

COGNISYS
SCOUT
CAMERA MINI



Owner's Manual

Revision 1.0



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1. Safety Instructions


WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Follow all CAUTION notices to reduce the risk of personal injury, prevent damage to the Scout equipment, accessories, and devices (computers, cameras, flashes, etc). Failure to follow all CAUTION notices may void your warranty. CAUTION may also indicate a potentially hazardous situation which, if not avoided, may result in personal injury.

The safety alert symbol  precedes a general CAUTION or WARNING statement.

The electrical hazard symbol  precedes an electric shock hazard CAUTION or WARNING statement.

-  **CAUTION:** Only use approved power sources for Scout equipment. Use of other power adapters or batteries may damage the controller and/or attached equipment.

-  **CAUTION:** Misuse of Scout equipment could potentially damage your equipment. Cognisys, Inc. will not be held liable for damage to your equipment. If you have questions about safety please contact us!

2. Getting Started

The latest version of this manual is available on our website at:

<https://www.cognisys-inc.com/downloads/scout/ScoutCameraMini.pdf>

The graphics/menus included in this manual may not be identical to the software that you are running. Improvements and adjustments to the software may happen prior to an updated version of the manual.

Not big on reading manuals? (What? No thumbs-up? We worked hard on this you know!) We have a few real world setups in the “5 - Examples” section. You can always come back to the technical details if you get stuck. You really should finish reading this section though – it goes through battery replacement and the basic care of the camera controller and box.

2.1 What is the Scout Mini Camera Controller?

The Scout Mini camera controller finally answers difficult questions for long-term trail photography and videography:

What do you do with the camera?

How to keep it dry?

How can you keep it powered for long durations?

How do you get the sensor to tell the camera it's time to take a photograph?

How do you control how many pictures are taken?

Put a hole in a box and run wires? Critters love to eat and play with the wires.

Let's go over the features:

- Weatherproof housing for your action camera
- Wifi connectivity to your computer, tablet, or phone to adjust settings
- Wireless connectivity to other Scout products
 - Receiver/PIR sends wireless trigger signal to camera controller
 - Camera controller sends wireless signal to Scout Flashes
 - Camera controller sends wireless signal to Scout LEDs
- Customizable camera control (number of pictures, time windows, etc)
- Complex multiple triggering options
 - PIR #1 activates lighting bank on the left
 - PIR #2 activates lighting bank on the right
 - Receiver #1 starts video recording
 - Receiver #2 takes several still photographs
- Time-lapse feature
- Can limit the number of shots to reduce nuisance triggers (curious squirrels)
- Optional power for your camera
- Multiple ¼-20 tripod mounts
- Security options for python cables and locks
- Power: 8 AA batteries or an optional Li-Ion pack. Battery packs can be doubled for long-term deployments
- Optional external power
- Optional 5-pin expansion connector
- > 100 days of battery life (use-case dependent)
- Wide operating temperature range: -40C – 85C (-40F – 185F)

2.2 What is Included

The Scout Mini Camera Box includes:

- Scout Mini Camera Box
- Scout Mini Camera Controller
- 8xAA battery pack or (optional) Li-Ion battery and charger
- GoPro Mounting Bracket
- Free PC/Mac application for setup

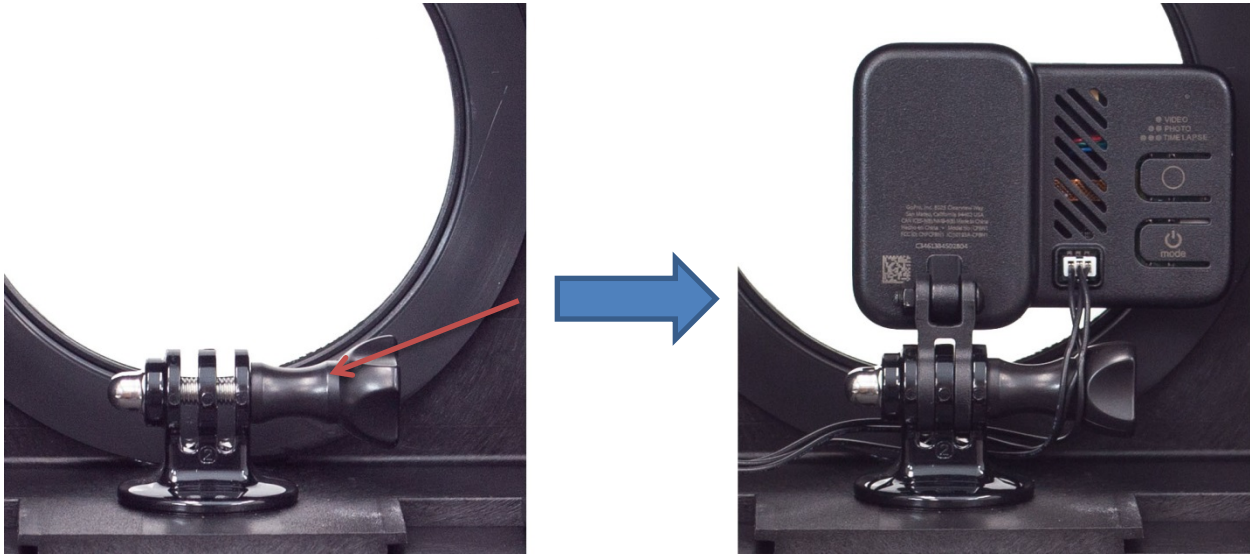
If you purchased the Scout Mini Camera Box as a kit it may include additional accessories.

