AUTOMATED OUTDOOR ANIMAL MONITORING

TrackSnap Manual

TrackSnap Digital Eye 7.2

Model TS-DE 7.2-01

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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 I**nfra-**R**ed) 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 Sony DSCW55 camera is set up correctly, Camera Mode Selector is in the correct position and camera turned off. The TrackSnap controller will power the camera when required and will 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 4 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 will surely get many empty pictures, as these active, fast animals will often leave the frame before a picture 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 photos.

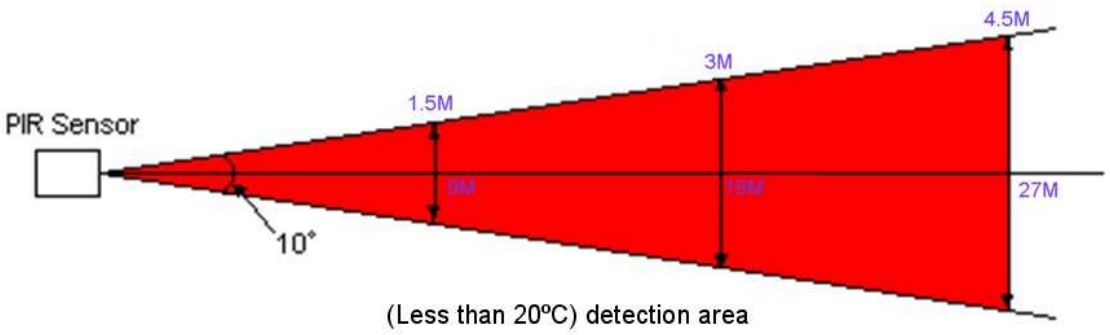
PIR Motion Sensors Basic Overview for Effective Use

All TrackSnap cameras use a PixController PIR motion detection sensor. **PIR** stands for **Pryoelectric I**nfra-**R**ed, 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.

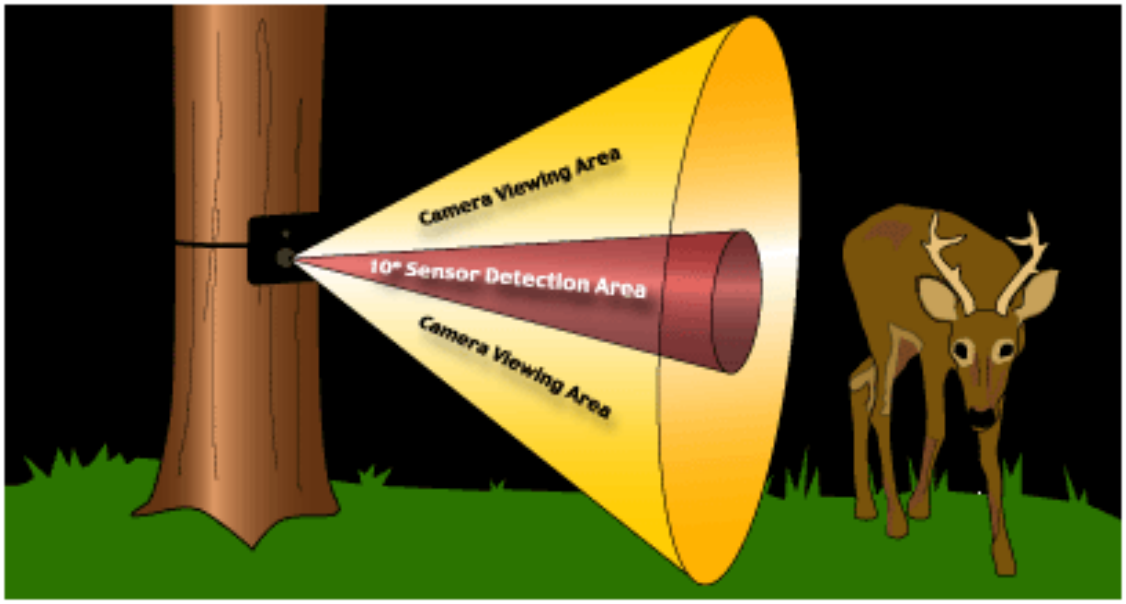
The size of the target and the distance of the target from the PIR sensor will also effect if the target can be detected or not. Smaller targets such as birds and small mammals may not be detected especially if they are moving fast or are at a great distance from the PIR sensor. Larger targets such as 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 35.5ºC, 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 20ºC. 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.



