



AUTOMATED OUTDOOR ANIMAL MONITORING

TrackSnap Manual

DVR Manual

Model TS-DVR-01

Document Author: Paul Skelly
Version: TS DVR.02
Issue Date: 14/06/2007
Status: Released
Document Location: <http://www.tracksnap.com>

DOCUMENT HISTORY

Rev	Date	Description	Author
.01	13/06/2007	Released	Paul Skelly
.02	01/10/2008	Complete update including new battery information.	Paul Skelly

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Introduction

Congratulations on the purchase of a new TrackSnap camera system. This manual provides detailed information for the setup and use of your system.

Please read this manual before using your TrackSnap camera. The information provided will give you good service from your system.

At the heart of any motion sensing camera is a controller board. All TrackSnap cameras use a PixController PIR (**Pryoelectric Infra-Red**) motion detection sensor. The PixController motion sensor electronics is a unique design. With this design you will get the minimum number of false triggers (blank photos), and the PIR electronics will shut down when the board battery gets low also minimising false photos. It can detect the target in any vector of travel (say up and down target movement), which is very important if you plan to mount your sensor in an elevated position.

Knowing your system is working in the field all the time is what you expect from our high quality products!

TrackSnap Setup Tips

- Ensure the Neuros DVR is set up correctly, DIP Switches are in the correct position and battery is properly charged. The TrackSnap controller will power the DVR and camera when required and the unit not function correctly without these correct settings.
- Utilise the Auto **Walk-Test Mode** to confirm settings after positioning the camera as suggested below. See top of page 5 for auto walk-test mode information.
- Position the camera correctly
 - 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. The warmed air rising from the ground can cause problems too.
 - 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 day's warmth. A warm evergreen or other dense shrub will hold the day's 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 may get some empty pictures, as these active, fast animals will often leave the frame before a video clip can be taken. Orient your sensor to your target.
 - Wind (moving air) 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 when you use your PIR sensor equipped cameras in a location prone to high winds.
 - Wind can also cause movement of the tree or other object you have your sensor mounted to. Make sure to secure your sensor to an object that will not sway in strong winds. Trees should be a minimum of 25 cm in diameter.
 - Make sure your equipment is fastened securely. Movement of the equipment can be interpreted as motion by the sensor and may result in unnecessary video.

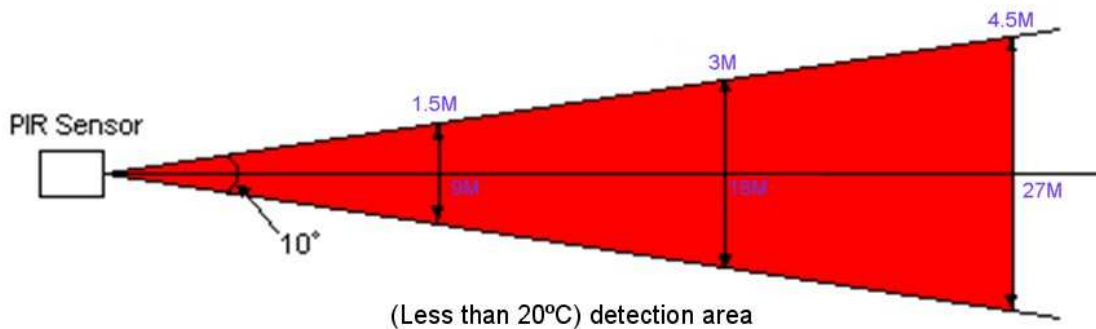
PIR Motion Sensors Basic Overview for Effective Use

All TrackSnap cameras use a PixController PIR motion detection sensor. **PIR** stands for **Pryoelectric Infra-Red**, which detects warm targets in motion over ambient background temperature. A stationary target or a target not moving can not be detected. The target must also have a warmer surface temperature than the ambient background temperature in order to be detected.

