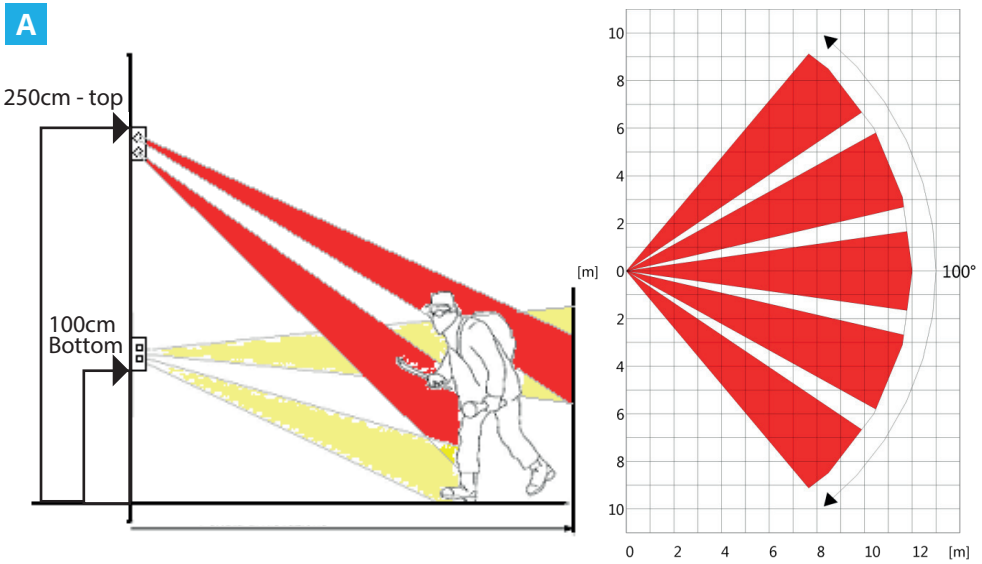
READ CAREFULLY THIS MANUAL BEFORE INSTALL YOUR NEW ALARM SYSTEM. KEEP THIS MANUAL FOR FUTURE REFERENCE.

ONLY QUALIFIED TECHNICIAN MUST INSTALL THIS DEVICE. INSTALLER MUST FOLLOW CURRENT REGULATIONS.

THE MANUFACTURER SHALL NOT BE LIABLE FOR ANY IMPROPER USE OF THE PRODUCT, INCORRECT INSTALLATION OR FAILURE TO COMPLY WITH INSTRUCTIONS OF THIS MANUAL AND THE LAW REGARDING ELECTRICAL SYSTEMS.

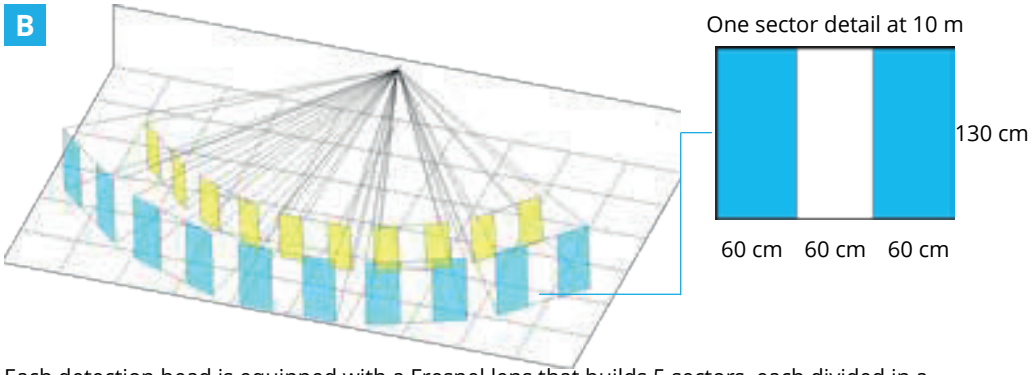
DETECTION AREA

A



Installation height of the center of the sensor must be between 100cm and 250 cm(fig. A1)
The detection arear is max 12 meter long and 100° wide (fig. A-2)