2.3 Installing the Camera

The camera box has a permanently attached GoPro camera mount. To attach a GoPro camera simply remove the threaded screw by rotating the knob on the right-hand side. Insert your GoPro camera into the mounting grooves. Re-install the threaded screw.

If using a Sony RX0 simply use a GoPro to ¼-20 adapter.

The picture below shows the threaded screw for attaching the GoPro camera or ¼-20 adapter.



2.4 Battery Installation

Battery installation is a simple process and because the Scout Mini Camera Controller has excellent battery life – you won't have to do it often!

The Camera Controller requires eight AA (LR6) batteries. You can use either alkaline, lithium, or rechargeable varieties. You can optionally use (and we recommend) the Scout Li-Ion battery pack for even longer life. For details about maximizing battery life see section “5.5 - Maximum Battery Life”.



1. Be sure the camera box is clean prior to opening otherwise dirt may compromise the weatherproof seal.
2. Open the two latches on each side of the handle.
3. Insert the battery pack(s) as shown in the above photo.
4. Secure the hook and loop strap around the battery pack.
5. Plug the camera controller into the power distribution connector on the left.
6. Plug the battery pack into the power distribution connectors in the center.
7. Verify the camera box seal is clean prior to closing the lid to prevent water leakage.

You can also power the Scout Camera Controller with external power using the optional power cable available here:

<https://www.cognisys-inc.com/store/3pin-extpwr-cable.html>

You do not need to remove the internal batteries when using external power but you should remove the batteries if the camera controller will not be used for an extended period.

Note: Do not store Li-Ion battery packs in a fully discharged state.

2.5 Cleaning and Care

We want your Scout equipment to last – so here are some brief steps to keep it happy!

2.5.1 Cleaning

For cleaning we recommend a slightly dampened (not wet) micro-fiber cloth. Do not spray water directly into the inside of the equipment. Any liquid that goes into the controller may cause an electrical failure of the device. Do not use a flammable liquid/solvents or cleaning agents on the controller – just a micro-fiber cloth (dampened if needed).

2.5.2 Care and storage

Scout equipment is designed to handle normal wear and tear but there are some things to avoid:

- Do not get the unit wet internally.
- If not using the external connectors be sure to attach the protective cover on the jacks or water may leak into the controller causing damage.
- Do not drop the unit
- Do not allow dirt to get into the weatherproof seal. This could cause seal failure and damage to the camera controller and/or your equipment.
- **Remove all batteries prior to long term storage.**

Failure to properly care for the Scout Mini Camera Controller could result in a leak that may cause damage. The product warranty does not cover water damage resulting from user error or abuse.

2.5.3 Maintaining Weatherproof Design

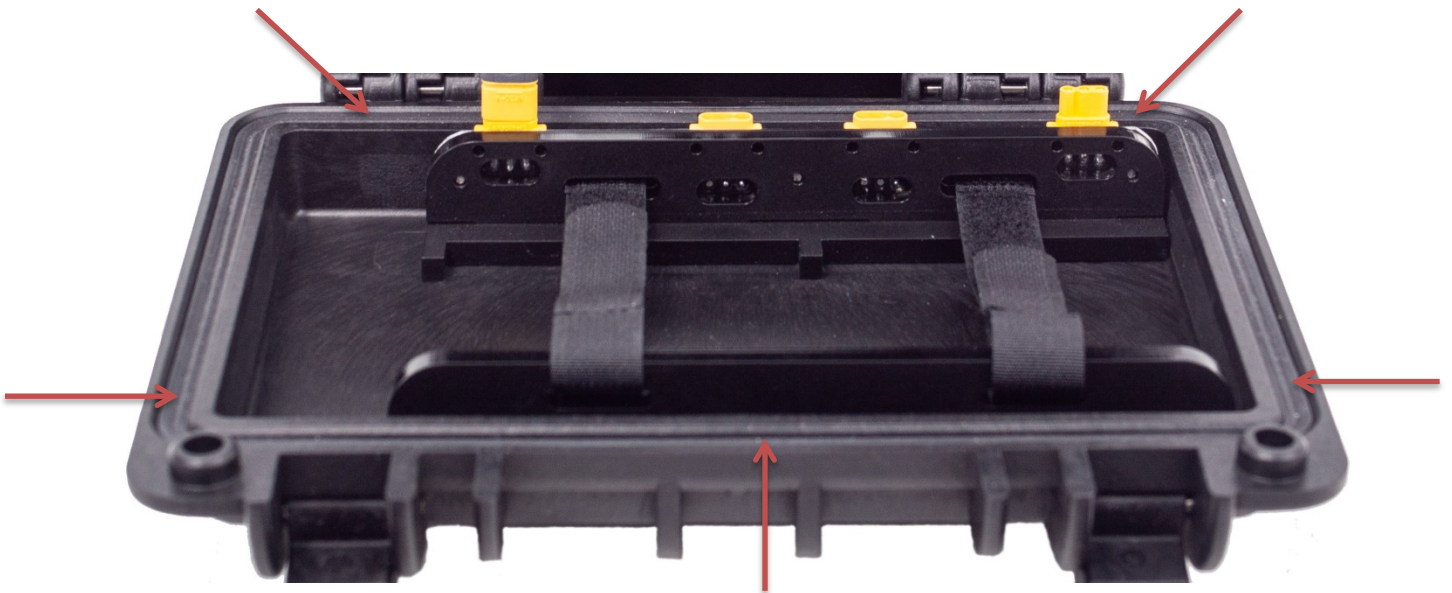
Scout equipment is designed to meet the most challenging environmental conditions. It does, however, require some care to maintain its weatherproof sealing.