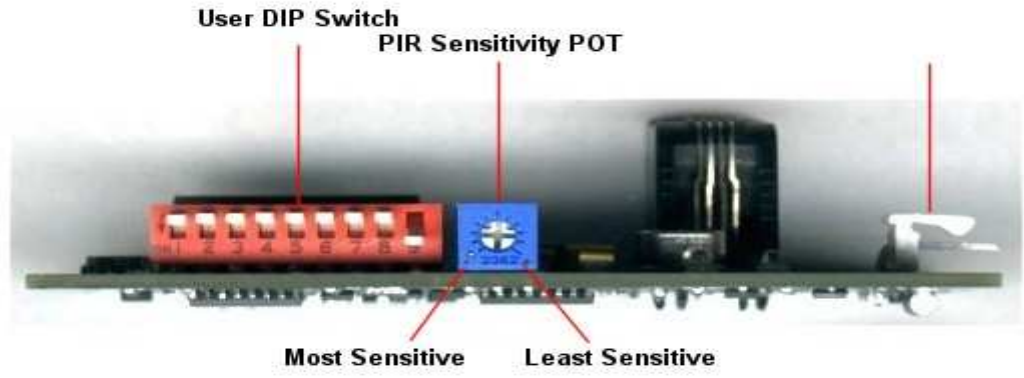
Auto Walk-Test mode on power up

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.

Trail Mode™

Trail Mode™ is an exclusive feature developed by PixController, Inc. When setup in this mode your trail camera will keep the digital camera powered up after taking the first photo and will be take any subsequent photos can be taken in 3 seconds with a trigger time of 1/10 second for a time window of 30 seconds. In the case a subsequent photo is taken the *window time period* is pushed out another 30 seconds ensuring you will capture all animals travelling together on a trail. This will allow you to capture all of the animals coming down a trail and not capture the first animal only.

Adjusting the PIR Sensitivity POT



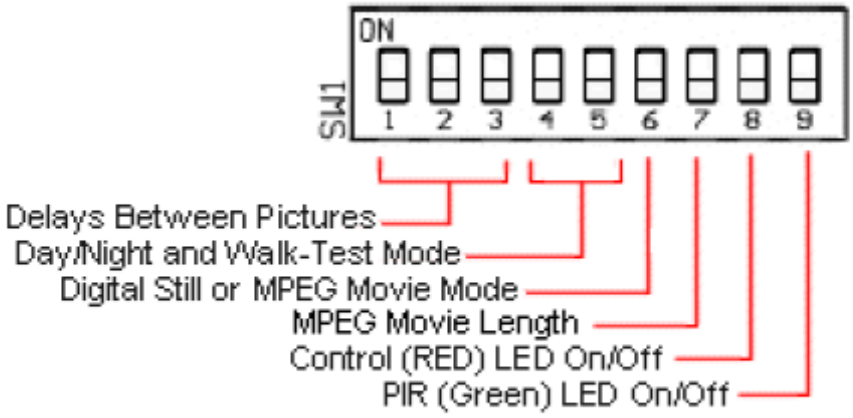
Bottom Edge

To adjust the PixController PIR detection range simply turn the single turn POT shown in the above diagram 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.

Note: *Turning the sensitivity to the minimum setting will turn the PIR detection off.*

DIP Switch Settings



PixController 9-Position DIP Switch

When changing switch setting you must re-boot your *Pix*Controller board. 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 9-Position DIP User Control Switch (SW1) will let you customize your Universal control board. 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, capturing Digital Still's or Movie Files, and turning the control board LED's on or off.

Note1: When turning power on to your Digital Eye 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 Up (ON) except SW9 Down (Off) and a summary is listed:

- Trail Mode
- 24 hour mode of operation
- Capture Still Picture
- PIR LED On
- Green PIR LED ON

Delays between Pictures Setting

Switches 1, 2 and 3 control the delay between picture events. This setting is used so you can limit or not limit the number of photos taken when a motion event triggers your board. For example when you set your system up on a track you will want the 10 second 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 photos of one animal.

