



Trail Cameras and Remote Surveillance Systems

**UndercoverEye™ Trekker MiniDVR
Remote Surveillance System
Instruction Manual**



Introduction

The PixController UndercoverEye™ Trekker MiniDVR is a complete *all-in-one* groundhog video surveillance recording system. Video recordings are saved on standard SD media cards in a H.264 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 UndercoverEye™ Trekker MiniDVR will be ready for motion event video recording. Capture 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.

The UndercoverEye™ Trekker MiniDVR system box can be buried into the ground for the ultimate covert setup. Simply make sure the RF antenna is above the ground and has good line of sight to the wireless sensors. You may use a SMA Cable extender to position the RF antenna higher if needed.

The UndercoverEye™ Trekker MiniDVR is not limited to “groundhog” type setups. Because of its small size it can be used for indoor or in-vehicle applications for covert recording operations. The UndercoverEye™ Trekker MiniDVR can be hidden in a false ceiling, desk drawer, or in a car trunk.

Sound can also be recorded with your UndercoverEye™ Trekker MiniDVR which is a very important feature. However, in situations where sound recording is not permitted you can simply unplug the sound MIC cable from the UndercoverEye™ Trekker MiniDVR unit.

The UndercoverEye™ Trekker MiniDVR can accept any 12V NTSC/PAL video camera. The system is sold with a waterproof day color/high IR bullet camera, but any video camera such as board cameras, pinhole cameras, or wireless video cameras can be used.

Being that there are no mechanical parts for running camcorder tape recording the UndercoverEye™ Trekker MiniDVR 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 Li-Ion 4.5 AH battery, which under normal use can last up to 3 weeks of unattended use.

The UndercoverEye™ Trekker MiniDVR included one wireless PIR motion sensors which can cover a wide sensing area. If you are recording a trail area for example simply place one PIR sensor up the trail and one down the trail, and one in the center where UndercoverEye's video camera is placed. In this scenario you can pre-trigger the UndercoverEye's recording system before the subject walks into the video camera range.

Note: If the UndercoverEye™ Trekker MiniDVR is powered down while recording a video clip, the current video clip will not be stored on the CF memory card.

What's included with your UndercoverEye™ Trekker MiniDVR System

Your UndercoverEye™ Trekker MiniDVR system contains the following items:

- UndercoverEye™ Trekker MiniDVR water proof system case/motion control electronic
- Removable Tilt-Swivel RF Antenna w/ SMA connector
- Low-light Covert Bullet Video Camera
- 16' Video/MIC Cable
- RF Wireless Remote Control
- 12V 4.5AH Removable Li-Ion Battery
- 12V battery charging unit
- PixController UndercoverEye™ Trekker MiniDVR CD with manuals and media player

Inspection/Acceptance of received products

The buyer shall be responsible for inspecting all products shipped prior to acceptance; provided, however, that if Buyer shall not have given PixController, Inc. written notice via email of rejection or shorted items to support@pixcontroller.com within ten (10) days following receipt by Buyer, the products shall be deemed to have been accepted by Buyer.

All electronic products sent back for a full refund are subject to a 15% restocking within thirty (30) days from purchase. Products authorized for return must be in their original unopened packaging to receive credit. Unauthorized returns will not be accepted. After thirty (30) days from purchase items may not be returned for a full refund. Your electronics are covered for a full 6 month period covering all part failure under normal use.

Contact Information

Address:

