

IN-MOTION 300

- / Passive (Pyroelectric) Infrared Motion Detection
- / Easy Installation with your INSTAR IP Camera
- / 90 Degrees Conical Detection Zone
- / Pulse Count Compensation to prevent false Alerts
- / Compatible with all INSTAR Cameras featuring an Alarm I/O



IN₃₀₀
Motion



INNO
Motion

Quick-Installation Guide

IN-Motion® 300 PIR Motion Detector

The following topics will be shortly explained in this Quick-Installation Guide:

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More information can be found
on our homepage
www.instar.de

**This Quick-Installation Guide
was made exclusively for INSTAR customers.**

Please read the following safety instructions carefully and keep them in a safe place.

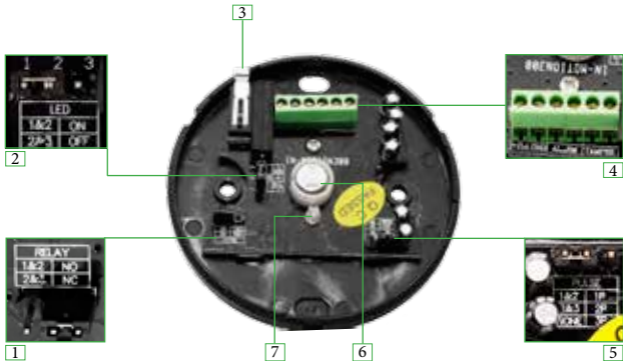
- » Make sure the device is not operated near any hot surfaces.
- » This device shall not be used by people (including children) with limited physical, sensory and mental capabilities. Only a trained person that knows how to use the device carefully can use the device.
- » Children should be supervised to make sure they don't play with the device.
- » If the device casing is damaged, it can only be replaced by the manufacturer or the customer service person or a similar qualified person to avoid any damage to you and the device.
- » When cleaning the device, please never place the device in water.
- » Make sure you only install the device in a suitable power socket (100-240V).
- » This device is for indoor use only!
- » Never install the device near explosive or flammable substances.
- » Don't use the device for any other purpose that it isn't made for.

CE-Conformity



This device suits the basic requirements of the European regulations for electromagnetic compliance (2004/108/EC) and the low voltage regulations (2006/95/EC).

2 | The PIR Sensor



- | | | |
|---|---------------------------|---|
| 1 | Relay Jumper | Allows you to set the relay to “Normally Open” (1&2) or “Normally Closed” (2&4). In NC mode an interruption in the connection to the sensor, e.g. when it is damaged, will lead to an alarm. NC is the standard mode. |
| 2 | Alarm Indicator Jumper | Set the Jumper to the pins 2&3 to deactivate the red alarm indicator LED (see 7, below). |
| 3 | Tamper Switch | The tamper switch will cause an alarm in case the sensor is opened to avoid manipulation. |
| 4 | Connection Terminal | Connector for the 12V power supply + alarm output. |
| 5 | Pulse Compensation Jumper | In case your sensor triggers too many false alarms, please adjust the sensors sensitivity - Jumper on Pin 1&2 equals a high sensitivity, 2&3 an average sensitivity and removing the jumper leads to a low sensitivity. |
| 6 | IR Sensor | Dual element pyroelectric detector. |
| 7 | Alarm Indicator | The red shows LED the alarm state of the sensor. |

What is PIR?

PIR stands for Passive Infrared or Pyroelectric Infrared. PIR sensors can be defined as detectors of warm-bodied targets in motion. A stationary target can not be detected. To detect a moving target, the target must have a surface temperature that is substantially different than the surrounding ambient temperature. Although the usual targets of a PIR detector are warm-bodied (mammals, birds), the PIR sensor will also detect a moving target that has a surface temperature that is significantly lower than the ambient temperature. As long as the target is large enough, and its surface temperature is detectably different than the ambient (higher or lower) - and the target is moving - it can be detected by a PIR sensor.

General Considerations

Temperatures can often change dramatically in relatively short times. Large temperature changes can render the PIR sensor either more, or less, sensitive. As ambient temperatures rise to near 37°C, the difference between the target and ambient temperature decreases - and the sensitivity of the sensor declines. As temperatures decrease the opposite is true and the sensor becomes more sensitive.

As target and ambient temperatures become equal, the PIR sensor may no longer be able to detect a target. Large targets usually have enough variation in their surface temperature to allow the sensor to detect them - even when the ambient temperature is the same as their average body temperature.

The IN-Motion PIR sensors compensate the PIR detector sensitivity according to the ambient temperature. This allows you to utilize the full range of the sensors capabilities - whenever and wherever they are needed!