Delay Between Pictures	Switch 1	Switch 2	Switch 3
Trail Mode	Up/On	Up/On	Up/On
10 Seconds	Up/On	Up/On	Down/Off
30 Seconds	Up/On	Down/Off	Up/On
1 Minute	Up/On	Down/Off	Down/Off
2 Minutes	Down/Off	Up/On	Up/On
5 Minutes	Down/Off	Up/On	Down/Off
10 Minutes	Down/Off	Down/Off	Up/On
20 Minutes	Down/Off	Down/Off	Down/Off

Day / Night Operations Settings

Switches 4 and 5 control the mode of 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 put the camera in continuous Walk Test Mode. This is useful for training and setting up your camera sensing area.

Mode	Switch 4	Switch 5
24 Hour Operation	Up/On	Up/On
Night Only	Down/Off	Up/On
Day Only	Up/On	Down/Off
Full-time PIR Walk Test Mode	**Down/Off**	**Down/Off**

Picture Capture Setting

Switch 6 will allow the user to adjust how the camera shutter will function. The normal “Still Picture Setting” this will shutter the camera once to take a still photo. In the “Movie/Double Photo Mode” the shutter will be held open for 15-20 seconds for movie taking, or taking another still photo seconds after the first photo.

Picture Mode	Switch 6
Still Picture Mode	Up/On
Movie or Double Photo Mode Setting	Down/Off

Movie Length Setting

Switch 7 sets the length of the movie captured

Camera Mode	Switch 9
15 second digital movie clip	Up/On
20 second digital movie clip	Down/Off

Control LED Setting

Switch 8 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 8
RED LED On	Up/On
RED LED Off	Down/Off

Green PIR LED Setting

Switch 9 sets if the PIR LED (Green LED) is to be used or not.

	Switch 9
Green LED Off	UP / Off
Green LED On	Down / On

Motion Sensor Control board Specifications

Board Operating Conditions
Operating Voltage: 5V - 14V DC
Recommended Operating Temperatures: 48.8℃ to -12.2 ℃
Battery Life: ~9 months on An Alkaline 9V. Actual times depend on operating temperature.

User Feedback
Red (Super Bright) control LED: Displays board functions
Green PIR LED: Displays PIR triggers

Interface Ports
2.5mm Stereo Connector
4 position - 4 conductor Phone Style Connector
Solder Style Camera Port
Sony/Canon LANC Port
Sony ACC Terminal Port
RS-232 Port
DC Power Port
External Light Port

Sensors
PIR Sensor: Pryoelectric Infrared motion sensor. Detection range out to 24.4 Metres depending on temperature.
CDS Photo Sensor: Detects light/dark for day/night operation.

User Interfaces
9 Position DIP Switch: Adjust board operating settings
Single Turn PIR Sensitivity POT: Adjust PIR Range/Sensitivity

Inside Your TrackSnap Camera

Note 1: Make sure camera is correctly seated inside case so lens does not hit foam shield.

Note 2: To disconnect camera, pull camera cable straight down, do not twist cable.

TrackSnap Digital Eye Control Board Features

- **TrackSnap can be mounted vertically or horizontally.** The unique dual element PIR sensor enables the camera to be used in any orientation.
- **External light port (optional).** This can switch up to a 4.2 amp supply for lights and IR LED arrays.
- **Dual LED's for better board diagnostics.** The unique LED's design, super bright red control LED, and green PIR LED is used on all of our motion sensing boards. The LED layout is designed to shine through the PIR lens in your case.
- **Fast re-trigger PIR!** C*an be re-triggered within 1 second* With this you get features like continuous filming as long as motion is present for LANC camcorder setups.
- **Day, Night, or 24 hour operation setting.**
- **Auto walk test mode on power up.** The walk test mode will blink every time you walk into the PIR detection area. It gives instant feedback.
- **Low battery level detection** - the green PIR LED will blink when a low battery is detected. 9V battery will last from 4-5 months depending on operating temperature
- **9-Postion DIP switch** so you can easily configure board settings.
- **Rugged and stable PIR circuitry,** which works very well in cold conditions, as well as hot conditions. Detection range can be over 100 feet under the right conditions
- **PIR sensitivity POT** to adjust the PIR detection range.
- **Auto PIR shut-down on low battery detection.** *Minimises false photos when battery becomes low!*
- **Reverse polarity circuit.** This will protect your board if you install a battery backwards. There is an on-board fuse to protect your investment!
- **Professionally built, assembled, and tested.**