PixController, Inc.
1056 Corporate Lane
Murry Corporate Park
Export, PA 15632

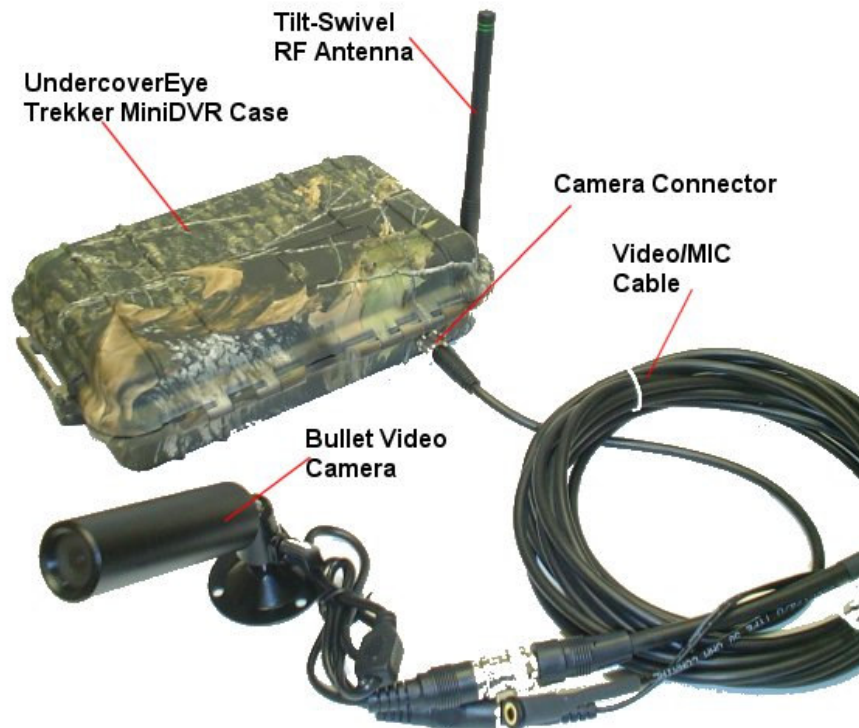
Phone: 724-733-0970

FAX: 724-733-0860

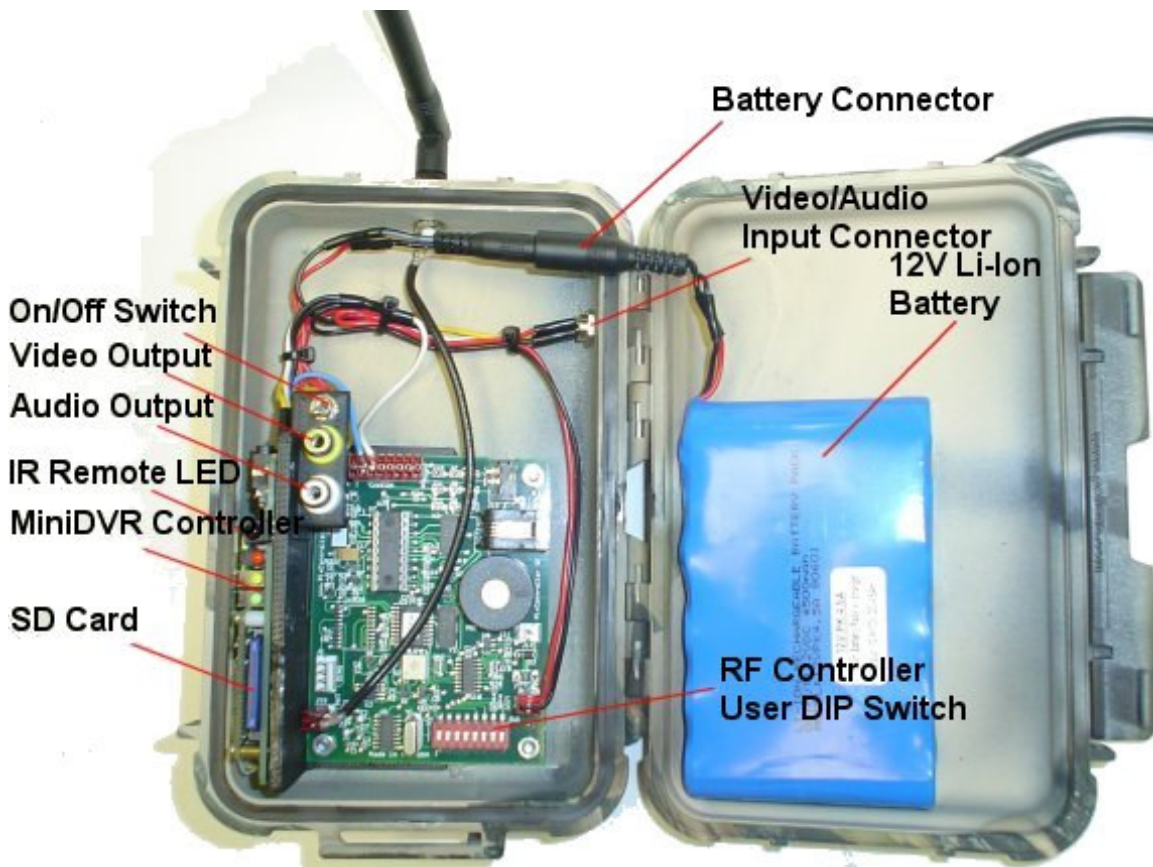
Email: support@pixcontroller.com

Web: <http://www.pixcontroller.com>

UndercoverEye™ Trekker MiniDVR System Components

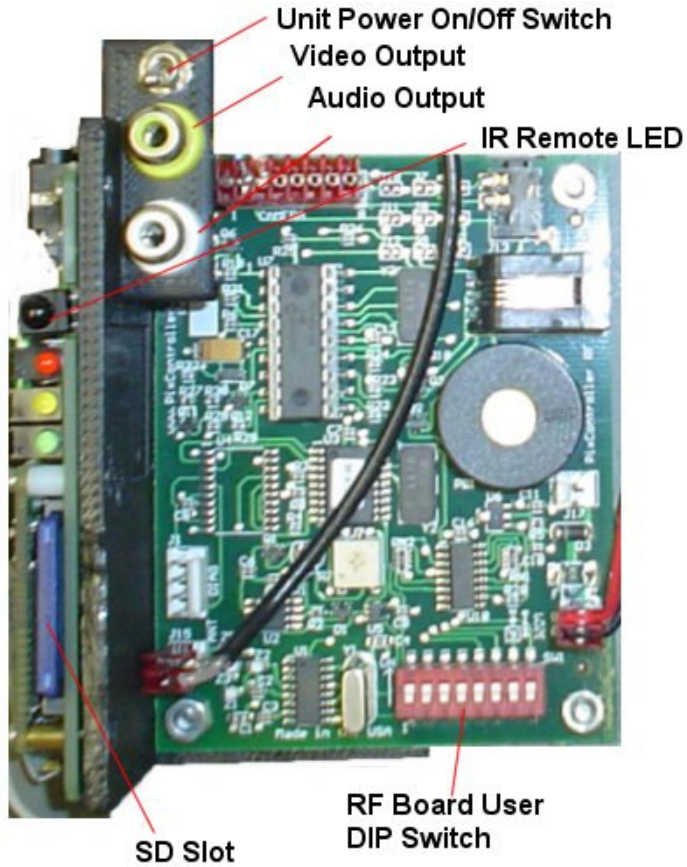


UndercoverEye™ Trekker MiniDVR Exterior Components



UndercoverEye™ Trekker MiniDVR Interior Components

UndercoverEye™ Trekker MiniDVR Electronics Overview



UndercoverEye™ Trekker MiniDVR Electronics

Note: you will need to remove the top cover to access the DIP Switches

Setting up the UndercoverEye™ Trekker MiniDVR



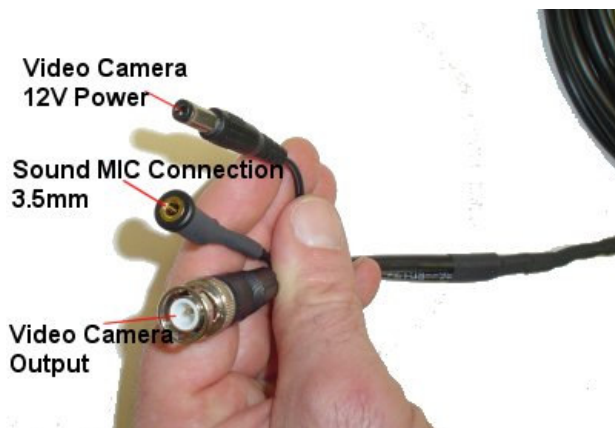
Step 1