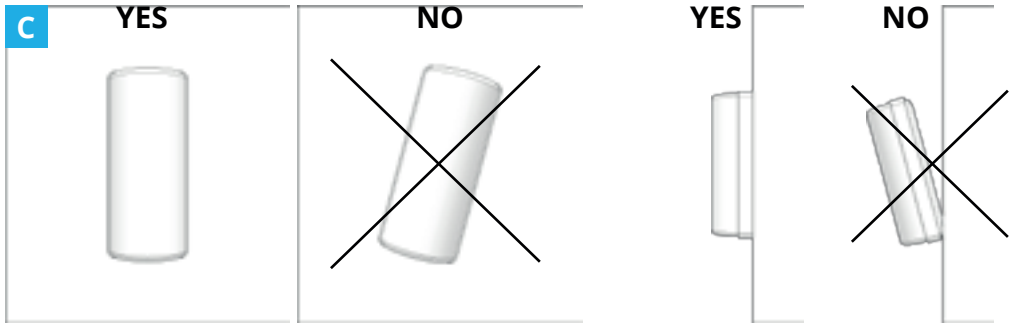
B



Each detection head is equipped with a Fresnel lens that builds 5 sectors, each divided in a couple of beams (fig. B-1)

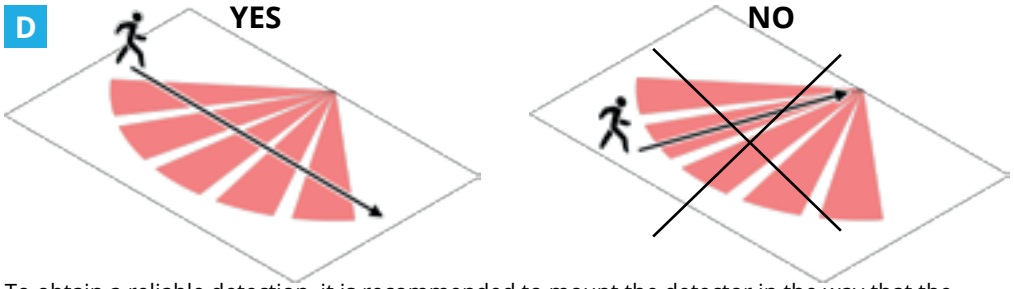
INSTALLATION (PLACEMENT)

C



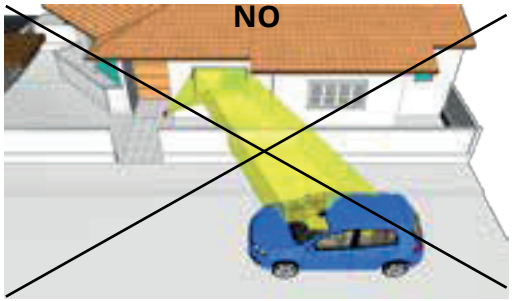
Mount the sensor vertically, without front or side inclination (fig. **C**): the joint of each IR head allows to adjust the orientation.

D



To obtain a reliable detection, it is recommended to mount the detector in the way that the intruder crosses beams perpendicularly and not with frontal approach (fig. **D**).

Never point the heads directly towards reflective surfaces, in order to avoid unwanted detections.
Typical reflective surfaces: windows, glass, water puddles, wet roads, smooth concrete surfaces, paved roads.
These surfaces can reflect a sufficient amount of heat (very strong sources) or infrared (other security systems, photocells...) to cause alarms.



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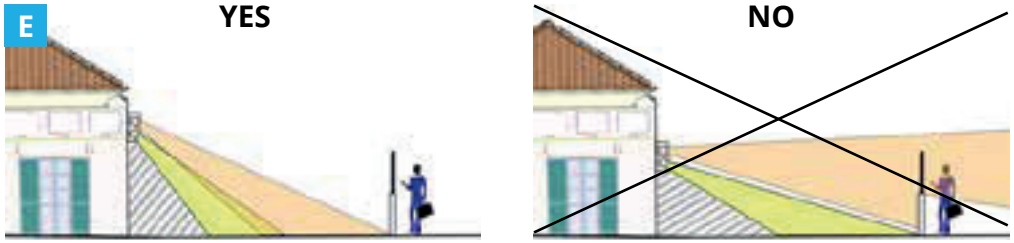


Do not point the heads causing parallel beams to the ground.
The beams should always end against a surface (wall, ground) so to define the detection area.

Do not point towards open space.