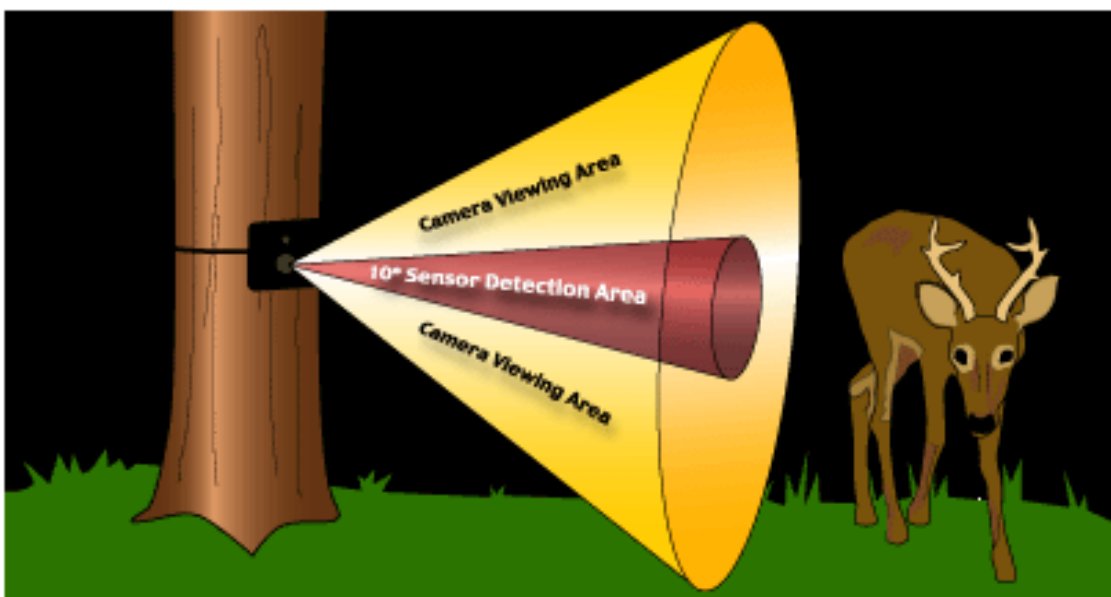
The size of the target and the distance of the target from the PIR sensor will also effect if the target can be detected or not. Smaller targets such as birds and small mammals may not be detected especially if they are moving fast or are at a great distance from the PIR sensor. Larger targets such as medium size and large size mammals are easily detected within the range of the PIR detection area (see below). However, if you increase the sensitivity of the PIR sensitivity POT you can detect smaller targets, but you run the risk of a greater chance of false triggers.

PIR Sensor Detection Area

As ambient background temperatures rise to near 35.5°C, the difference between the target and ambient background temperature decreases for warm-blooded targets. The sensitivity of the PIR sensor declines in this instance. However, as ambient background temperature decrease the opposite is true and the sensor PIR becomes more sensitive. Under these conditions you can adjust the PIR sensitivity POT to accommodate your detection range needs. The graphics below show an example of the PIR detection area at around 20°C. The PixController PIR sensor is unique in that the target does not need to be moving from right to left, or left to right. The sensor can detect the target in any vector of travel (say up and down target movement), which is very important if you plan to mount your camera in an elevated position for security reasons.



The red area is the PIR detection area in the above graphic.