Connect the RF antenna to the SMA antenna connector as shown. The RF antenna is a tilt-swivel antenna and should be pointed up when installed. The Trekker case can be oriented in any direction.



Step 2

Connect the video cable to the Trekker box as shown. The connection is keyed. Once the connection is made twist the cable end to make a tight fit.



Step 3

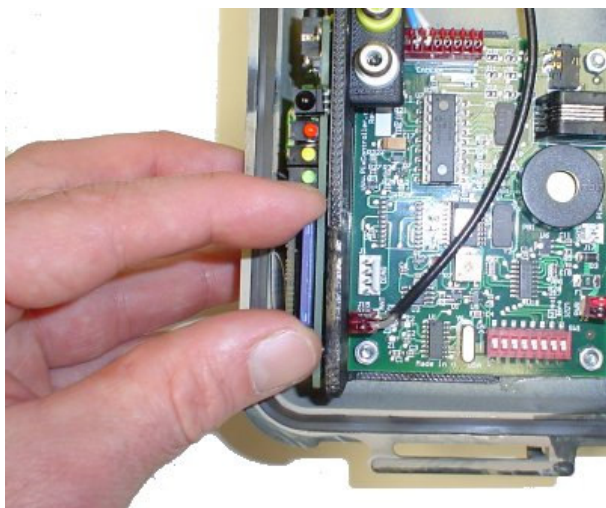
The video cable fits most standard 12V video camera. The cable comes complete with a male 12V power connector (2.1mm barrel with center positive), BNC video cable, and 3.5mm MIC connector.

You can attach a microphone to record sound if permitted using a standard microphone with a 3.5mm connector.



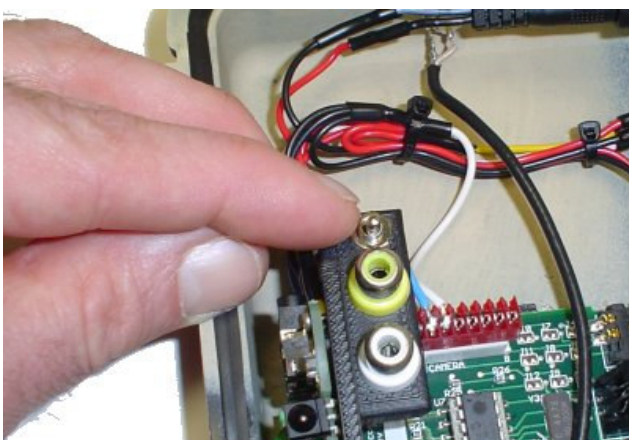
Step 4

Connect the video camera to the video cable as shown.