INSTALLATION (PRECAUTIONS)

- The sensore has a IP54 protection level against dust and liquids.
  To mantain the IP54 level it is mandatory to insert the o-rings provided.
  If possible, it is suggested to install the sensor protected against weathering; do not point high pressure water jets to the sensor.
- This sensor has been designed to guarantee a very high immunity to light interference; however, a very bright light can produce a range decrease.
  It is recommended to pay attention during the installation and avoid, as much as possible, that direct or reflected solar light or very intense lights are oriented towards the two sensitive elements.
- Infrared detector is sensitive to the “amount of heat” produced by a moving body.
  The maximum range of the sensor (measured in meters) is referred to a human body.
  However the same “amount of heat” may be produced by a smaller body at lower distances (dog), or by a larger one at greater distances (vehicle).

F

- On outdoor installations, use the “AND” mode for an high immunity to unwanted alarms, and point both heads towards the same direction (but shifted) to avoid missed detections.
- Do not point the sensor towards unstable objects, such as: bushes, flags, tree branches, clothes hung, etc. This avoid unwanted detections.
- During adjustment, perform several detection tests to verify the correct working of the sensor. Al tests must be done WITH THE COVER in place.
- Once fixed the sensor, slightly loose the screws of the head joints for a more easy head pointing.
- For best IR “sensitivity” adjustment, start setting the sensitivity to minimum (turn completely counterclockwise the trimmers) and point the heads downwards.
  Gradually increase the sensitivity and change the heads orientation until obtain detection only inside the wanted area.
  Tight the joint screws once finiched the adjustment
- The sensor may detect pets (no pet-immune function).

TECHNICAL

	G-OP-DPIR-W	G-OP-DPIR-U
Power supply	12 V DC	Battery. The sensor can be powered with two different voltage : 3,6V DC or 9V DC
Absorption *	Stand-by: about 8 mA Alarm: about 24 mA	Stand-by: about 15 µA Alarm: about 8 mA
Autonomy (estimated) **	-	About 2 years at normal use
Stabilization Time (at power-up)	About 30 seconds (with LED blinking)	About 5 seconds
Quiet Time between detections	-	About 30 seconds
Detection technologies	Infrared (double PIR head with joint)	Infrared (double PIR head with joint)
Installation height - center of detector	1,0 to 2,2 m	1,0 to 2,2 m
Detection area (H x W x D) *	Max 12 m 100° wide (each IR head)	Max 12 m 100° wide (each IR head)
IR head adjustment	Orientation completely independent (vertically and horizontally)	Orientation completely independent (vertically and horizontally)
Sensitivity	Independent for each head (trimmers) from 30% (L) to 100% (H)	Independent for each head (trimmers) from 30% (L) to 100% (H)
Alarm logics	OR, AND, Directional AND	OR, AND, Directional AND
Wired outputs - Relay (OptoMOS)	OptoMOS, N.C. type (open if power off) Max 40 V DC / 100 mA Alarm Tamper	OptoMOS, N.C. type (open if power off) Max 40 V DC / 100 mA Alarm output Tamper output Low battery output
LEDs	2 red LEDs (IR heads detection) 1 blue LED for alarm	2 red LEDs (IR heads detection) 1 red LED for alarm
Temperature / Humidity	-40 ÷ +70 °C / 95 % (relative)	-40 ÷ +70 °C / 95 % (relative)
Case / IP degree / IK degree	ABS antiUV / IP54 / IK10	ABS antiUV / IP54 (main body) / IK10
Dimension (H x W x D) / Weight	190 x 85 x 75 mm / 410 g	190 x 85 x 113 mm
Internal space for transmitter (H x W x D)	-	20 x 70 x 30 mm
Accessories included	n. 2 lens cover for curtain effect n. 2 pre-cut adhesive masks	n. 2 lens cover for curtain effect n. 2 pre-cut adhesive masks Battery clip for 2 x 3,0 v battery (CR123A)