Do not twist the pressure relief valve in the top of the housing. It is designed to be permanently sealed. Twisting or altering the pressure relief valve could cause water to leak into the housing.

Prior to opening the equipment rinse it under gently running water if it is dirty.

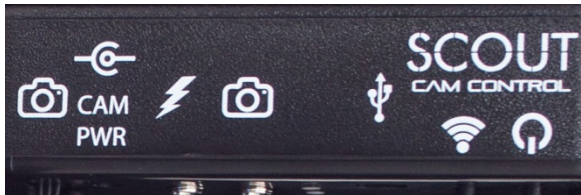
It's *very* important to keep the housing's weatherproof seal clean. A single hair or grain of sand could potentially cause the housing to leak and damage the equipment. To clean the seal open the housing and gently wipe the seal with a dampened microfiber cloth. Allow the seal to dry prior to reassembly.

Below is an image indicating the seal location. It is slightly recessed in a groove in the top cover of the Camera Box.



2.6 The Scout Mini Camera Controller

2.6.1 Internal connections / buttons / indicators



1 2 3 4 5 6 7 8

There are several internal connectors and indicators on the Scout Camera Controller (left to right):

- 1. GoPro Hero Bones Connector**
Use this connector to power your GoPro Hero Bones. It is a polarized connector meaning it will only go in one way or the other. This also controls the shutter / video recording.
- 2. Camera Power**
Power your camera using the optional dummy battery. Verify your camera is compatible with the 4.2v lithium ion batteries prior to use.
- 3. Flash sync in**
If using Scout flashes, this needs to be connected to your camera's pc-sync port or to the camera's hot-shoe.
- 4. Camera shutter release cable**
3.5mm jack to control your camera.
- 5. Power / Wifi indicator**
Green when power is on (and not in sleep mode).
Red when activating the internal camera shutter release.
Blue when Wifi is currently on.
- 6. USB**
Used for updating the firmware.
- 7. Wifi Button**
Press to turn on/off Wifi. This will also wake the controller from sleep mode.
- 8. Power Button**
Turns on/wakes up the controller from sleep mode.
Press and hold to turn off.

2.6.2 External connections



There are two external connectors available on the Scout Camera Mini Box (left to right):

1. Expansion Port

This connector is reserved for future use. It supports shutter control, USB power, and battery power.

2. External power

5 – 20V DC. 8 – 20V required if using the optional camera power.

The Scout Mini Camera Box uses weather-resistant connectors and cables. If the Camera Box will be used outside during rain, snow, or condensing humidity be sure to have the connectors or caps fully locked in place. If using external 2.1mm, 3.5mm, or RCA connectors they must be kept dry.

2.7 Camera connection

The Scout Mini Camera Controller has two camera connectors. Sony action cameras (RX0) use the 3.5mm connector combined with our Sony Video switch:

[Sony Video Switch](#)

The only GoPro that performs reliably for camera trapping is the Hero 10 *Bones* camera. This camera uses the 3-pin camera connection. It is a keyed cable meaning that it only plugs into the controller and camera in a certain orientation. If it doesn't fit, rotate the cable 180 degrees and then insert it. Please contact us if you have questions regarding GoPro compatibility.

2.8 Waking the Camera Controller

The Scout Camera Controller will automatically enter a low power mode after its Wifi connection times out (See section “4.2.6.4 - Timeout” for adjusting this timeout). To wake the camera controller quickly press either the power or Wifi button. This sometimes isn't convenient in the field – especially if you just want to look at how many pictures have elapsed. You can optionally wake the camera controller by quickly pressing the power button on a Scout PIR or by navigating on the Scout Receiver to Settings->Wake CamCtrl and pressing enter.

2.9 Download the app

The PC and Mac versions of the app are free. You can download them here:

[Scout App](#)

There is also an Android and iOS application available for a low fee. Search the Android “Play Store” for “ScoutCam” or Apple’s “App Store” for “Scout Cam Control”.

2.10 Connecting to the Mini Camera Controller

The Mini Camera Controller acts as a Wifi router / access point. You do NOT need a Wifi router or internet to use it! It will have a name of “ScoutCam” followed by a unique identifier.

2.10.1 PC/Mac connection

Simply connect to the Scout Mini Camera Controller like you would any other wireless connection. Find the wireless network (as shown below) and then click on it to connect. The controller defaults to no security but you can add security and set a password later if required. You will have to connect to the camera controller each time Wifi is started unless you tell the operating system to “automatically connect”. The computer may prefer a different network (if available) for auto-connect since the camera controller doesn't have active internet.