Step 5

Insert a SD card into the MiniDVR card slot.



Step 6

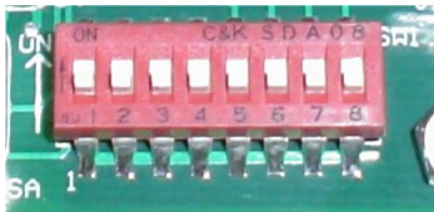
Power on the Trekker system as show.

Note: Before powering up the Trekker system please read the remainder of the manual to become familiar with the settings and sensors.

Powering up the UndercoverEye™ Trekker MiniDVR

To power up the system turn the Power on/off switch to the "on" position. You will hear a short melody from the PixController RF board letting you know it's powered on. Next there will be a 30 second delay. After this time expires you will hear 4 quick beeps which let you know the system is going into a 1 minute auto walk test phase. If you walk past the Wireless PIR motion sensors at this point you will hear 1 beep for a "A" Sensor or trigger sensor, and 2 beeps for a "B" sensor or power up sensor. You may want to keep the case open so you can hear this from a distance. After this 1 minute walk test phase expires you will hear 4 quick beeps again letting you know the system is going "active". After this point the system is active.

How to customize the Trekker MiniDVR settings



RF Board User DIP Switch

The RF Sensor DIP Switch will let you customize how the remote sensors will trigger the MiniDVR controller. Here you can adjust the address of which sensors to respond to (trigger the MiniDVR), Walk-Test mode, use KeyFob or PIR sensor, and camera test mode.

Sensor Address	Switch 1	Switch 2
"A" Address	Down	Down
"B" Address	Down	Down
"C" Address	Down	Up
"D" Address	Down	Up

Wireless PIR or KeyFob Mode	Switch 3
Use Wireless PIR Sensor	Down
Use KeyFob	Up

MiniDVR Recording Time	Switch 4	Switch 5	Switch 6
30 Sec./Cont.	Down	Down	Down
30 Seconds	Down	Down	Up
10 Seconds	Down	Up	Down
45 Seconds	Down	Up	Up
1 Minute	Up	Down	Down
2 Minutes	Up	Down	Up
5 Minutes	Up	Up	Down
10 Minutes	Up	Up	Up

Walk-Test Mode	Switch 7
Test Mode Off	Down
Test Mode On	Up

Power Camera	Switch 8
Camera test off	Down
Camera test on	Up

Setting the Address Code

Switches 1 & 2 control the address code of the UndercoverEye™ Trekker MiniDVR controller box. Both the SlimFire Remote Control or Wireless PIR Sensor, and UndercoverEye™ Trekker MiniDVR controller box need to be set to the same address code in order for the unit to function properly. There are 4 unique address codes you can set the UndercoverEye™ Trekker MiniDVR to respond to.

The UndercoverEye™ Trekker MiniDVR is compatible with the SlimFire remote and PIR wireless motion sensors. The address code here is the “house code” from A-P, however, the UndercoverEye™ Trekker MiniDVR only will recognize “house codes” A-G. For more information about setting the house code on your SlimFire remote or Wireless PIR Motion Sensor.

Out of the box both the SlimFire remote, Wireless PIR sensor, and Remote VideoEye™ will be defaulted to the “A” Address Code.

Why set different address codes? There may be a situation when you want to have several UndercoverEye™ Trekker MiniDVR units in a recording session. You may want to only have several UndercoverEye™ units respond to SlimFire or Wireless PIR motion sensors. For this you have the ability to set the address between each of these devices. It is a good idea to use a marking pen and write the address code on your SlimFire remote or Wireless PIR motion sensor if not set in the default “A” address code.

Wireless PIR Sensor or KeyFob Mode

Switch 3 is the setting to let the UndercoverEye™ Trekker MiniDVR know if you are using the KeyFob or PIR sensor.

In the Wireless PIR sensor mode, DIP switch 3 in the DOWN position the Trekker MiniDVR will respond wireless PIR sensors. Note, the unit will still respond to the KeyFob by pressing the “on” button on the KeyFob unit, however, it will not respond to the KeyFob “off” button. If using the KeyFob in this mode the recording time is setup by switches 4, 5, and 6.