Sony DSCW55 Camera Battery

There are two separate batteries used in the TrackSnap Digital Eye camera. The Sony DSCW55 camera uses a Lithium Ion battery and should provide power for 390 shots/ 245mins. The battery should be recharged using the supplied charger and can be charged at any time to even top up the battery to keep the battery charged. The multiple shoot Trail Mode feature of the Digital Eye can mean the camera can consume battery power at a much higher rate than normal camera usage – basically it is taking a lot more pictures.

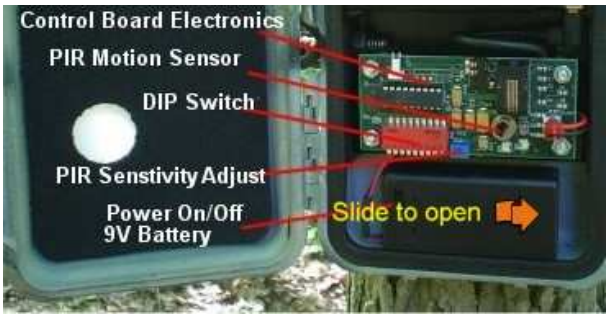
Control Board 9V Battery and Replacement Instructions

When the control board battery does not have sufficient charge, the Green PIR LED will start blinking about once every ½ second. When this occurs it is time to replace the 9V Battery.

It is recommended to use only 9V alkaline batteries and monitor the battery level, with a battery tester, or replace the battery at least every six months.

To replace the Control Board 9V battery, open the case and use your thumb to slide the battery holder cover as shown in the figure below. The cover will move about 5 mm and then be free to lift out of the case. Remove the 9V battery by again using your thumb to pus away from the terminals of the battery.

Insert a new 9V alkaline battery, correctly aligned with the terminals and push until properly seated in the terminals. Realign the battery holder cover about 5 mm from the closed position and push back into the closed position. The base and the cover should be aligned with no overlapping edges.



Memory Stick Pro Duo (accessory)

The Memory Stick PRO Duo media gives you maximum storage for your compact digital camera System. It provides you with durable, high capacity storage for your digital files. With the included adaptor, it can be used in most devices that use full-sized Memory Stick PRO media. You can swap out cards in the field and manage the photos on your PC with a card reader.

Memory Stick Pro Duo estimated maximum number of photos

	128MB	256MB	512MB	1G	2G
2 Megapixel	134	268	552	1119	2245
4 Megapixel	60	119	245	497	999
5 Megapixel	48	95	195	395	800
6 Megapixel	44	88	180	366	735
7 Megapixel	39	78	161	327	657
8 Megapixel	35	69	143	290	582

Master Lock® Python Camo Cable (Accessory)

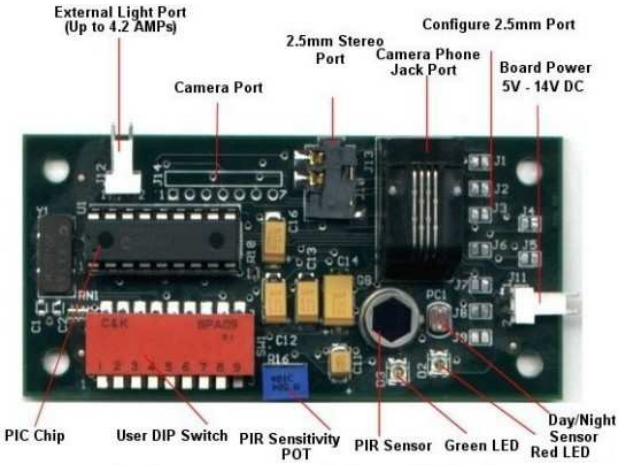
The ultimate security solution for protecting your TrackSnap camera when mounting on a tree.