Auto Walk-Test mode on power up

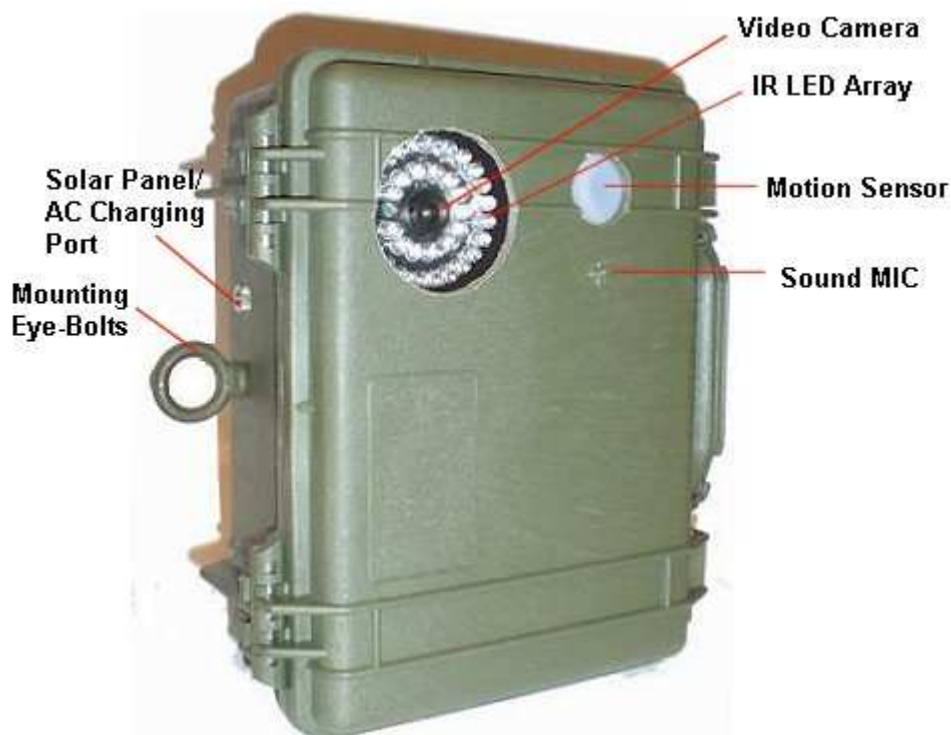
When turning power on to your TrackSnap both the red and green LED will light up. They will both stay on for 30 seconds. This time will allow the PIR circuit to warm up. After this time expires the green LED will turn off and the red LED will blink 5 times letting you know that the board is entering a 1 minute **automatic walk-test phase**. At this point you can move around the camera setup and check out the PIR area. Both the green and red LED's will light when motion is detected. After the 1 minute automatic walk-test phase expires the red LED will blink 5 times letting you know the camera system will now become active.

Digital Video Recorder (DVR) Overview

The DVR (Digital Video Recorder) is a complete (PIR) motion triggered video recording system packaged in an *OD Green* water-proof housing for recording wildlife movements. The motion detection range is over 24 metres. Video recordings are saved on standard Compact Flash (CF) or Sony Memory Stick DUO memory cards in a MPEG4 video recording format. Simply turn the internal power switch to the "on" position, close the case, and wait the 1.5 minute motion control warm up time and the **DVR** will be ready for motion event video recording. The unit captures more than 1 hour of footage at 640 X 480 @ 30 Frames per second in high resolution with Sound on a 1 GB memory card. Connects to your TV for play back, PC with memory card reader, or carry your Personal Video Player (PVP) in the woods to view your video clips. Email your video clips to friends without needing expensive video capture equipment.

The advantages the **DVR** has over traditional camcorder motion event recording systems are that the video camera switches to full colour during daylight hours and stealth IR mode for night recording automatically with IR illumination out to 21 Metres. Sound is also recorded with your video, which is a very important feature when recording wildlife especially. Being that there are no mechanical parts for running camcorder tape recording the **DVR** can be used in much lower temperature conditions where a camcorder will often freeze, and it can be used in much more humid weather conditions where a camcorder can be damaged by moisture, and will power up much faster than camcorders will. The DVR and Video Camera are powered by a rechargeable 12V SLA 3.4 AH battery, which under normal use can last up to 3 weeks of unattended use. A solar panel can be added as an accessory item to charge the 12V SLA battery an unlimited unattended use time.