Figure 1 - Connecting Windows

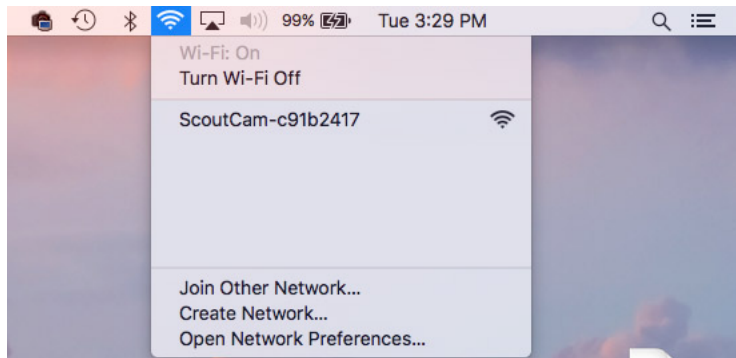


Figure 2 - Connecting OS-X

2.10.2 Android Connection

Connect to the Scout Wifi connection just like you would any other Wifi connection. After connecting the Android device might say “No internet connection: Stay Connected?” Just select “Stay Connected”. Now you’re ready to launch the Scout App!

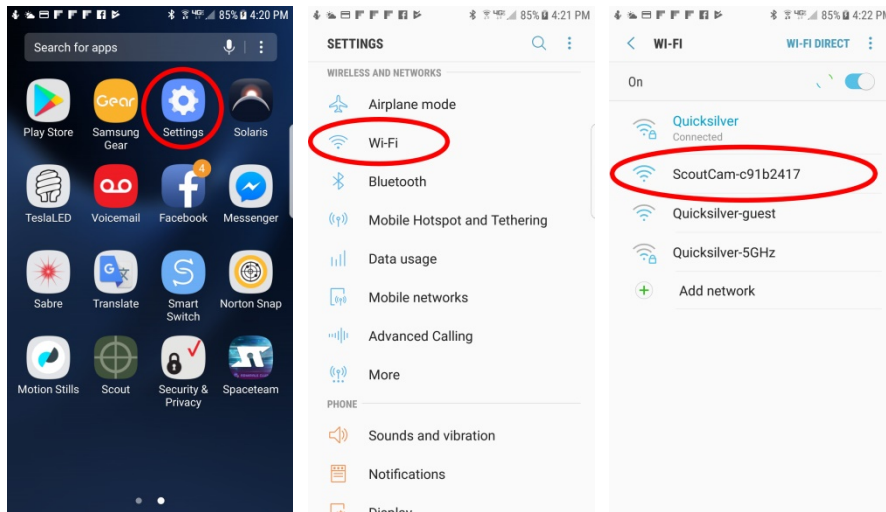


Figure 3 - Connecting Android

2.10.3 iOS connection

Connecting to your iOS device is simple. You will have to connect to the camera controller each time Wifi is started unless you tell the operating system to “automatically connect”. The device may prefer a different network (if available) for auto-connect since the camera controller doesn’t have active internet.

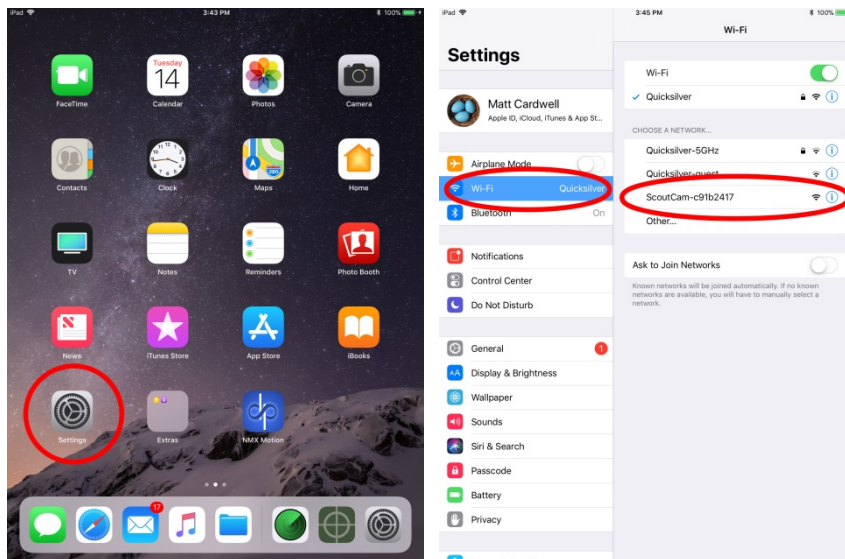


Figure 4 - Connecting iOS

3. Navigating the app

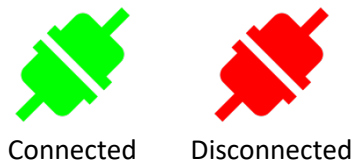
In this section we'll go into the basics of adjusting settings for the Scout Mini Camera Controller. If you find your eyes glossing over with all the technical discussion you can always skip to the "5 - Examples" section to start using your Scout Mini Camera Controller. This app is also used for the full Scout Camera Controller so not all features may be available on the smaller Scout Mini Camera Controller.

3.1 Connection Status

You can verify you have a connection to the camera controller. The indication varies depending on the operating system.

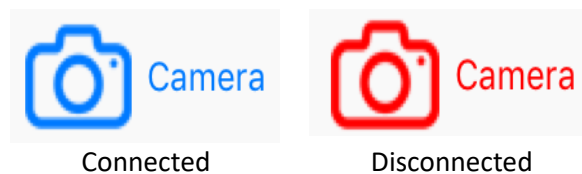
3.1.1 PC / Mac / Android connection

In the upper-right corner of the application there will be a green or a red indicator. Green indicates that the computer/device is communicating with the camera controller. Red means either Wifi is not connected or there is a communication issue (firewall, networking issue, etc).