In the KeyFob mode, DIP switch 3 in the UP position the Trekker MiniDVR will respond to the “on” button from the KeyFob to turn the Trekker MiniDVR on into recording mode, and by pressing the “off” button on the KeyFob will power down the Trekker MiniDVR. Note, you can still trigger the unit via the wireless PIR sensor but the unit will power down when the “off” command is sent by the wireless PIR sensor. In default mode this is one minute after a PIR trigger, but this time can be adjusted manually in the PIR sensor. Please see the paper instructions inside the PIR sensor for more information.

MiniDVR Recording Time

Switch 4, 5 and 6 sets the recording time of the UndercoverEye™ Trekker MiniDVR on a PIR event

Walk-Test Mode

When Test Mode is set to “On” it will let you test out the “line of sight” distance between the triggering unit, i.e., the SlimFire remote control or Wireless PIR motion sensors, and the UndercoverEye™ Trekker MiniDVR unit. This is useful to be sure the camcorder units can see commands from the triggering units.

Note: To put the UndercoverEye back into “recording mode” when using Test Mode.

Power Camera Test Mode

Switch 8 controls powers up the video camera and UndercoverEye™ Trekker MiniDVR 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.

Note:

When changing switch setting you must re-boot your UndercoverEye. When re-booting you must wait approximately 30 seconds before turning power on again.

Using the SlimFire Remote Control KeyFob

Your RF wireless remote control unit is used to power up your UndercoverEye™ Trekker MiniDVR via a wireless command by pressing the buttons on the remote control.

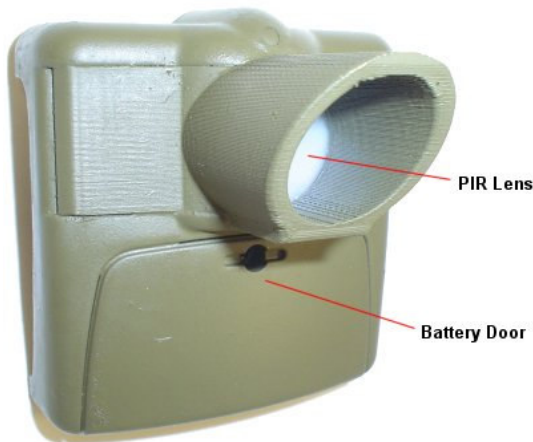
By pressing the “On” button, note there are 2 sets of “On” and “Off” buttons which are redundant. This will power up the camcorder and start it recording. By pressing the “Off” button the camcorder will stop recording and power down the camcorder.

Your RF wireless remote control can control your UndercoverEye™ Trekker MiniDVR from a distance up to about 180 feet “line of sight”. For best reception be sure to have a clear view of the Remote VideoEye™ from your controlling location.



*RF Wireless Remote Control
KeyFob*

Introduction to the Wireless PIR Motion Sensor



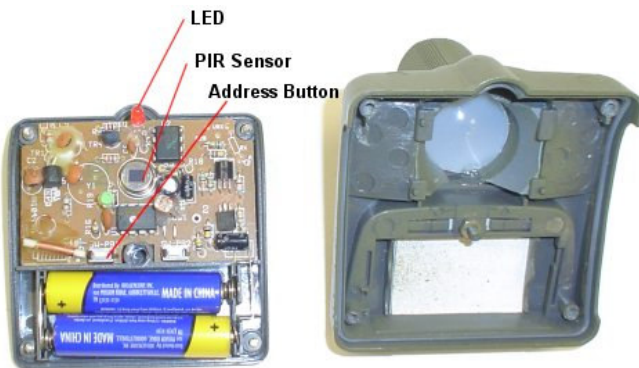
The PixController DigitalEye RF (Radio Frequency) is a wireless camera controller which works in conjunction with the wireless PIR motion sensor. The PixController RF boards "listens" for wireless commands sent from the wireless PIR motion sensor when the motion sensor is tripped. When the RF board receives a trigger event it will trigger the attached camera or camcorder to take a photo or record video.

There are 2 AAA batteries that power the motion sensor which will last for a year of continuous use. To replace them just remove the battery door.

Never touch the PIR lens as this could damage the PIR sensor

Setting Wireless PIR Motion Sensor Addresses

Each wireless PIR sensor can be setup to send out a unique address. Wireless PIR sensors are assigned an 'address', which consists of addresses between “A” to “P”.



To change the Address that the Wireless PIR transmits: First, remove the 4 screws from the back of the case and take off the cover as shown. Press and hold the **Address** button (under the battery compartment lid) the red LED flashes first and then blinks the current setting (once for A, twice for B, etc.). Release and immediately press the button the desired number of times for the House Code you want to set (once for A, twice for B, etc.) and **hold the button on the last press**. 3 seconds after the last press (while holding the button) the red LED blinks back the number of times for the code you set. Release the button.

Mounting the Wireless PIR Motion Sensor



To mount the Wireless PIR motion sensor first remove the battery door and remove the AAA batteries. You will see 2 screw holes in which you can mount a small mounting plate or screw it to the surface of the mounting area.