Outside Your TrackSnap DVR Camera

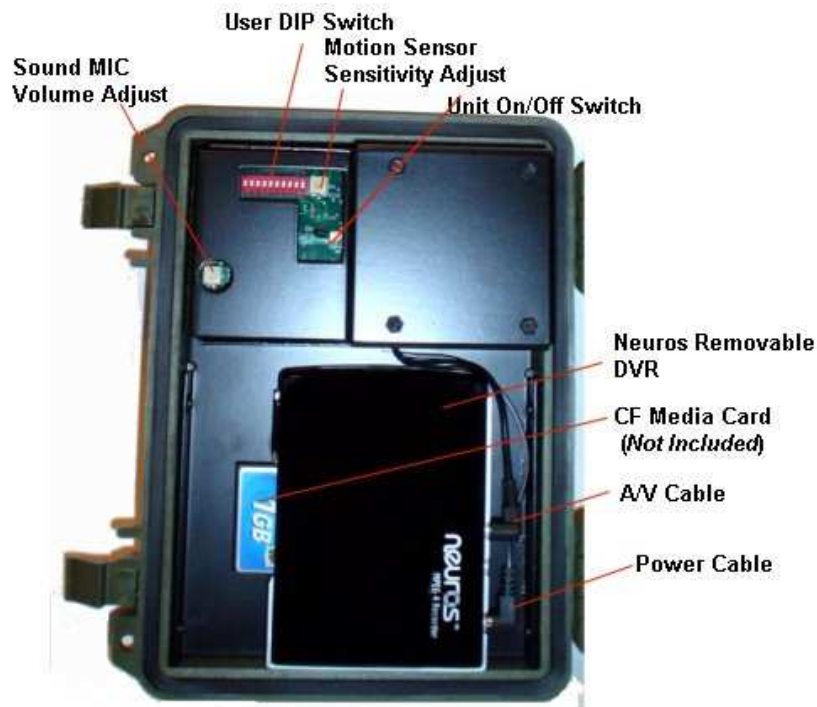


DVR Special Mounting Options

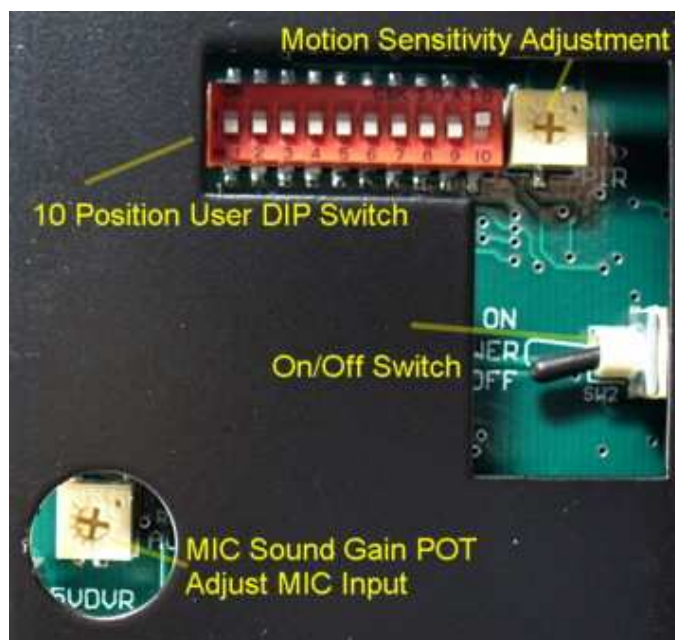
The DVR has standard cast steel eye bolts for mounting to a tree in the field via bungee chords or the Master lock Python locking cable.

The DVR also has a special base mounting bracket for attaching a standard video security camera mount or tripod.

Inside Your TrackSnap DVR Camera



Adjusting the Camera Controls



Adjusting the PIR Motion Sensitivity POT

To adjust the PIR detection range on your controller board simply turn the single turn POT shown in the picture on page 6 to your desired range. The default setting is in the middle, as shown. The two "dots" on the Philips head screw show the actual location.