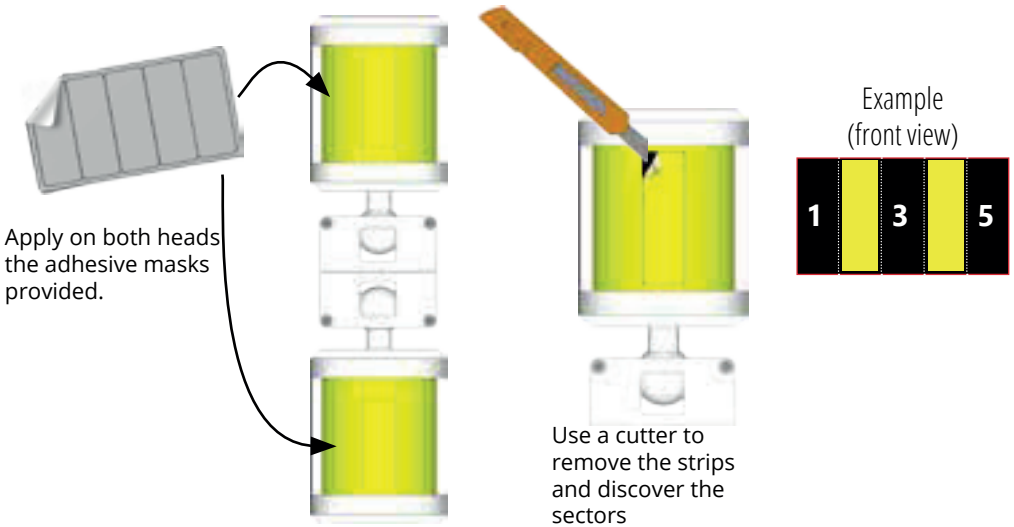
***** All the data are approximate, for sensor in NORMAL mode at operating temperature of 21 °C. THE MAX RANGE DEPENDS SIGNIFICANTLY ON ENVIRONMENT TEMPERATURE.
****** Mean value for 10 detections-alarms/day + supervision.

BATTERY DURATION (ESTIMATED) IS PROPORTIONAL TO:
- **HEAT CYCLES OF THE BATTERY WHICH AFFECT CHARGE CAPACITY AND DURATION**
- **WORKING TEMPERATURE OF THE BATTERY (E.G.: AT TEMPERATURE LOWER THAN 0°C THE BATTERY DURATION MAY DECREASE OF 50 %)**
- **NUMBER OF DETECTIONS TO WHICH THE SENSOR IS SUBJECT: IF THE SENSOR IS INSTALLED IN HIGH FREQUENCY OF PASSAGE, THE BATTERY DURATION WILL DECREASE DRAMATICALLY**

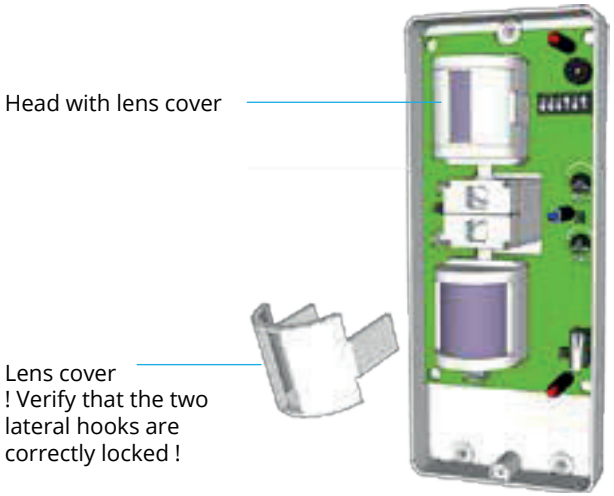
ACCESSORIES

Sometimes the heads detection area can be too wide and it can be a potential trouble if in the area to be protected there are tree branches, curtains, windows, etc.
In this case, it is possible to reduce the detection area by masking some beams with the accessories provided, to have detection only from beams oriented towards stable zones.

ADHESIVE MASK
This type of mask allows to select exactely which beams can detect: it ispossible to leave covered the zones with unwanted movement or limit the detection only for some sectors.

