Camtraptions PIR Motion Sensor v3 Manual

Firmware Version 2.2

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What is a PIR Motion Sensor?

All objects emit energy in the form of invisible infrared radiation. A passive infrared (PIR) sensor detects movement of infrared-emitting sources within its field of view. This allows it to sense when an animal passes in front. The term “passive” refers to the fact that the sensor does not emit radiation but instead monitors the levels if infrared radiation falling on it. As a result, PIR sensors are very energy-efficient.

What is new in Version 3?

The following new features have been add to this PIR:

1) Added an integrated wireless transmitter, compatible with Camtraptions Wireless Receivers.
2) Redesigned sensitivity algorithm delivers faster response time with more reliable false trigger filtering.
3) Now supporting three distinct operating modes: Still mode, Video mode and Legacy mode
4) Support added for a wider range of cameras and flashes

Primary Controls

The PIR is configured via three dials and a bank of six switches on the front. There is also an On-off switch on the bottom of the device.

Dials

The dials control the following functions:

- Sensitivity – See Page 14
- Time Variable – See Page 15
- Luminosity Threshold or Secondary Time Variable – See Page 16

Note that the behaviour of the Time and Luminosity Dial varies based on the program. The behaviour of the Sensitivity Dial is the same for all programs.

Switches

The switches control the following functions:

- 1 & 2: Day / Night behaviour

Still mode

- 3: Dial function
- 4, 5, 6: Transmitter Program

Video mode:

- 3: Extend video length on additional motion off/on
- 4, 5 & 6: Video Program

On-off Switch

The On-off switch is situated on the bottom of the device. Turn the switch to “I” to turn the sensor on. Turn the switch to “O” to turn the sensor off.

On power-up, the LED on the front of the device will flash to indicate the supply voltage and then there will be an 8 second delay while the sensor calibrates. Thereafter, the LED will flash to indicate the Operating Mode and Channel before commencing normal operation. See Page 9 for further details.

Operating Modes & Channel Selection

The PIR v3 has three operating modes:

1. Stills mode: All programs focused on still shooting
2. Video mode: All programs focused on video shooting
3. Legacy mode: Replicates programs of PIR v2

The PIR v3 can be configured to work in one of seven different wireless channels. These channels are compatible with Camtraptions Wireless Triggers.

Setting the Operating Mode & Channel

It is intended that the operating mode and channel are set when the PIR is set-up for the first time. Thereafter, it should not be necessary to adjust these settings again unless it is necessary to swap between still and video mode. If multiple PIRs are being used in a small area then set them to different channels so they don’t interfere.

The operating mode and wireless channel of the transmitter are set via the internal jumpers. To access the jumpers, open up the batter enclosure and

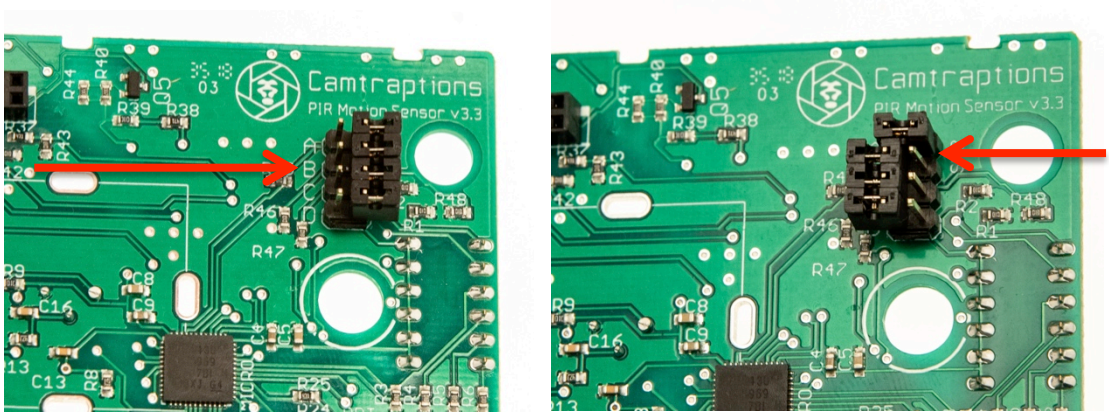
remove the battery holder by unscrewing the two screws that secure it to the enclosure.