Try to keep the sensors at 2' to 3' from the ground if you want to get the best detection of targets on the ground.

The range of the PIR detection is 40' to 80' depending on air temperature and temperature of the target. The hotter the target the longer detection range you will have. For example a car can be seen at a greater distance.

The RF wireless range back to the DigitalEye unit is about 100' to 150' depending on line of sight.

Setting up the Trekker MiniDVR and viewing videos in the field



When setting the Trekker MiniDVR in the field users often wish to see the camera view. To do this you must supply a hand held video monitor.

Simple connect the Video Out and Audio Out RCA type cables to your monitor as shown. With the Trekker system off move DIP switch 8 into the UP position then power on the Trekker MiniDVR unit. This will power up both the video camera and MiniDVR unit.



If you wish to make changes to the MiniDVR such as the time-date and other features you can do so at this time by using the MiniDVR remote control unit. Just point it towards the IR LED on the MiniDVR unit.

You may also play back videos captured at this time.

Setting up the MiniDVR

Before setting up the MiniDVR unit you must connect the Trekker unit to a monitor as shown above. By using the MiniDVR remote control unit you can setup the time/date, recording quality, and triggering settings.



Remote Control

1		REC	Start AKR-200 recording or stops recording. Turn the SD power off when pressing the REC button for 3 seconds. (Recording can resume after 20 seconds)
2		MENU	Enter OSD menu. On OSD menu, go to the upper menu.
3		UP/ DOWN	On OSD menu, chooses menu fields and change values. On search mode, play the previous or next recorded file.
4		LEFT/ RIGHT	REW: Fast Rewind (X2-X4-X8-X16) FF: Fast Forward (X2-X4-X8-X16)
5		REW	REW: Fast Rewind (X2-X4-X8-X16)
6		FF	FF: Fast Forward (X2-X4-X8-X16)
7		PLAY	Playback at X1
8		STOP	Stop recording or playback. On playback mode, go back to the first frame.
9		PAUSE	Pause playback or resume playback.
10		MUTE	Remove audio.
11		ENT	On playback mode, playback at X1. On OSD menu, enter values.
12		SEARCH	Enter Search menu. On search menu, move to upper search menu.
13		MODE	Switch between playback mode and live view mode.



OSD Menu

Press 'MENU' button on remote control to access to MiniDVR OSD menu. Please refer the page above about how to use remote control buttons. Password is '0000' as default. The password can be changed on '[SUB MENU] [PASSWORD CHANGE]'.

In order to select cameras for recording, set recoding quality, schedule recording times and to set other operation parameters, you will need to access the MiniDVR's menu. Numerals can be selected by pushing up/down button on remote control.



Main Menu

In the main menu, the 'indicator >' will be shown on the left of each menu. Press 'UP/DOWN' button on remote control to select a desired menu. After placing '>' on the desired menu and press 'ENTER' button to enter the menu.



System Setup

Configure current time and 'DAY LIGHT SAVING' option. On setting the current time, the field order should be as follows;

2004/02/17 = year/month/day 19:44:32 = hour/minute/second

1. TIME SET > DAY LIGHT SAVING

SELECT 'ON' when you want to use day light saving time. You can set up a time of period when day light saving is applied.

2. LANGUAGE SETUP

English, French, Dutch, German, Spanish

3. VIDEO OUTPUT

Not selectable. Display NTSC or PAL according to unit's CCD type.

4. BRIGHTNESS:

Select brightness value among low, medium and high.



Video Setup

Resolution:

VIDEO INPUT(LIVE VIEW) Resolution - NTSC

	HIGH	NORMAL	LOW
4CIF	704x480 / 30fps	704x480 / 30fps	704x480 / 30fps
2CIF	704x240 / 30fps	704x240 / 30fps	704x240 / 30fps
CIF	352x240 / 30fps	352x240 / 30fps	352x240 / 30fps

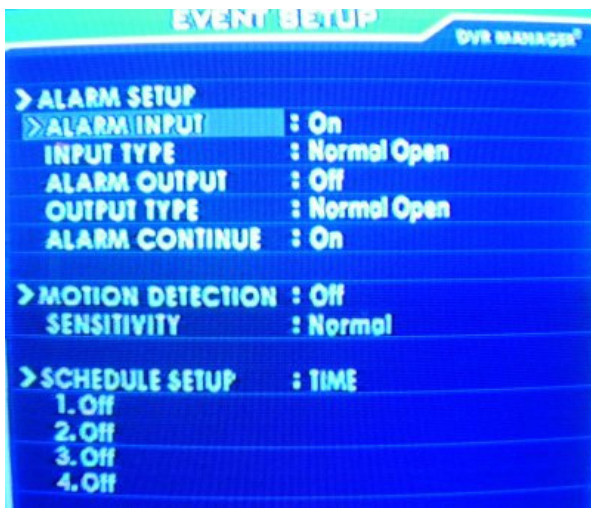
Video Quality: Set as **"HIGH"** for best recording quality.