3.1.2 iOS connection

For iOS, the color of the camera tab changes to indicate the connection status. At the bottom of the screen the "camera" will be blue for connected and red for disconnected.



3.2 Global buttons

There are five global buttons in the app that affect all the currently connected devices. "Find Devices", "Read Config", "Write Config", "Shutter", and "Outputs Off". Their location varies depending on the operating system:

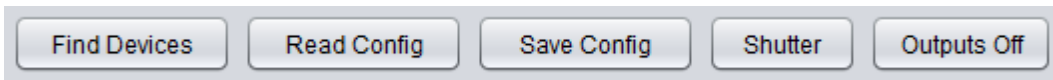


Figure 5 - Mac/PC Global Buttons (at top)

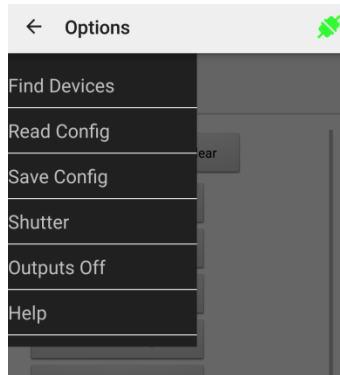


Figure 6 - Android Global buttons (under hamburger icon)



Figure 7 - iOS Global Buttons (at top)

3.2.1 Find Devices

This will go out and look for any present and “awake” devices. The app will do this automatically when launched (and periodically) but if you forget to wake up a device it might get missed. Some devices, such as the Scout Receiver and PIR don’t always have their wireless active in order to conserve battery. To make the Scout Receiver activate its wireless go to Settings->Wake CamCtrl. For the Scout PIR you can either quickly press the power button OR walk through the sensor path when the app is connected.

There can be up to one camera controller, four receivers, four PIR’s, eight flashes, and eight LED’s. Each device must be set to the same wireless channel, and also be set to its own unique ID for that device type. Having multiple device types with the same wireless ID can cause communication issues.

3.2.2 Read Config

Pressing this button will read the current settings for all of the active devices.

3.2.3 Write Config

This will take any app changes and permanently save them to all the active devices. Any time you make a change to a setting it will be sent down to the applicable device but it will not be permanently retained (after a power-cycle) unless you press the “Write Config” button.

3.2.4 Shutter

This will activate the shutter outputs (and follow their programming) for the camera controller.

3.2.5 Outputs Off

“Outputs Off” will stop any shutter/camera outputs as well as auxiliary outputs. It will also stop timelapse from running (if active).

4. Settings

The settings are grouped under collapsible categories. Press the button to expand or collapse the settings. This will reduce the number of settings visible at any given time and decrease “configuration fatigue”!

4.1 Settings Navigation Map

Below is the navigation map for all the settings. The links are “clickable” to get you to the specific details about the setting.

Camera Settings →

Activate

- Input Source
- # pics
- Pre-trig time (delay)
- On time
- Off time
- On Time 2+
- Off Time 2+
- Final Off
- Extend On
- Extend Off
- Periodic Half-Press →
 - Enable
 - Half-Press Time
 - Interval

Aux Settings →
(Not applicable to the Mini version)

Shot Limit →

- Limit Enabled
- Shot Limit
- Limit Window
- Limit Timeout

Time Settings →

- Window Enabled
- On Time
- Off Time

Wireless Settings →

- Channel

Wakeup Speed

Wifi Settings →

- Security
- Key
- Channel
- Timeout

Flash Settings →

(Not applicable to Mini version)

Power Settings →

- Camera Power
- Camera Wake
- LED Debug

Infrared Settings →

(Not applicable to Mini version)

Time lapse Settings →

- # pics
- Elapsed
- Interval
- Sensor Starts

Software Version

Voltage

Load ScoutCam Defaults

4.2 Setting Descriptions

4.2.1 # Pics

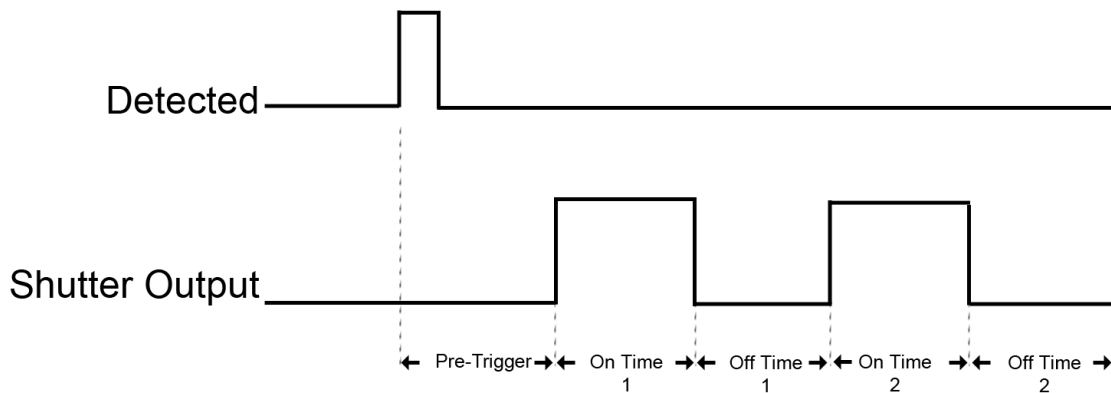
This is the number of “Camera (internal)” shutter activations that have occurred since power-up or since the “Clear” button has been pressed. It can be updated to the latest picture count by pressing the “Read Config” button. The count can be reset by pressing the “Clear” button.