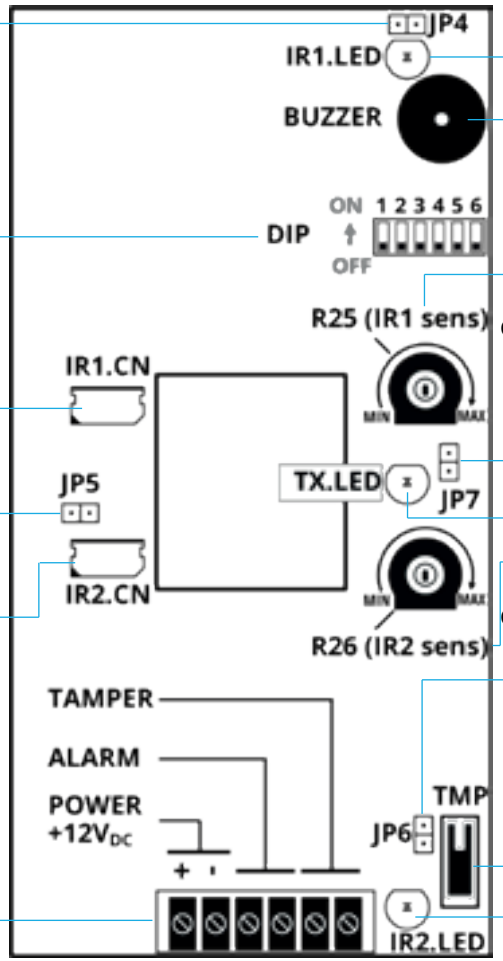


LENS COVER
The lens cover - when mounted on head - creates a CURTAIN detection. With this lens cover, the detection opening beam of the lens is reduced to 20° (keeping the same detection range).
The lens cover mount on heads thanks to an interlocking system.



G

G-OP-DPIR-W (WIRED)



JP4 (BUZZER)
(only if DIP4 = ON)
Closed = enabled
Openedo = disabled

IR1 detection LED

BUZZER

DIP-1÷6
Sensor settings
(see table)

R25 (IR1 sensitivity)
Clockwise = increase
Cntclockwise = decrease

IR1 connector

JP7 (TX.LED)
Closed = LED enabled
Opened = LED disabled

JP5 (Anti-removal tamper)
Closed = disabled
Opened = enabled

TX / ALARM LED

IR2 connector

R26 (IR2 sensitivity)
Clockwise = increase
Cntclockwise = decrease

JP6 (TAMPER TMP)
Closed= disabled
Opened = enabled

Terminals
The ALARM and TAMPER outputs are OptoMOS relay,
N.C. type (opened if no power supply)
Max 40 V DC / 100 mA

TMP
Anti-opening tamper

IR2 detection LED

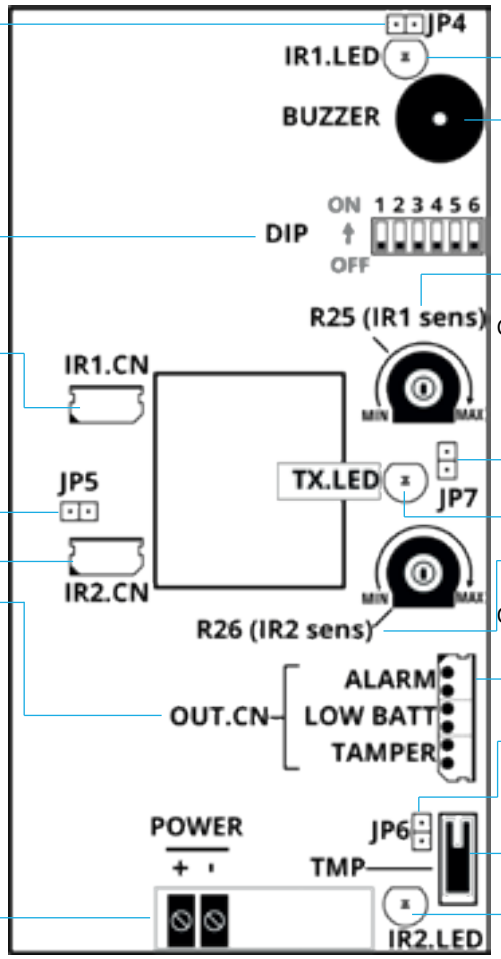
DIP-SWITCH

		OFF	ON
DIP1	AND / OR	AND	OR
DIP2	Environment	INDOOR High sensitivity	OUTDOOR Low sensitivity
DIP3	AND type	NORMAL	DIRECTIONAL
DIP4	Signals from IR1.LED, IR2.LED and BUZZER	DISABLED	ENABLED (the **BUZZER** depends on **JP4**)
DIP5	Anti-shadowing	DISABLED	ENABLED
DIP6	Not used	Leave OFF	

It is recommended to disable the LED and BUZZER (DIP4 = OFF) after the test.