The jumpers are located in the top right corner under the Camtraptions logo and are labeled A, B, C and D. Place a connector so that it bridges the two jumper pins to set the state to On. Place the connector so that it is mounted on just one side, to set the jumper state to Off.

Important: when pulling up the jumper connectors, ensure the board is pushed down so that it does not come away from the enclosure. If the board lifts from the enclosure, the o-rings that seal the dials may pop off.

The power-up LED flash sequence provides a simple way to check the state of the jumpers without removing the battery enclosure. See LED Indicator for more.

The images below show example jumper placements:



Left: Jumpers A to D in the Off position with jumper connectors stowed on just the right pin.

Right: Jumper A in the On position (jumper connector spanning left and right pins) and Jumpers B to D in the Off position (this time with jumper connectors stowed on the left pin).

Operating Mode

The jumper marked A can be used to switch between stills and video mode.

Jumper A: **Off**: Stills mode (see Stills Manual)
On: Video mode (see Video Manual)

Wireless Channel

The jumpers marked B, C, D set the wireless channel. The jumper configurations for each channel are shown below:

Setting	B	C	D
Channel 1	Off	Off	Off
Channel 2	**On**	Off	Off
Channel 3	Off	**On**	Off
Channel 4	Off	Off	**On**
Channel 5	**On**	**On**	Off
Channel 6	Off	**On**	**On**
Channel 7	**On**	**On**	**On**
Tx Disabled	**On**	Off	**On**

The corresponding channels on Camtraptions Wireless Receiver are as follows:

Setting	1	2	3	4
Channel 1	**On**	Off	Off	Off
Channel 2	Off	**On**	Off	Off
Channel 3	Off	Off	**On**	Off
Channel 4	Off	Off	Off	**On**
Channel 5	**On**	**On**	Off	Off
Channel 6	Off	Off	**On**	**On**
Channel 7	**On**	**On**	**On**	**On**

Legacy Mode

This mode replicates the programs of the PIR v2. It is set as follows:

A: Off
B: On
C: Off
D: On

For instructions on how to use Legacy Mode, refer to the PIR v2 Manual.

Inserting Batteries

Use a screwdriver to remove the four screws on the back of the device and take off the back wall. Insert six AA batteries into the battery holder, taking care to follow the polarity direction indicated on the holder. Check the sensor turns on and then replace the back wall and the four screws. When replacing the back wall, ensure that the seal around the edge is clean and free of debris.

The sensor accepts either Alkaline or NiMH rechargeable batteries and will operate while the supply voltage is greater than 3.7 volts. Please note that if using a different type of battery or powering the sensor from an external power source, the supply voltage should not exceed 9.6 volts.

When the sensor is first turned on, the red LED on the front indicates the battery voltage, see Page 9.

Red LED Indicator

The red LED on the front of the PIR serves three functions:

1) Indicates the battery voltage on power-up
2) Indicates the Operating Mode and Channel setting
3) Helps sensor alignment and sensitivity testing during the first 5 minutes

Power-up Sequence

When the sensor is first turned on, the LED will flash up to 5 times. There is then an 8 second delay before the sensor will flash four times and start operating.

The number of flashes during the initial power-up phase provides a quick indication of the remaining battery level. This battery indicator has been calibrated to be most useful when the sensor is powered by six Alkaline batteries.

The battery life thresholds are as follows:

Number of flashes	Alkaline battery life remaining
5	More than 80%
4	60%-80%
3	40%-60%
2	20%-40%
1	Less than 20%

If you are using NiMH rechargeable batteries then the approximate thresholds are as follows:

Number of flashes	NiMH battery life remaining
4	More than 90%
3	20%-90%
2	10%-20%
1	Less than 10%

Operating Mode & Channel Indicator

Before the PIR starts operating it will flash four times. The length of each flash corresponds to the Jumper settings inside the PIR. The first flash corresponds to JPA, the second JPB and so on. A long flash indicates a jumper is On while a short flash indicates it is off. Thus a long flash followed by three quick flashes indicates the sensor is in Video mode, Channel 1. A short-long-short-long sequence would correspond to legacy mode. See Page 7 for Operating Mode and Channel jumper configuration.