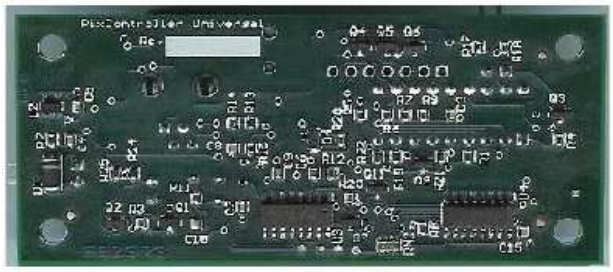
Features:

- 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**

PixController Universal Control Board

Note: Slight variations can occur with the components on the board.





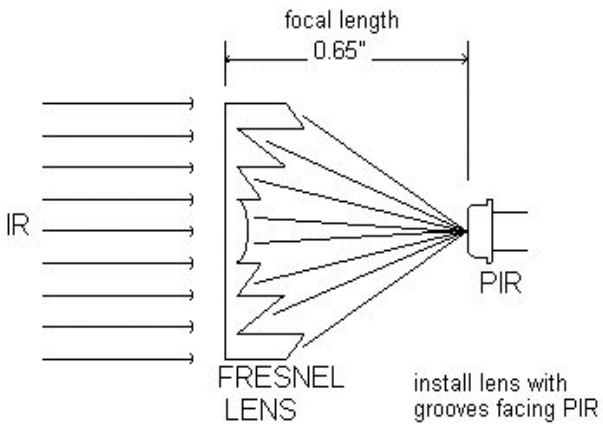
Board Back

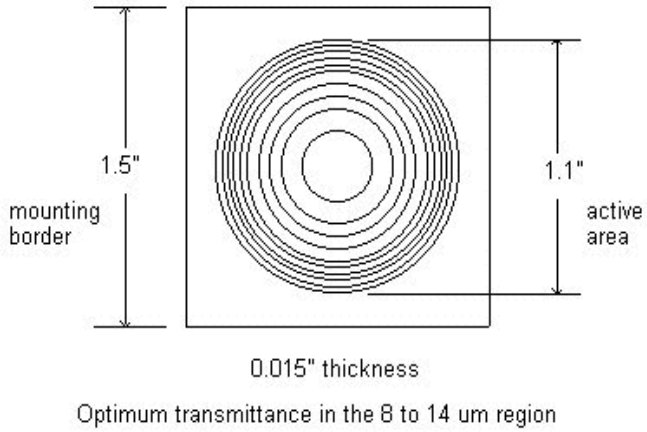
Top Edge

Bottom Edge

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 of 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.





Fast Re-Trigger PIR detection electronics

The PixController PIR detection electronics is unique in that is recovers very fast after each PIR detection trigger and will be able to detect the next detection trigger almost immediately. This makes Walk-Test mode on this system a very usable feature. The key is that the PixController PIR circuit used advanced digital detection electronics. The PIR detection electronics recovery time is only ½ second! This is why you will see unique features like continuous recording as long as the target is present in the PIR detection area for our video systems. This feature alone is an invaluable tool for building video systems.

TrackSnap Positioning - PIR Sensor Considerations

The PIR sensor will allow the TrackSnap Camera to be used horizontally or vertically without needing the PIR sensor to be rotated. The PIR sensor circuit is the most rugged and reliable on the market today. Triggering occurs when a change in infrared levels is detected, as when a warm object moves in or out of view of one of the sensor’s “eyes.” The PIR sensor design is quite resistant to false triggering. Also, the camera can be mounted in elevated positions such as from high in a tree.

Pelican® Case (Mossy Oak Graphics)

The case used in the TrackSnap Camera is a standard Micro Case modified for remote camera applications. It is part of the Pelican Micro Case Series. Whilst the Micro Cases will protect your camera and electronics, as they are water-resistant, crushproof and have an automatic pressure purge valve. **THE CASE WILL NOT PROTECT THE CAMERA FOR SEVERE IMPACT**. The camera itself is not shockproof and the referred impact will be likely to damage the camera. Caution should be taken to avoid impacts such as this.

They case includes a ring for a lanyard for easy attachment and have two external U bolts for mounting onto trees and posts.