If you have the “Camera (internal)” shutter control to active four times (it has it’s “# pics” set to four), this count will still only be increased by one. It is the number of times the shutter programming is activated.

4.2.2 Camera Settings

The Scout Camera Controller gives you plenty of flexibility for controlling your camera. You can choose how many pictures you want, how long the half-press is held (focus or wakeup), how long the shutter button is pressed, and even the time between each shutter button press.

Below is a diagram showing the different steps the Camera Controller will go through when it activates the camera. In this example, “# pics” is set to two, and “final off” is also turned on.



4.2.2.1 Activate

This will start the programming for this specific camera. This is useful for testing connections or properly framing your camera.

4.2.2.2 *Input Source*

You can choose what device you would like to activate the camera (either internal or external). The system defaults to using the Scout Receiver that is programmed with an ID of “1”.

You can currently select between the Scout Receiver or PIR. If using multiple receivers and PIR’s make sure that each device is set to its own unique ID. You can have a Scout Receiver and a Scout PIR with “ID: 1”, but **not** two Receivers with “ID: 1”.

You can also select “Any” for the source or “Any” for the ID. Here are a few examples:

Example 1:

Source: RX

ID: 2

Only the Scout Receiver that is programmed with a wireless ID of “2” will activate the shutter or aux outputs.

Example 2:

Source: Any

ID: 1

Either a Scout Receiver OR PIR with ID 1 will activate the shutter or aux outputs.

Example 3:

Source: Any

ID: Any

Any sensor will activate the shutter or aux outputs.

4.2.2.3 *# pics*

This is the number of times you would like to take a picture when Scout Camera Controller receives a detection signal. This assumes your camera isn’t in burst mode, of course! We’ll also refer to it as “shutter activation”.

4.2.2.4 *Pre-trig time*

This is the first step after a sensor detects something. During the pre-trigger time the camera’s half-press is held down. Some cameras are quite slow to wake up before they’ll respond to a shutter activation. You can use this “pre-trig” time to make sure your camera is ready to go! Also since the half-press is held down you could potentially use this to try and get a focus lock on a subject if your lens is set to auto-focus. If “Pre-trig” is set to zero then this step in the shutter activation process is skipped.

If shooting video with Sony cameras the “pre-trig” time may need to be in excess of one second to allow the camera to fully wake up.

4.2.2.5 On time

Once the “pre-trig” time expires (or completely skipped if it is set to zero), the camera’s full-press (shutter activation) will be held down for this time.

If your “pre-trig” time is set to zero you will want this “on time” to be at least long enough to wake your camera out of sleep mode.

If your camera is set to burst mode, this is how long the burst mode will be active (minus the wake-up and lag time of the camera of course).

4.2.2.6 Off time

The “off time” is how long the shutter button is released. If your “# pics” is greater than one, this will be the duration between pictures.

Once this time expires, the Scout Camera Controller will start looking for another subject detection signal.

4.2.2.7 On Time 2+

If the “# pics” is set to greater than one you can use this setting to adjust the duration of the second (and all future) shutter activations. This can be useful for long duration (bulb mode) exposures. The first “On Time” can be quick to wake the flashes and the second (“On Time 2+” can control the duration of the bulb mode exposure.

4.2.2.8 Off Time 2+

If the “# pics” is set to greater than one this will be the time between shutter activations beyond the first one. This is used in “On Time 2+” to set all shutter timing beyond the first shutter activation.

4.2.2.9 HP Limit

This is a half-press limit. If you set the “Pre-Trig” or “Delay” normally the half-press will be held down the entire duration. “HP Limit” lets you set a shorter duration for the actual half-press but still wait the “Pre-trig” or “Delay” time.

Why would you want to do this?!? When shooting video with some Canon cameras you can’t give them a long half-press or else it will bring up a “Push the Start/Stop button to activate Movie Shooting” screen. The camera needs a quick half-press, but also a little more time to “warm up”.

4.2.2.10 *Final Off*

You have the option of disabling the final “off time”. Here are two use-cases.

- 1) The “# pics” is set to one. If “final off” is set to on, then you can use the “off time” to set how long the Camera Controller will ignore any additional subjects walking through the a sensor.
- 2) The “# pics” is set to two. The first shutter activation could start a video recording. You would then set “off time” (the time between shutter activations) to how long you want to record the video (let’s say 30 seconds). Then the second shutter activation would happen (because “# pics” is set to two). But for this application, you do NOT want the final off time, because it would mean you’d be waiting another 30 seconds before the Camera Controller would detect anything.

4.2.2.11 *Extend On*

If this option is selected any detection signal from a sensor will continue the programmed “on time” if the “on time” is currently active. This can be useful for video recording where you may have programmed 30 seconds of video but if the sensor continues to detect a subject the video will continue another 30 seconds.

4.2.2.12 *Extend Off*

This is similar to “Extend On”. It can be used for a couple of use-cases.

1. If a subject enters the sensor area it will fire the camera. If the subject hovers and continues to re-trigger the sensor, and this option is enabled (along with final off), it will prevent the camera from firing again.
2. If the “# pics” is set to greater than one, and the subject hovers, this can be used to prevent the picture taken until the subject stops moving in the sensor area.