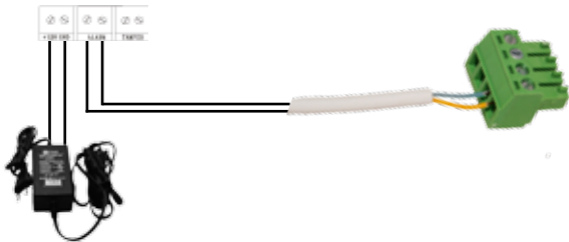
Main Features:

- Internal logic control to avoid false alarms
- Auto temperature compensation
- Pulse count adjustment
- White light interference compensation
- RF interference comp. (20V/m-1GHz)
- Wide angle Fresnel lens
- Ceiling installation
- Alarm output N.C. / N.O.

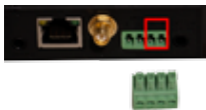
3 | Basic Setup

How to connect your IN-Motion Sensor to your camera ?

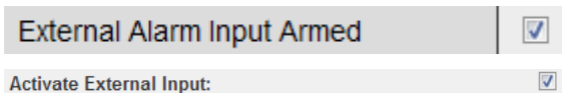
The IN-Motion PIR Sensor is already connected to the power plug and the alarm output cable. Simply connect the signal cable to your INSTAR cameras alarm input connector. The image below shows the I/O bridge of IN-3005/3010 or 3011 - choose the ports 3 & 4 for the sensor cable and replug the bridge into the cameras I/O connector.



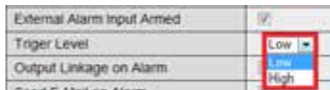
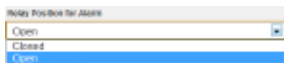
The alarm input of your camera might look different depending on your camera model. Please refer to your user manual to identify the correct ports. You may choose either polarity when connecting the cable - please refer to the next page for information on how to adjust the cameras trigger level accordingly.



After connecting the PIR sensor with your camera's signal input, please open the camera's web userinterface. Go to the alarm settings and activate the external alarm input:



Depending on the polarity you choose for connecting the sensor's signal cable to the camera, you might receive a constant alarm trigger. Please adjust the Alarm Trigger Level / Relay Position accordingly:

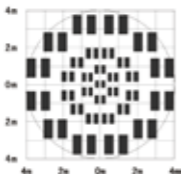


Triggering the PIR sensor (red alarm indicator should light up when triggered, see page 3/ #7) should now trigger an alarm event inside of the camera. The trigger event will be treated just like an internal motion detection event by the camera. So all the settings in place for an alarm event (video recording, email notification, ftp upload, etc) can be triggered by the PIR sensor from now on.

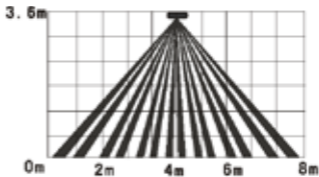
4 | How does it work?

What do I need to consider before installing the sensor ?

The standard sensor coverage area is approximately conical in shape and is broken up into zones by the Fresnel lens - see below for a top view of coverage area. The target to be detected must pass either into or out of one of these zones in order to be detected. Small targets can sometimes move between these zones and not be detected because they never pass into or out of a zone.



Sensor Coverage Area
Top View



Sensor Coverage Area
Side View

Targets moving directly toward or away from the sensor may sometimes escape detection as PIR sensors tend to be less sensitive to this type of movement - this is most likely to occur with small targets.

While not an absolute requirement, for the best results a target should move across the coverage area. Note how the zones are spaced wider near the end of the sensors range, and are shorter at the edges of the coverage area. At the far end of the detection area the sensor is covering the largest number of square feet. As you move closer to the sensor its coverage area decreases. A small target near the end of the sensors range crosses only a tiny percentage of the total covered area and might escape detection. A small target close in to the sensor crosses a greater percentage of the covered area and is much easier to detect. A target's size, distance from sensor, and surface temperature play an important part in the sensors effective range.

How do I minimize false alerts?

The greatest drawback of the PIR sensor is that it will detect anything that is moving - air, shadows, grass, etc - and has a temperature differing from ambient. Many schemes have been tried to minimize this problem, but in harsh outdoor settings, some “falsing” is unavoidable. Below are some tips to help you minimize false events.

Point the sensor away from the rising or setting sun. In general, North or South works well, but your local site conditions could dictate otherwise.