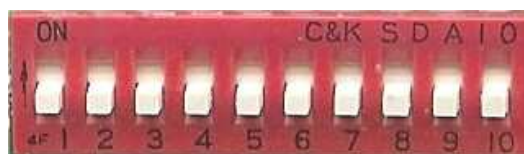
The default setting is desirable for almost all weather conditions. In very hot summer months, or setups over fields with no shading cover you should reduce the PIR sensitivity.

The detecting distance adjustment allows you to easily set the PIR detecting distance (range). Pyroelectric infrared is more sensitive in winter than in summer, be sure to reduce the sensitivity in summer by adjusting the sensitivity knob away from the silver dot to avoid false triggering. Reducing the range for night photography will help the problems of your subject being out of the flash range.

Adjusting the Audio MIC Gain

To adjust the MIC sound level on your controller board simply turn the single turn POT shown in the picture on page 6 to your desired range. The default setting is in the middle, as shown. The two "dots" on the Philips head screw show the actual location. The default setting is desirable for most conditions.

DIP Switch Settings



PixController 10-Position DIP Switch

When changing switch setting you must turn the camera off then on again.
When rebooting you must wait approximately 30 seconds before turning power on again.
Not doing so can result in the controller not working properly.
Symptoms of this are a dim red LED or blinking green LED or both.

Introduction

The User Control Switch will let you customize how the motion control board will trigger the DVR recorder. Here you can adjust the time delay between pictures, operating only at day, night, or 24 hours, setting up a walk-test mode for testing PIR range/area, set how long the camcorder will record, and turning the control board LED's on or off.

Note: When turning power on both the red and green LED will light up. They will both stay on for 30 seconds. This time will allow the PIR circuit to warm up. After this time expires the green LED will turn off and the red LED will blink 5 times letting you know that the board is entering a 1 minute automatic walk-test phase. At this point you can move around the camera setup and check out the PIR area. Both the green and red LED's will light when motion is detected. After the 1 minute automatic walk-test phase expires the red LED will blink 5 times letting you know the camera system will now become active.

Default Setting

The default settings for your camera are marked in Yellow

All switches "Down" and a summary is listed:

- No Delay between pictures
- 24 hour mode of operation
- 30 Seconds/Continuous recording time
- Control LED On
- Green PIR LED Off

Delays between Video Clips Setting

Switches 1, 2 and 3 control the delay between video events. This setting is used so you can limit or not limit the number of clips taken when a motion event triggers your board. For example when you set your system up on a track you will want a small delay setting so you can capture as many photos as possible, but when setup over a feeder you want to use the 10 minute PIR delay so you limit the number of clips of one animal.

Delay Between Pictures	Switch 1	Switch 2	Switch 3
No Delay	Down/Off	Down/Off	Down/Off
30 Seconds	Down/Off	Down/Off	Up/On
1 Minute	Down/Off	Up/On	Down/Off
2 Minutes	Down/Off	Up/On	Up/On
5 Minutes	Up/On	Down/Off	Down/Off
10 Minutes	Up/On	Down/Off	Up/On
15 Minutes	Up/On	Up/On	Down/Off
20 Minutes	Up/On	Up/On	Up/On

Day / Night Operations Settings

Switches 4 and 5 control the Day /Night operation of your PixController board. Here you can setup if the board is to function 24 hours a day, night only, or day only. The last setting sets up the day/night sensor light detection level. This is useful for setting up your PixController board to detect light/darkness levels.

Mode	Switch 4	Switch 5
24 Hour Operation	Down/Off	Down/Off
Night Only	Down/Off	Up/On
Day Only	Up/On	Down/Off
Day/Night Sensor Calibration.	Up/On	Up/On

Video Recording Time Setting

Switch 6 and 7 will allow the user to adjust how long the video recording event will be.