4.2.2.13 *Periodic Half-Press*

The Receiver has the capability to periodically give your camera a half-press. Why in the world would you want to do this given that it will decrease the battery life of the camera?

Some cameras (Canon) will exit live-view video recording if allowed to sit idle (in sleep mode) for about 30 minutes. The next time you wake them up – you’ll find the camera requires a physical button press to get it back into video mode. Less than ideal when your camera is sitting in a weatherproof box for months at a time.

Periodic half-press can work around this problem by every so often giving the camera a good *poke* to make sure it doesn’t do something as silly as leaving video mode!

It can also be used for some setups to recharge flash capacitors.

The green LED will light on the Scout Receiver when the camera receives a half-press.

4.2.2.13.1 *Enable*

Selecting this will enable or disable the Periodic Half-Press feature.

4.2.2.13.2 *Half-Press Time*

This is how long the half-press will be held down on the camera at the specified interval. Most cameras will wake up with a 0.5 second interval (the default).

4.2.2.13.3 *Interval*

The “Interval” is how often the camera will receive the half-press signal. You can specify minutes or seconds.

4.2.3 **Shot Limit**

Sometimes you can get yourself into a bad environment where things are moving around too fast and critters (the ones you don’t care about) are causing false triggers. Wasted frames and overheating flashes – **not** good! There is a way to tell the Camera Controller to stop triggering the camera if it sees too many subjects. Three settings come into play to adjust this. The first is “Shot Limit”. This sets the maximum number of pictures that can be taken within the time set in “Window”. See the two other settings below.

Note: The Camera Controller will no longer take photos while the shot limit is reached. To reset the shot limit manually (instead of waiting for it to time-out) you can press “Outputs Off” in the app, or quickly press the power button on the controller. You can also reset the “Shot Limit” by pressing “Wake Cam Ctrl” on the Receiver or by tapping the power button on the PIR.

4.2.3.1 *Limit Window*

This sets the time “window” for the “shot limit”. If you get “shot limit” number of frames within “limit window” amount of time, the Camera Controller will ignore any more detections for a period of time. If you get a few pictures but it doesn’t reach the “Shot Limit” within this amount of time, the number of pictures taken will be reset. See below.

4.2.3.2 *Limit Timeout*

This is how long the Camera Controller will ignore anything crossing in front of a sensor. You won’t have any camera activations for this duration. That’s a lot of words! Let’s put some numbers to these settings and then walk through a scenario. We’ll use the defaults in this case:

“Shot Limit” is set to 10, “Limit Window” is at 20, and “Limit Timeout” is at 300. Your setup is working great – you’re getting some great shots. You leave the setup to go into town for an hour. Unfortunately a biblical swarm of cicadas appears (the horror!). Your Camera Controller and sensors, being very effective at detecting things starts rapidly triggering. With the settings above, you’ll definitely see 10 cicadas within the 20 seconds – it’s a swarm after all! Once the sensor “sees” those 10 within the 20 seconds, the Camera Controller will ignore any more for 300 seconds (5 minutes). Let’s say you get back from town, shoo away the swarm (the cicada story falls apart here), but now you want to start looking for critters again. Simply press the power button to reset the shot limiter and it is back to normal. You could have also waited for the 300 seconds to elapse.

4.2.3.3 Limit Enabled

Check this box to enable the “Shot Limit” feature.

4.2.4 Time Settings

The Camera Controller can limit when it will activate the camera (or wake up other Scout equipment) based on the time of day. If you are only interested in night photographs or you want to decrease “interest” in your equipment from two-leggeds during the day you can use the “time settings” to create a “window” of time. You simply set the current time, a start time, and an end time, and turn on the window.

Two windows are supported. This lets you set up more complex scenarios for triggering (two hours in the morning, two hours in the evening).

When you save the settings the Camera Controller will use the current time of the device that is running the app. The Camera Controller will remember the time even if the batteries are removed (for over 12 hours).

4.2.4.1 On Time

The “Start Time” sets when the window begins.

4.2.4.2 Off Time

This will set the off/end time for the window. Here are a couple of examples:

On Time: 6:00AM
Off Time: 8:00AM

In this case, the Camera Controller will only activate the camera for a two hour period in the morning.

The next example is a little different:

On Time: 6:00PM
Off Time: 8:00AM

Since the on time is after the off time (because it is set to **PM**), the Camera Controller will activate the camera for 14 hours – starting at 6:00PM and ending at 8:00AM the following day. So please be sure to pay attention to the AM/PM – it could easily get you into trouble!

4.2.4.3 Window Enabled

Follow the programming for the selected window. You can enable the time windows individually or have both active.

4.2.5 Wireless Settings

Wireless is used by the Camera Controller to communicate with other Scout equipment. It uses a 2.4 GHz proprietary low-latency RF protocol.

4.2.5.1 Channel

This determines what frequency the Receiver operates on. All Scout equipment for a given setup must be on the same channel to operate properly.

If using more than one Scout setup in the same area (within 100 meters / 330 feet) you should assign each setup its own unique channel.

The default “channel” is 15.

For the PC/Mac applications you have the option to “scan” the radio spectrum to evaluate the cleanest channel for operation. For maximum range you should select the channel with the highest bar on the graph.

4.2.5.2 Wakeup Speed

The “Wakeup speed” setting determines the speed of wireless wakeup. “Normal” works for most applications but if you need a faster response time you can change this setting to “Fast”.