Alignment & Sensitivity Indicator

After the power-up phase, the sensor will commence normal operation.

The LED will light up whenever motion is detected. This can be used as a visual aid to help align the sensor so that it is only detecting motion in the desired trigger zone. When you are using the LED to set-up your sensor, you might want to leave your camera off to avoid taking unwanted images.

After 5 minutes the LED will be disabled in order to conserve battery power and avoid drawing attention to the PIR sensor. If you want to reactive the LED then you will need to turn the sensor off and then on again.

If the LED is illuminating in response to motion but the camera is not firing then please check the following:

1) Some programs do not fire the camera (for example, several video programs do not send full-press signals to the camera)
2) If using a wireless connection, the channel of your receiver might not match the PIR transmitter
3) If in a “Night” program, then the camera will not fire if the ambient light level is above the luminosity threshold set by the Luminosity Dial
4) If in a “Day” program, then the camera will not fire if the ambient light level is below the luminosity threshold set by the Luminosity Dial
5) Some programs include long delays during which the camera will not fire (for example, it is possible to set a delay of up to 60 seconds after each burst)
6) Your camera may not be set-up correctly so double-check the settings in the “Quick Start” guide in the Stills Manual

Mounting the Sensor

There is a standard tripod socket on the bottom of the sensor that allows it to be mounted on a tripod or similar mounting accessory.

The device also has attachment points for a strap on either side so that it can be strapped to a post or tree trunk.

The sensor is sealed so that the electronics and batteries are protected from precipitation. However, it is possible for water to trickle inside via the camera connecting cable socket if the sensor is not mounted with this socket facing downwards. Therefore, it is important to mount the sensor the correct way up.

Long-term Deployment in Wet Conditions

The Camtraptions PIR v3 is weather-sealed but it is still possible for moisture to enter the device, particularly via the connecting cable socket. For long-term deployment in wet and humid conditions, it can be a good idea to use bathroom silicone sealant on this socket to improve the seal. Make sure the bung or camera connecting cable are inserted into the socket and then apply the sealant around the insert. Do not apply sealant if the bung or cable are not inserted as it may get into the cable socket and make it unusable for wired connections. As an additional precaution, you may also want to insert a small sachet of silica gel desiccant inside the PIR (behind the batteries).

Controlling the Field of View

The detection zone is immediately in front of the white dome lens on the front of the sensor.

The detection range is around 5m in front of the device but the precise distance depends on the size of the subject, the sensitivity setting and the relative temperature differential between the subject and the background.

The detection field of view is around 120 to 150 degrees horizontally. The detector is most sensitive towards the centre of the detection zone.

It may be necessary to limit the detection area in order to have more control over the position of the subject relative to the camera. To do this, open out the flaps on either side of the sensor to limit the sensor's field of view. Tighten the knurled thumbscrews on the bottom of the device to secure the flaps in position.

Connecting a Wired Camera

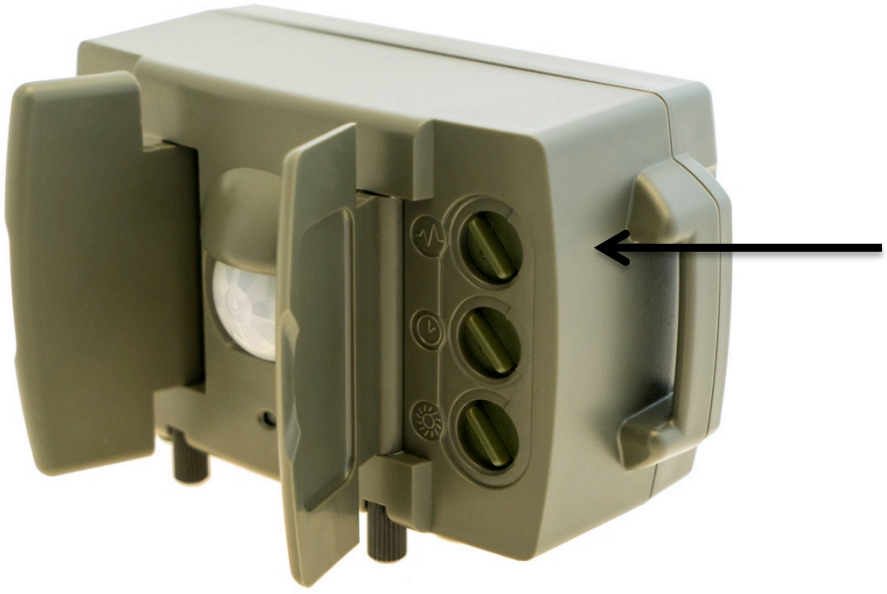
Remove the bung in the socket on the bottom of the sensor and plug in the camera connecting cable. Connect the other end of the cable to your camera's shutter release port.