Mode	Switch 6	Switch 7
30 Second / Continuous	Down/Off	Down/Off
30 Seconds	Down/Off	Up/On
1 Minute	Up/On	Down/Off
5 Minutes	Up/On	Up/On

DVR Manual Powered-UP Mode Setting

Switch 8, when set to the UP or ON position, powers up the video camera and DVR for reviewing video in the field with a hand held video monitor, viewing video at home on your TV, or making changes to the DVR settings with the DVR remote control.

	Switch 8
DVR in Automatic Mode	Down/Off
DVR Powered-up in Manual Mode	Up/On

Control LED Setting

Switch 9 sets if the Control LED (**Red LED**) is to be used or not.

Note: The control LED will always be on during the Power-Up Phase, or when in Walk-Test Mode.

	Switch 9
LED Off	Down/Off
LED On	Up/On

Green PIR LED Setting

Switch 10 sets if the PIR LED (**Green LED**) is to be used or not.

	Switch 10
LED Off	Down/Off
LED On	Up/On

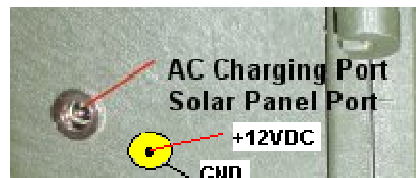
DVR Battery Information

There is a Standard 12V 3.4AH Sealed Lead Acid (SLA) Battery used in the TrackSnap DVR camera.

The 12V battery powers all of the electronics in the camera unit. The Battery can be charged via the included battery charger, via the Solar Input socket or swapped-out and charged externally.

On the outside of the DVR case there is a 2.1mm power connector.

This connector can accept an external power supply such as a 3-5 Watt Solar Panel or other 12V supply and the DVR internal circuitry will manage the battery charging. A Solar Panel is an optional extra.



To charge the battery with the included charger, remove the DVR connections from the battery terminals and connect the colour-coded charger clips to the correct coloured terminals on the battery.



Battery Charger



Connected to battery.

Features:

- * Short circuit and wrong polarity prevention
- * Constant charging current
- * No charge with wrong polarity connection
- * No voltage at alligator clips until battery is connected.

The charger is fully automatic. When the battery is charged, the charger automatically switches to trickle charge and a green LED will show this. A red LED is lit when there is normal charging. Virtually any SLA battery can be charged but the higher the battery size, the longer the charge.

SLA batteries must be kept charged and will be damaged if discharged and left uncharged. Proper care of the battery will provide good service life.

Note: the charger will not charge a totally flat battery i.e. zero volts

PIR Lens Information

The PIR lens is mounted in the case with your board. The lens is centred over the PIR Sensor and be 16.5 mm from the top. We mount the lens with the "ridges" facing towards the PIR sensor. Do not scratch the lens on either side. Also, **do not mount any glass, tape or plastic film over top of the PIR lens.** Glass will not let infrared heat to pass through to trigger your PIR sensor. The PIR lens is glued to the inside of the case (lens ridges pointed in, smooth side out), with a waterproof adhesive.

Master Lock® Python Camo Cable (Accessory)



The ultimate security solution for protecting your TrackSnap camera when mounting on a tree.

Features:

- Cut resistant 1.8 m x 8mm braided steel cable adjusts to any position from 15cm - 1.8m.
- Durable ABS bumper with scratch resistant Camo finish.
- Pick resistant reliable pin tumbler locking mechanism.
- Easy to use Velcro strap holds excess cable in place.
- Timber high definition (TM) Camo finish
- Fits all TrackSnap cameras
- Comes in **Individual Keyed Single** and **Four pack keyed alike**

DVR Camera Settings and SPECIFICATIONS:

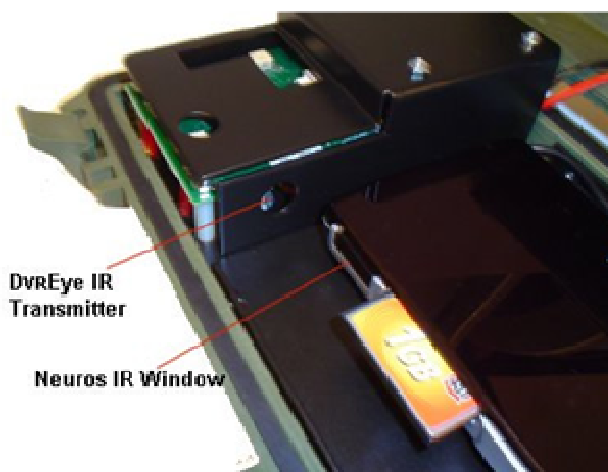
Neuros DVR Overview

The Neuros DVR is the heart of the DVR and it records the captured video to the memory card as MPEG-4 video files. The DVR will accept Compact Flash (CF) or Sony Memory Stick DUO memory cards. Reviewing on your recorded files can be done by either connecting the DVR to a portable video player (PVP), laptop or TV, or alternatively to swap out or transfer the files from the memory card.

A Compact Flash or Memory Stick DUO Storage card is required and is an optional extra.

To setup functions such as the DVR time/date, recording quality, and installing DVR Firmware simply remove the DVR unit from the DVREye box and connect it to your viewer. Use the Neuros Remote control unit to adjust any of the settings. Please see the Neuros DVR manual for further information.

Caution: Please note when you replace the DVR unit in the DVREye you need to make sure the DVREye IR Transmitter is pointed towards the Neuros IR Window. This is how the DVREye “communicates” to the DVR for sending recording commands. If this is not aligned your DVR will not record video. Also be sure to press the AV cable all the way into the AV Input port.



Complete Unit Specs:

- Size: Length 235mm x Width 197mm x Depth 114mm
- Camera: 1/3" Sony Super HAD CCD video camera: NTSC or PAL
- Media Type: Compact Flash (CF) or Sony Memory Stick PRO
- PIR Motion Detection Range: 24 Metres (heat and motion trigger) with adjustable sensitivity.
- IR Flash Range: 21 Metres
- Enclosure: rugged and waterproof case
- Trigger Time: ~4-6 seconds
- 12V Battery: 3.4AH 12V SLA Rechargeable/Removable battery
 - Lasts approx. 3 weeks on a single charge.
- 12V Solar Panel/AC charging port with over charging protection and blocking diode. Standard 2.1mm centre positive connector.
- User adjustable Settings
- Unit lockable with a Master lock ® Python™ Cable
- Temperature range: -17°C to 49°C
- Power up auto walk-test mode (testing out PIR unit detection area/range)

Operation Spec:

- On board Power On/Off switch
- 10-position DIP switch for setting unit operations
- 8 PIR delay settings: no delay, 30 seconds, 1 minute, 2 minute, 5 minute, 10 minute, 15 minute, 20 minute
- 24 hour, day only, night only operation
- Recording Times: 30 seconds or Continuous motion recording, 30 seconds only, 1 minute, 5 minute
- Special setting to power camera/DVR on for TV DVR setup/review
- Dual LED - Red Control LED/Green PIR LED (adjustments to turn LED's on/off)
- Day/Night Sensor for setting operation modes
- On board MIC and MIC Gain POT to adjust input sound levels
- On board PIR sensitivity POT to adjust motion detection range/sensitivity
- On board IR Remote TX control LED - Allows a wide range of DVR devices to be controlled
- Upgradeable board firmware: Allows custom programming options/device control options
- External Trigger Port: Custom port to allow other sensors to trigger the DVR other than the on-board PIR sensor.
- Adjustable DVR recording quality from 640 X 480 @ 30 frames/second down to 320 X 200.