Frame Rate: Set to **"30"** for best recording quality.

Pre-Recording: Must be set to **"OFF"**

Post-Recording Time: Must be set to **"5 SEC"**

Auto Recording: must be set to **"ON"**



Event Setup

The following setting MUST be setup as shown in order for the Trekker MiniDVR unit to function properly. These settings will be setup correctly leaving the factory; however, in the event of any systems changes it's a good idea to verify these settings.

Alarm Input: Must be set to **"On"**

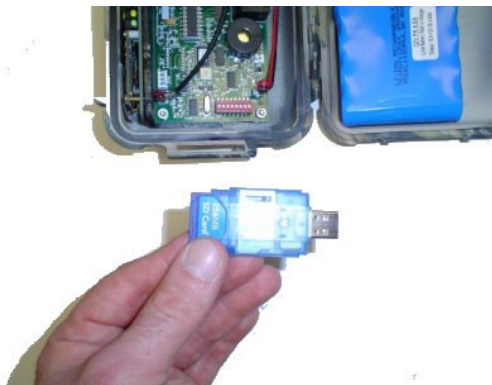
Input Type: Must be set to **"Normally Open"**

Alarm Output: Must be set to **"Off"**

Output Type: We don't care what this setting is

Motion Detection: Must be set to **"Off"**

Playing the UndercoverEye™ Trekker MiniDVR Video Files on your PC



To play the saved video files first remove the SD card from the Trekker MiniDVR unit and place the card into the USB reader as shown. Insert the USB reader into the USB slot of your PC.



Next, be sure to install the AK40H software on your PC. Follow the instructions on the Trekker MiniDVR CD for installing the AK40H software. The AK40H software will let you play back the recorded video files and convert the video files to .AVI format.

UndercoverEye™ Trekker MiniDVR 12V Battery & Charger



Included with your UndercoverEye unit is a rechargeable 12V Li-Ion battery and 12V charger. The 12V battery is completely removable from the UndercoverEye unit for replacing or recharging. To recharge the 12V battery simply connect the barrel connector to the 12V wall charger unit.

When charging the red LED on the wall charger will be lit and will change to green when the 12V SLA battery is fully charged.

Replacement 12V Li-Ion batteries can be purchased from www.pixcontroller.com.

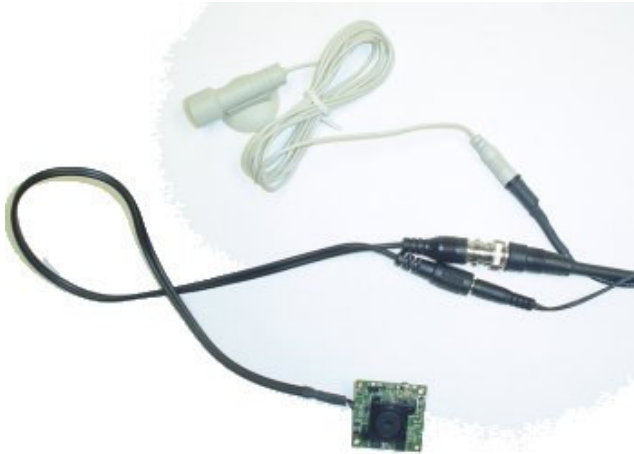


Trekker MiniDVR CCD Bullet Video Camera Specs



- Sony 1/4" CCD Color Bullet Camera
- Color Day, IR Night
- 420TVL Resolution
- Shutter Speed NTSC: 1/50th to 1/120,000th
- Weatherproof, mini-compact Bullet Camera
- Lens 3.6mm 90° Field of View
- 0.05 LUX Rating 0.5 AGC Auto Gain Control
- Dimensions 1" (D) x 3" (L)
- Signal to Noise Ratio >45dB
- 12V DC Power Input – 2.1mm x 5.5mm center positive
- NTSC Output – BCN connection

Using other Video Cameras with your Trekker MiniDVR



Board Video Cameras

Board and Pinhole Cameras

You can use any 12V video camera with a standard NTSC or PAL output with the Trekker MiniDVR unit. Some applications may require other video cameras than the bullet camera supplied with the Trekker MiniDVR unit.

Cameras such as board cameras and microphones as in the photo shown can be used. Applications such as indoor where you may need to hide the video camera in something for covert recording are possible with the Trekker MiniDVR unit.



Room setup: PIR Motion sensor trigger, video camera connected to a wireless transmitter

Wireless video cameras with motion sensor trigger

The Trekker MiniDVR unit can also be used with various wireless video cameras. In this setup the Trekker MiniDVR recording unit can be hidden in another room or a distance of 100' from the wireless video camera.