I

G-OP-DPIR-U (UNIVERSAL)



JP4 (BUZZER)
(only if DIP4 = ON)
Closed = enabled
Openedo = disabled

IR1 detection LED

BUZZER

DIP-1÷6
Sensor settings
(see table)

R25 (IR1 sensitivity)
Clockwise = increase
Cntclockwise = decrease

IR1 connector

JP7 (TX.LED)
Closed = LED enabled
Opened = LED disabled

JP5 (Anti-removal tamper)
Closed = disabled
Opened = enabled

TX / ALARM LED

IR2 connector

R26 (IR2 sensitivity)
Clockwise = increase
Cntclockwise = decrease

OUTPUT CONNECTOR
(provided cable)
All outputs are OptoMOS relay, N.C. type (opened if no power supply)
Max 40 V DC / 100 mA

Connect here (use special cable) the trasmitter

JP6 (TAMPER TMP)
Closed = disabled
Opened = enabled

POWER connector
Two different power voltages: 3,6 V or 9 V

TMP
Anti-opening tamper

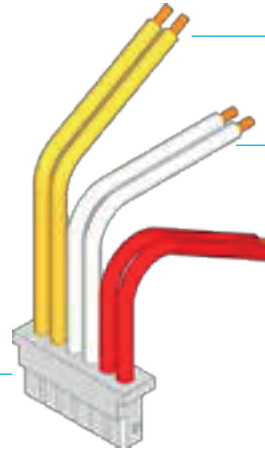
IR2 detection LED

DIP-SWITCH

		OFF	ON
DIP1	AND / OR	AND	OR
DIP2	Environment	INDOOR / High sensitivity	OUTDOOR / Low sensitivity
DIP3	AND type	NORMAL	DIRECTIONAL
DIP4	Signals from IR1.LED, IR2.LED and BUZZER	DISABLED	ENABLED (the **BUZZER** depends on **JP4**)
DIP5	Anti-shadowing	DISABLED	ENABLED
DIP6	Pause between alarms	Quiet time (30 seconds)	Alarms without pause

It is recommended to disable the LED and BUZZER (DIP4 = OFF) after the test, to increase the battery life.

Outputs cable
(connect to transmitter)



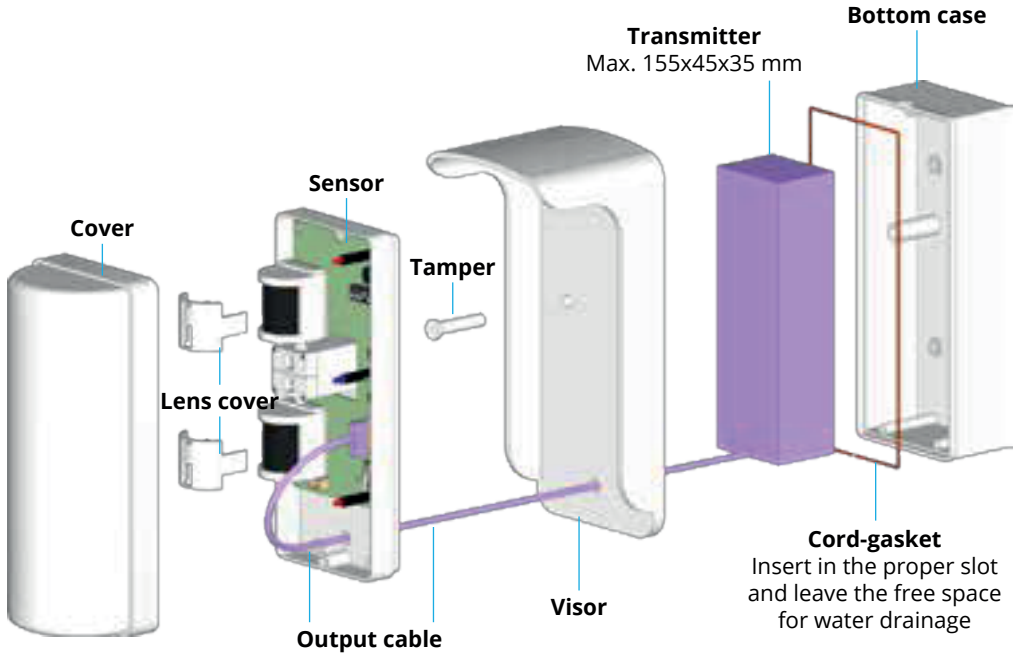
Alarm
(yellow wires)