Video Camera Specs:

- Switches from colour to night IR automatically
- Day Colour- Night IR 6mm Video Camera
- System: 1/3" Sony Super HAD CCD video camera: NTSC or PAL
- Resolution: 520 TV Lines
- Input Voltage: 12V DC
- Lens: S= 6.0mm, W= 3.6mm
- Minimum Illumination: 0.05 Lux, 0 Lux(IR ON)
- Synchronization: Internal
- Adopts "Special Optical Low Pass Filter" No Day & Night Focus Shift
- High Efficiency Infrared LED, Radiant IR Distance – 21 Metres
- CDS Automatically Activate LED, When Light Drops Below 20 Lux
- High Sensitivity Sensor, Excellent Picture Quality

Neuros DVR (Digital Video Recorder) Specs

Real Time MPEG-4 Video Recording

ISO Standard MPEG4 SP encoding with AAC-LC audio:
 30fps@320x240 resolution (QVGA setting) recommended for handhelds
 30fps@368x208 resolution (16:9, WQVGA setting)wide screen format for PSP
 30fps@640x480 resolution (VGA setting)Best quality for TV playback

Video

Economic=384kbps
 Normal=768kbps
 Fine=1 mbps
 Super Fine=2mbps

AAC Audio

All modes=128kbps

Video Player

MPEG-4 SP with MPEG-1 Layer 3 (MP3) audio,30fps up to D1 resolution
 DivX 3.11@ CIF Resolution;
 DivX 4.x,5.x,30fps up to D1 resolution
 QuickTime 6; MPEG-4 AAC-LC stereo, MP4 format

Features

5 programmable recording schedules(once, daily, weekly or monthly)
 Transfer files between cards

Storage Card Compatibility:

Memory Sticks:
 Memory Stick Duo
 Memory Stick Pro
 Memory Stick Pro Duo

Compact Flash: Type I and Type II
 Hitachi Micro drives with CF type II interface

Recording Time for 1GB card:

Economic = 250min
 Normal = 143min
 Fine = 111 min
 Super Fine = 60min

Note:

CF and/or Memory Stick Storage card is required but is purchased as an Optional Extra item.

DVR recording times based on a 1 GB memory card:

Mode	Economic	Normal	Fine	Super Fine
320 x 200	250 Minutes	143 Minutes	N/A	N/A
368 x 208	250 Minutes	143 Minutes	N/A	N/A
640 X 440	250 Minutes	143 Minutes	111 Minutes	60 Minutes

Troubleshooting

Symptom	Cause	Solution
TrackSnap will not power up.	Check switch on the Controller board is in the on position. Check 12V SLA battery charge	Turn on switch Recharge / replace battery
When I turn power on to my TrackSnap the PixController board green PIR LED is blinking, and nothing else happens.	This is the indication that your batteries are low. The Pix Controller board has a built-in battery level indicator and when the power supply is too low the PIR will shut down, and blink the green LED. The camera may take false clips when batteries get low.	Recharge / replace battery
Why is there sometimes nothing in my photo on my outdoor setups?	Sometimes birds can fly past your camera setup and trigger the camera. A bird flying past can be too fast for this camera to catch. You may also have a "false video clip". Sometimes on warmer days objects that heat up to warm blooded animal temperatures and move can fool the PIR into thinking an animal walked passed.	Try turning down the "PIR Sensitivity POT" to be less sensitive on warmer days
Camera is not powering up	Camera battery is not installed properly Camera battery is too low for the camera.	Check and / or replace batteries
Picture quality is poor	Check Camera location and setup. Check Neuros picture Quality setting.	See setup tips on page 3 of this manual and refer to the Neuros manual for more detailed camera settings
Object in picture is 'bleached' in Night shots	The camera has a fixed LED light array. On closer images the camera will bleach the image if it is pointed directly toward the object	Aim the camera just over the top of the subject and use the peripheral light.
The TrackSnap does not take photos at night or only takes photos at night.	DIP Switches are set incorrectly. Night sensor is obstructed.	See page 8 for correct Day / night setting.
Some video clips are not recorded	If the DVR is powered down while recording a video clip, the current clip will not be stored on the Memory card	Allow the DVR to finish the current recording event before switching off