Keep the sensor aimed at an area that will not have intense, direct sunlight warming all or part of the detection area. Shadows of trees or clouds moving across a sun-warmed area can cause a momentary temperature drop which could cause a false event to be recorded. Warmed air rising from the ground can cause problems too.

Do not place the sensor in a location where direct, bright sunlight will fall on the sensor window.

Tall, sun-warmed grasses or other vegetation blowing in a breeze can be detected. Point the sensor away from dense, sun-warmed vegetation which can trap heat.

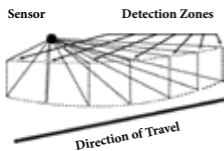
Even in a shaded area, keep the sensor pointed away from dense shrubs or trees that can retain the days warmth. A warm evergreen or other dense shrub will hold the days heat. If the air temperature drops at night - and the still warm shrub moves in the wind, this movement could be detected.

If the area is known to have many small birds / mammals, you will surely get many empty pictures, as these active, fast animals will often leave the frame before a picture can be taken (also see **Pulse Count Compensation**, next page).

Wind can cause false events. The moving air might be warmer or cooler than the background. Place the sensor in an area sheltered from strong winds.

Wind can also cause movement of the object you have your sensor mounted to. Make sure to secure your sensor to an object that will not sway in strong winds. Any movement of the equipment may be interpreted as motion by the sensor.

The IN-Motion PIR controller supports a **PCC** (Pulse Count Compensation) Mode - allowing you to determine how many detections (or ‘pulses’) must occur in a given time period before an event recorded. The illustration below shows a simplified concept of the PIR’s detection area, and its detection zones.



an edge (see vertical dotted lines) between “zones”, an electrical signal - or ‘pulse’ - is generated by the sensor. As the target moves across the detection area, several pulses are generated, one each time the target passes a zone’s edge. Since larger targets will generally cause a greater number of pulses in a shorter period of time, **PCC** modes can be used to help eliminate small animals from being detected.

PCC modes can also help reduce “falsing” in noisy environments (lots of wind, sun-warmed vegetation, etc), since most false events do not cause more than one or two pulses over a period of several seconds. Use **PCC** modes with care, as an overly aggressive setting could reduce capture rates of valid targets.



Set the Pulse Compensation Jumper (see page 3, #5) to pin 1&2 to set the **PCC** to one pulse (highest sensitivity), to pin 2&3 to set it to 2 pulses and remove the jumper completely to set the **PCC** to ignore all events that don’t generate at least 3 pulses.

5 | Installation



Turn the detector counterclockwise and remove the front cover. Then simply use the two screws and anchors included in the package to mount the sensor parallel to your wall or ceiling. Close the lid afterwards and you are good to go.

After turning on the power the sensor will start a self-test that takes about 60s, indicated by the red LED light. In normal operation the red indicates a trigger event. Please refer to page No. 3 #2 on how to deactivate the alarm indicator.

Technical Data	
Operating voltage	D.C. 9V - 16V
Current consumption	18mA @ DC12V
Detection distance	Diameter - 8m (at a height of 3.6m)
Detecting angle	360 ° @ an opening angle of ~ 90°
Start-up time	60 seconds (warm-up time up to 10 minutes in temperatures below -10°C !)
RF interference compensation	10MHz 1GHz 20V/m
Alarm indicator	Red LED
Alarm output	N.C. or N.O., DC 28V/100mA
Tamper output	N.C., DC 28V / 100mA
Sensor	Dual element pyroelectric sensor
Environment humidity	95% RH (no congelation)
Working temperature	-10°C to +50°C
Installation mode	Ceiling- or wallmount
Installation height	2.5 to 6m
Size	79 mm diameter / 23mm depth

WARRANTY

INSTAR offers a 2-year warranty on its products. During this time you can send in your device for a free repair. This **excludes** devices used with third-party equipment that has not been approved by INSTAR. The warranty is only valid for the original hardware parts of the device.

If you are contacting our Service Team please keep the model ready.

If you want to send in your device for repair, please use the RMA form that came with the device. If you don't have this form you can also download it from www.instar.de or contact the INSTAR Service Team.

Disposal of old electrical appliances

The European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE), requires that old household electrical appliances must not be disposed of in the normal unsorted municipal waste stream. Old appliances must be collected



separately in order to optimize the recovery and recycling of the materials they contain and reduce the impact on human health and the environment. The crossed out "wheeled bin" symbols on the product reminds you of your obligation, that when you dispose of the appliance it must be separately collected. Consumers should contact their local authority or retailer for information concerning the correct disposal of their old appliance.

You can find your INSTAR SERVICE CENTER at the following destination:

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