Low Battery
(white wires)

Tamper
(red wires)

Connector
(connect to **OUT.CN**)

Transmitter placement



POWER-ON

If the sensor is already powered (or at battery change), before proceed it is necessary to disconnect the battery, open the jumper **JP6** and hold the tamper switch for about 3 seconds: the circuit will be completely discharged and will be possible to start-up the sensor correctly.

The sensor must be powered EXCLUSIVELY if set as follows:

DIP1 = OFF	Detection mode: AND
DIP2 = --	*ON or OFF*
DIP3 = OFF	Normal AND
DIP4 = ON	LED and BUZZER enabled
DIP5 = OFF	Anti-shadowing OFF
DIP6 = ON	Alarm without quiet time

JP6 = OPENED	Anti-opening tamper enabled
JP5 = CLOSED	Anti-removal tamper excluded
JP7 = CLOSED	Alarm/transmission LED enabled

R25 = Minimum	UPPER head sensitivity trimmer
R26 = Minimum	LOWER head sensitivity trimmer

After power-up is possible to change the settings of the sensor without switch it off.

Each time the sensor is correctly powered, starts the “stabilization”: during this phase the IR detection LEDs blink and the buzzer emits “beep”. It is important to mantain the sensor in quiet (no detection) for example placing it in its box.
Wait the sensor ends the stabilization before proceed with installation: the sensor will be ready about 20 s after the LEDs blink.

To re-start the sensor, power it off and repeat the steps above.

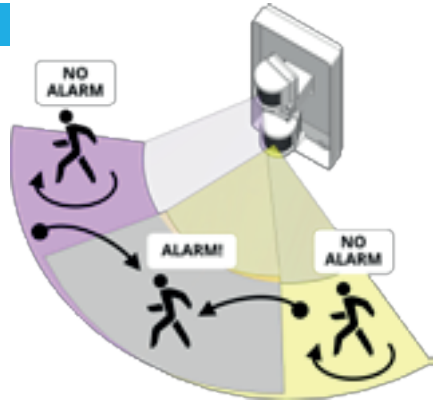
OR / AND / DIRECTIONAL AND - DIP1 + DIP2

OR (DIP1 = ON - DIP3 = any)
The sensor goes in alarm when one SINGLE IR head detects movement.
It’s possible to point the IR heads to protect different areas; it’s possible to create a 180° coverage.
NOTE: the OR logic can be used only on indoor environments (**DIP2** = **OFF**) but never on outdoor; when used on outdoor environment the risk of flase alarm is very high.

L

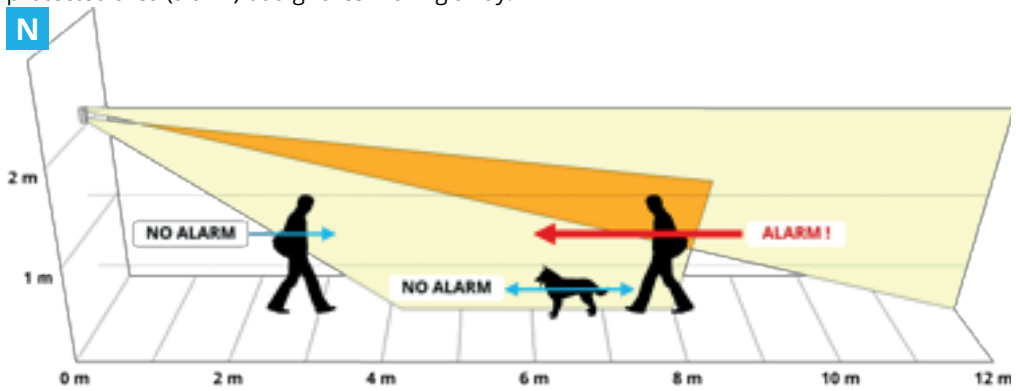
NORMAL AND (DIP1 = OFF + DIP3 = OFF)
The sensor goes in alarm only when BOTH IR heads detect movement within an “AND” time.
At the detection of the first IR head the “AND” time starts; if the second IR head detects over this time, the sensor backs at rest without alarm.
A single IR head detection does not generate alarm.
The IR heads must be oriented to the same direction.
The “AND” time cannot be changed.