An example setup show here would consist of one room setup with a wireless video camera connected to a video transmitter. The camera and transmitter can be hidden for covert setup, but power must be supplied to the video camera and transmitter. Simply setup the PIR motion sensor or motion sensors within the room.

Next, in another location setup the Trekker MiniDVR by connecting the video receiver to the video input cable of the Trekker MiniDVR unit. Connect the power and video output connections to the cable.

Upon motion detection from the room with the wireless video camera the Trekker MiniDVR unit will power up the wireless video receiver and start recording the incoming video signal.

In situations where you may need to monitor an area of a building but do not have access to the recording area this is the ideal setup. Simply setup the Trekker MiniDVR in the basement or outside the building in order to get access to the recorded video files.



Recording Setup: Video receiver connected to the Trekker MiniDVR video input



Room setup: PIR Motion sensor trigger, video camera connected to a wireless transmitter



Recording Setup: Video receiver connected to the Trekker MiniDVR video input with manual KeyFob trigger

Wireless video cameras with KeyFob trigger

The Trekker MiniDVR unit can also be used with a wireless video camera and a KeyFob for manual triggering of the Trekker MiniDVR recording unit.

An example setup show here would consist of one room setup with a wireless video camera connected to a video transmitter. The camera and transmitter can be hidden for covert setup, but power must be supplied to the video camera and transmitter.

Next, in another location setup the Trekker MiniDVR by connecting the video receiver to the video input cable of the Trekker MiniDVR unit. Connect the power and video output connections to the cable.

In situations where you may need to record covert operations such as in a car this is the ideal setup. Simply setup the Trekker MiniDVR in the trunk of the car and press the "on" button on the remote control KeyFob to start the Trekker MiniDVR recording. Press the "off" key to stop the recording.

Typical Field Setups



The PixController UndercoverEye™ Trekker MiniDVR Surveillance Camera System is an unattended groundhog video surveillance system can be used for unattended covert outdoor surveillance of targets ranging from, but not limited to:

- Marijuana fields
- Drug/meth labs
- Metal theft including copper theft
- Anhydrous ammonia theft
- Illegal dumping
- Graffiti
- Vandalism
- Construction site theft
- Sting operations
- Illegal/Trespassing ATV riders
- Monitoring remote locations

Typical outdoor setups are often used with multiple PIR sensors. This is especially useful when monitoring an area into or out of a site to catch vehicle traffic. When using multiple PIR sensors in this type of setup we recommend using a PIR sensor in front of the Trekker MiniDVR unit, one up and one down from the unit. This will pre-trigger the Trekker MiniDVR to start recording before the vehicle enters the Trekker MiniDVR camera view.

Remote criminal activity such as metal and anhydrous ammonia theft is among the hardest types of crimes to solve. Due to the random nature and the timing needed to get law enforcement agencies on site to witness the crime it makes it almost impossible to catch criminals in action. The UndercoverEye™ Trekker MiniDVR was designed just for this purpose.

This system is very simple to use and fast to deploy. A single person can deploy UndercoverEye™ Trekker MiniDVR giving audible feedback from sensors triggers during setup.

Using Personal Video Players (PVP)



Personal Video Player



Insert SD Card into PVP



Connect PVP to your computer via USB

Personal Video Player Overview

Personal Video Players or PVP's are a great tool for your UndercoverEye. Many PVP's today come with a large internal memory or hard disk, which means you can download your videos from the Trekker MiniDVR to the PVP when checking your camera system. This means you no longer have to purchase 2 memory cards per system, which will save you money in the long run too.

Simply plug in your CF or DUO card into the PVP and watch the movie clips your UndercoverEye has captured. Most PVP's also have a TV input, so you can plug the TV output cable from your UndercoverEye into the TV input of the PVP and change DVR settings in the field.

Once you return from the field simply plug your PVP into your Home PC via the USB port (found on almost every PVP) and download the photos to your PC.

Copying files from the SD Card

The PVP is a great tool to copy the contents of the SD card in the field. Simply insert the SD card into the PVP SD slot and select the option to copy the SD card onto the internal hard disk of the PVP.

When the transfer is done just erase or format the SD card and replace it into the Trekker MiniDVR unit.

Connecting the PVP to your computer

When you return from the field you can copy the contents or play the video files on the PVP directly from your PC computer by connecting the PVP to the PC via the USB port.

The PVP will now show up as an external hard disk. You can copy the files from the PVP and store them on your PC.



Connect the Video Input of the PVP to the Trekker MiniDVR Video Output for camera setup

Using the PVP as a TV Monitor

You can use the PVP player as a TV monitor by connecting the Audio/Video cable from the PVP to the Audio & Video output connectors inside the Trekker MiniDVR unit.

This is very useful when setting up the camera angle of the Trekker MiniDVR in the field or adjusting any MiniDVR settings.