Connecting a Wireless Camera

To connect your camera wirelessly:

- Ensure you know which channel the PIR transmitter is set to. By default it is Channel 1.
- Set the Camtraptions wireless receiver to the corresponding channel.
- Connect the camera connecting cable to the "Camera" socket on the receiver and the other end to the camera's shutter release port.

Sensitivity Dial



- Turn the dial clockwise to increase sensitivity.
- Turn the dial anticlockwise to decrease sensitivity.

Higher sensitivity results in faster response time and increased range. You will also need to increase the sensitivity when photographing small creatures or in hot conditions when the temperature differential between the subject and the background is lower.

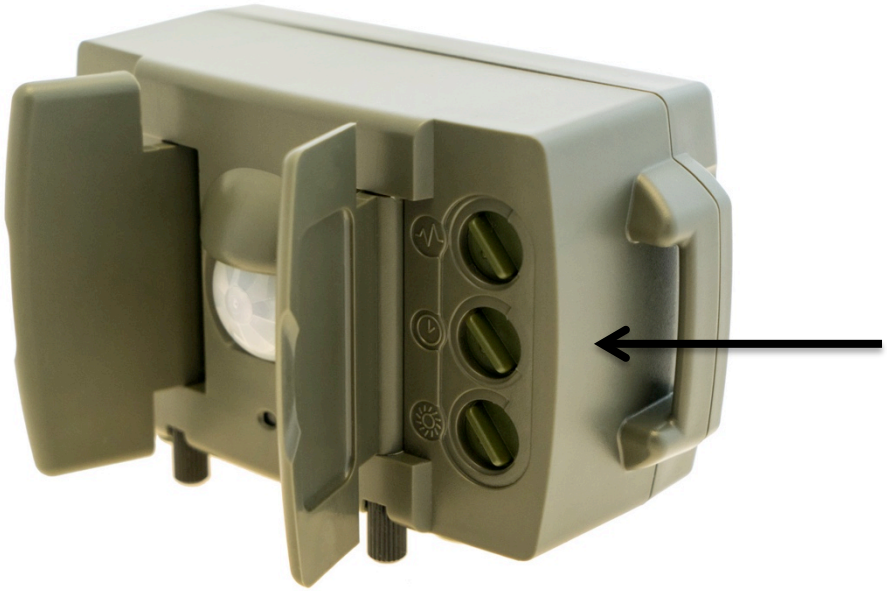
Minimizing False Triggers

You can reduce the sensitivity by turning the dial anticlockwise if you are getting an unacceptable level of false triggers.

However, before reducing the sensitivity, you should try to manage the scene to avoid potential sources of unwanted motion. For example, position the sensor so that it has a minimal amount of vegetation in the foreground that could move in the wind.

In general, you should try to position the sensor so that the subject will be much closer than anything that could cause false detections.