M



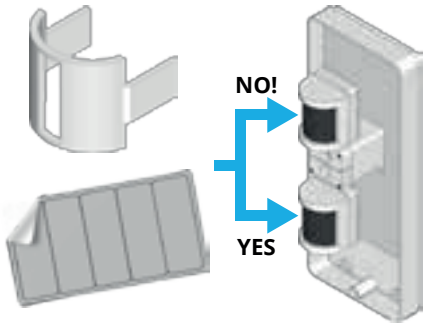
DIRECTIONAL AND (DIP1 = OFF + DIP3 = ON)
It is the same “AND” above, but with control of the detection order.
The sensor goes in alarm only if the detection starts from the UPPER IR head (farthest area) and then (within the “AND” time) the LOWER IR head (nearest area).
In this mode the detection has a “directionality”: the sensor distinguishes the approach to the protected area (alarm) but ignores moving away.

N



ANTI-SHADOWING - DIP5

This function - when enabled - increase the immunity to false alarms when in harsh environments due to fast lightings, changes of sun lightings, shadowing (caused for example by moving trees).
To use this function, the sensor MUST work in AND mode.
When using this function DO NOT apply the lens cover or the adhesive mask on upper IR head!
It is possible to use the lens cover or the adhesive mask on lower IR head.



QUIET TIME (MOD. / G-OP-DPIR-U) - DIP6

The G-OP-DPIR-W model works always without the QUIET TIME (leave DIP6 = OFF).

With the **DIP6** it is possible to enable the QUIET TIME between two consecutive alarms:

- QUIET TIME = OFF **DIP6** = **ON**
  The sensor transmits/signals alarm at each detection (depends on OR/AND mode).
  This mode allows the installer to adjust installation of the sensor.
  This mode is the factory setting.
- QUIET TIME = ON **DIP6** = **OFF**
  After a detection with alarm (depends on OR/AND mode) – the sensor stops the alarm signallings for the "quiet time".
  WARNING: during the quiet time NO DETECTION must happens, otherwise the quiet time restert! If the quiet time ends without detections, the sensor enables alarm signallings.
  The quiet time is about **30 seconds** (cannot be changed).
  The quiet time MUST be enabled in normal working because reduces the battery consumption.

ANTI-REMOVAL TAMPER

The sensor has two types of protection against tampering attempts: anti-opening of the cover and anti-removal. In case of tampering the sensor sends the "tamper" radio code or activates the "tamper" output (according to the model).
The ALARM/TX LED switches on in case of tamper events (if **JP7** = **CLOSED**).

ANTI-OPENING
Protection against cover openings. It is managed by jumper **JP6**:

- **JP6** = **CLOSED** → **EXCLUDED**
- **JP6** = **OPENED** → **ACTIVE**

ANTI-REMOVAL
Protection against removal from installation position: controls the tamper switch on the back of the case (normally closed because the sensor is on the wall).
It is managed by jumper **JP5**:

- **JP5** = **CLOSED** → **EXCLUDED**
- **JP5** = **OPENED** → **ACTIVE**

NOTE: the two tampers are in series.

BATTERY (MOD. G-OP-DPIR-U-K)

LOW BATTERY
When the battery is low and must be replaced:

- the sensor activates the "low battery" output (mod. G-OP-DPIR-U).
- The blue TX/ALARM LED blinks 9 times (it must be enabled **JP7** = CLOSED). The LED blinks after each alarm or supervision transmission.

Note: the low battery alerts will continue until the battery is replaced.

BATTERY REPLACEMENT
When the battery must be replaced:

- Disconnect the old battery.
- Close the jumper **JP5** (anti-removal) and open the jumper **JP6** (anti-opening) then press and hold the tamper switch for at least 3 seconds (circuit discharge).
- Connect the new battery (see the par. "Power-on").

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This manual may be subject to change without notice

EU Declaration of Conformity

CE

The full text of the EU Declaration of Conformity is available at the internet address:
www.guardeon.dk