TEMPERATURE RATING MINIMUM -23º C MAXIMUM +93º C

INTERNAL DIMENSIONS (L) 16.67 CM (W) 10 CM (D) 4.44 CM

EXTERNAL DIMENSIONS (L) 19.05 CM (W) 12.86 CM (D) 5.40 CM

INTERNAL LID DEPTH 1.9 CM **INTERNAL CASE DEPTH** 2.5 CM.

Sony DSCW55S Camera Settings:

Note: To remove camera, pull Camera Cable straight down, do not twist cable.

Recommended Sony DSCW55S camera settings:

Make sure the Digital Camera is turned off and the camera selector is on P

- Focus set to **3m to 7m**
- ISO set to **1000** **(best night photos)**
- P.Quality **Fine**
- Red eye reduction **Off**
- AF Illuminator **Off**.
- Auto Review **Off**
- AF in **Monitor Mode**
- Beep **Off**.
- Video Out **PAL**.

Make sure that you **turn your LCD screen off** while in the field as well, it reduces shutter time and increases battery life.

Sony DSCW55S Camera SPECIFICATIONS:

- Sensor and Size:1/2.5" CCD (Approx 7.4MP)
- Effective Pixels:7.2 MP
- Lens Type: Carl Zeiss Vario-Tessar
- Focal Length :6.3-18.9mm (38 - 114mm)
- F Number:2.8 - 5.2
- Optical Zoom:3x
- LCD:2.5" (115K pixels)
- Microphone: Yes (mono)
- Speaker: Yes (mono)
- USB 2.0 Connection
- Internal Memory: 56MB
- PictBridge™ Compatible: Yes
- Start-up Time: Approx. 1.6sec.
- Shutter Time Lag: Approx 0.3 sec
- Auto Focus: W: 50cm - infinity T: 50cm - infinity
- Macro Focus: W: 2cm - infinity T: 30cm - infinity
- Aperture Range: Auto(F2.8-F13) / Program auto(F2.8-F13)
- Shutter Speed: Auto(1/8-1/2000) / Program auto(1"-1/2000)
- ISO Sensitivity: Auto / 100 / 200 / 400 / 800 / 1000
- Exposure Compensation:+/- 2.0EV, 1/3EV Step
- Sharpness/Contrast:Sharpness/Contrast:+/-1 Step
- White Balance: Auto, Daylight, Cloudy, Fluorescent, Incandescent, Flash
- NR Slow Shutter: ISO Auto/100/200:shutter speed of 1/6sec or slower ISO 400/800/1000:shutter speed of 1/25sec or slower
- Flash Range: ISO Auto: 0.2-4.2m(W) / 0.3-2.2m(T)ISO 1000: 0.8-7.3m(W)/0.5-4.0m(T)
- Flash Level Setting:+/-1 Step
- Recording Formats: JPEG (standard/fine)
- Image Playback: Rotate, Zoom (Up to 5x Precision Digital), Trimming, Resize and Slide Show
- Burst Mode:7M (fine) 4 shots / Approx 0.9s sec
- MPEG Movie VX Fine *:640 x 480, 30fps
- MPEG Movie VX Standard *:640 x 480, 16.6fps
- Battery Life on Supplied Batteries: Supplied: 390 shots/ 245mins
- Dimensions (WxHxD):88.9 x 57.1 x 22.9mm
- Weight (without accessories):116g
- Media: Memory Stick Duo, Memory Stick PRO Duo and Memory Stick PRO Duo (High Speed)
- Accessories: Lithium-Ion Battery (NPBG1), Battery Charger (BCCSG), Power Cord, Multi Cable, Wrist Strap

Troubleshooting

Symptom	Cause	Solution
TrackSnap will not power up.	Check switch on battery holder is in the on position. Check 9V Alkaline battery	Turn on switch 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 photos when batteries get low.	Change the 9V Alkaline battery
When I use the PixController DIP Switch setting for “Movie Mode” I still get still photos. What am I doing wrong?	Be sure to setup your Sony Camera into Movie taking mode.	Refer to your Camera manual for setting this mode.
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 photo”. 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 charge / replace battery
Picture quality is poor	Check Camera location and setup.	See setup tips on page 2 of this manual and refer to camera manual for more detailed camera settings
Object in picture is out of focus	The TrackSnap default setup is on page 13 and set to infinity. Check the focus setting.	Set focus to correct setting.
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 7 for correct Day / night setting.