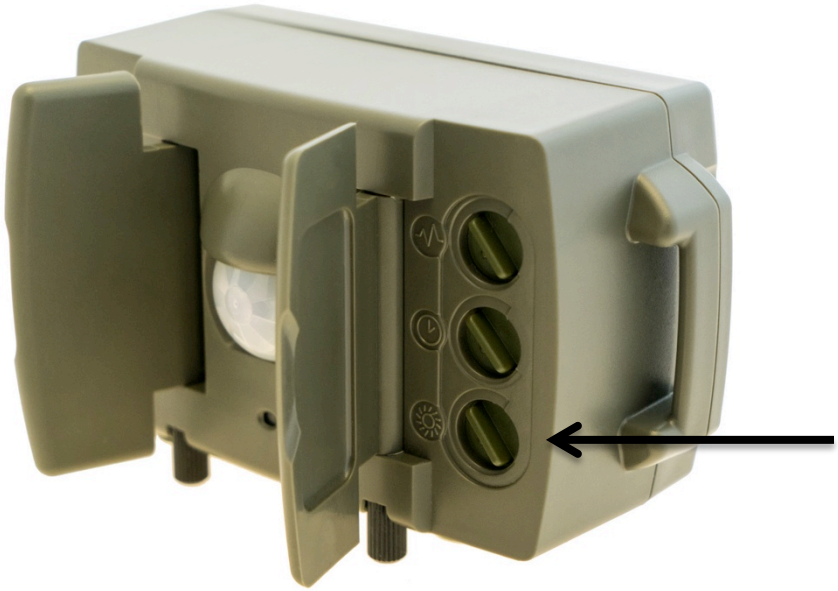
Time Dial



- Turn the dial clockwise to increase time duration.
- Turn the dial anticlockwise to decrease time duration.

The Time Dial changes different durations depending on the program selected. For example, it might be used to set the duration of a burst in Stills mode or the video length in video mode. Refer to the relevant mode documentation for further details.

Luminosity Threshold Dial



- ☼ Turn the dial clockwise to increase the luminosity threshold.
- ☼ Turn the dial anticlockwise to decrease the luminosity threshold.

The Camtraptions PIR sensor is able to vary its behaviour based on the ambient light level. For example, the PIR can be configured to work only during daylight, only during darkness or all of the time.

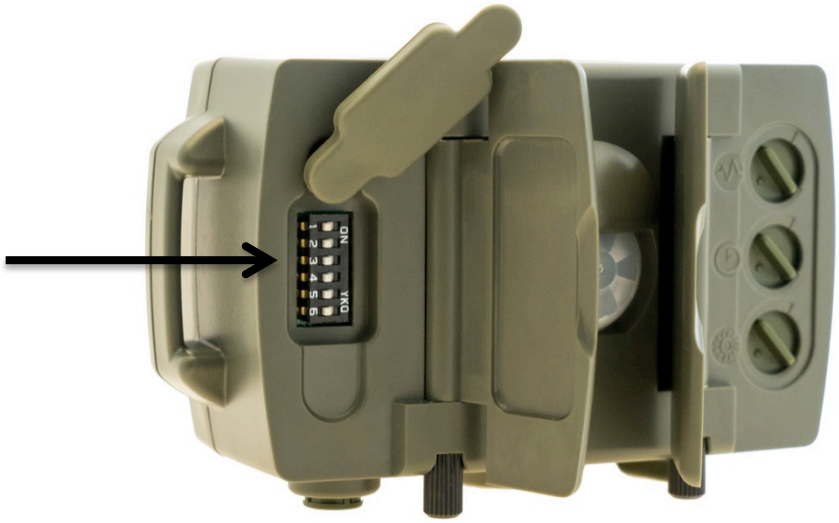
It is also possible to configure the PIR with no luminosity cut-off so that it will work all of the time. In this situation, the Luminosity Threshold Dial is used to set a Secondary Time Variable. Refer to the Program documentation below for further details.

For Day and Night Programs, turn the dial to set the threshold between day and night operation. For example, with the dial set somewhere in the middle, and a Night Program selected, the camera will only be triggered in gloomy and dark conditions. As the dial is turned anticlockwise the threshold is lowered so the camera would only get triggered in darkness. If the dial were turned fully clockwise, the camera would fire in all light conditions.

This behaviour is reversed in a Day Program; with the dial in the middle, the camera would only fire in gloomy light and full daylight, with the dial turned clockwise, it would only fire in bright sunlight and with the dial turned fully anticlockwise, the camera would fire in all light conditions.

Please note that if you want the camera to fire in all conditions then it is advisable to select a program without a luminosity cut-off to avoid the risk of accidentally setting the luminosity threshold incorrectly and the camera not operating for part of the day.

Program Selection



Programs are set via switches 1 to 6 on the front of the device. These switches are located under the watertight bung, behind the flap, to the left of the sensor dome.

There are 64 unique switch combinations that can be used to select programs. Refer to the Still or Video operating mode manuals for more information.

Support

For technical support, please email support@camtraptions.com.

To share photographs and discuss camera trap techniques, please join our group on Facebook: https://www.facebook.com/groups/camtraptions/