Note: All Scout equipment for a given setup must have its wakeup speed set to the same value. Equipment may not wake properly if all devices are not set to the same “Wake up” setting.

Battery consumption will increase on all devices when wake-up speed is set to “Fast”.

4.2.6 Wifi Settings

Wifi can be turned off and on using the Wifi button on the Camera Controller. The blue LED will light when it is on. Wifi will automatically turn off after ten minutes of inactivity (no computer/phone/tablet app communication) in order to conserve battery power.

There are only four settings which are described below.

4.2.6.1 Security

Much like your home router, Sabre has different security modes to encrypt data sent back and forth as well as prevent “undesirables” from accessing your Camera Controller. Your Camera Controller ships with security disabled. You must “save settings” and then power-cycle your Camera Controller for these new settings to take effect.

4.2.6.1.1 Open

No security measures are in place. This is easiest for you to connect up to your Camera Controller – but also for your neighbors (including squirrels with phones). Any communication is unencrypted. Of course, the “open” security is also extremely effective against intruders if Wifi is turned off.

4.2.6.1.2 WPA

This encrypts all transmissions to and from Sabre using Wifi Protected Access. This will prevent anyone from connecting to your Camera Controller unless they know the security passphrase/key. You will need to make a note of the “key” or change it to something you will remember. If you ever forget the key, you can load the factory defaults by having the Camera Controller turned off, press and hold the power button until the red power LED goes out, and then release the power button. The security will revert back to “Open”.

4.2.6.2 Key

This is your Wifi key or passphrase. The key must be at least eight characters/numbers and up to 64. If you change the key, you must “save settings” and then power-cycle your Camera Controller for the new key to take effect.

4.2.6.3 Channel

There are 12 supported Wifi channels. This setting is included for people in heavily congested Wifi areas where interference with neighbor’s routers may be a problem. Typically you will not need to adjust this setting.

4.2.6.4 Timeout

This is how long Wifi will remain active before turning off automatically. Any communication from an app will restart this timeout – so it is how long to leave Wifi on *after* you have closed the application. Don't make this too short otherwise it can be difficult to have enough time to connect the app to the Camera Controller!

4.2.7 Power Settings

“Power Settings” lets you manage additional power options.

4.2.7.1 Camera Power

If enabled the Camera Controller will provide power to the camera via its camera power port. This way your camera can take advantage of the larger Lithium Ion battery packs that the Camera Controller supports.

4.2.7.2 Camera Wake

This feature lets a sensor only apply a half-press to the camera for a configurable amount of time. An example use-case is a PIR sensor with a wider field of view to give a half-press to wake/top off flashes prior to the primary sensor (Scout Receiver) firing the camera.

4.2.7.3 LED Debug

The Camera Controller is optimized to save battery life which means even though it's running it may not light an LED to indicate that it is still alive and running.

If “LED Debug” is set then the Camera Controller will periodically give a quick “blip” to indicate it is still running.

○

4.2.8 Time lapse Settings

Time lapse lets you take pictures (or video) at specific intervals. When Time lapse mode is enabled any signals from the Scout Receiver or PIR will be ignored.

When the time lapse interval expires the Camera Controller will follow its programming for all of its outputs: Camera Internal, Camera External, and Aux 1-3.

Additionally you can use the “Time Window” feature (see section “4.2.4 - Time Settings”) to limit what times your time lapse will be active.

To stop the time lapse from running simply press the “Outputs Off” button.

4.2.8.1 # pics

This is the maximum number of pictures that the time lapse will run for. More specifically, it is the number of times the shutter programming is activated. If this “# pics” is set to 10 and the “Camera Settings” are programmed to take five pictures, you will end up with 50 pictures total.

Set to zero if you would like the time lapse to run indefinitely – batteries willing!

4.2.8.2 Elapsed

Press the “Read” button to see how many time lapse “# pics” have elapsed.

4.2.8.3 Interval

“Interval” sets how often to start the shutter programming. You can choose from 1 – 1000 seconds, minutes, or hours.

4.2.8.4 Sensor Starts

If selected then the Scout Receiver or PIR must detect a subject before the time lapse will start.

Note: You must still press the start button to enter time lapse mode. Then once the sensor detects a subject it will begin the time lapse.

4.2.9 Software Version

This is current software version on the Camera Controller.

4.2.10 Voltage

This indicates the current highest voltage (from the batteries or external power) being applied to the Camera Controller. You can use this to determine if it is time to replace the batteries.

If using the AA battery pack the lowest usable voltage is 7.2V. For the Scout Li-Ion pack it is 12V. Replace the batteries before coming close to this lower limit.

4.2.11 Load ScoutCam Defaults

Press this button to load the default settings. This will load the factory default settings for only the Camera Controller. It will not load the defaults for other connected devices.

5. Examples

In the following sections we will walk you through some real-world setups/examples using your Scout Receiver. Be sure to check out our website and follow us on YouTube (<http://www.youtube.com/user/CognisysInc/>) for video examples. Sometimes watching a video makes the whole process much easier to understand!

The most important task in setting up a successful camera trap is to test-test-test your setup once you *think* it is working. We're not talking just framing and lighting but waiting for the camera to enter sleep mode, make sure it wakes up, goes back to sleep.

5.1 Video Recording

For this setup the Camera Controller will only control the camera using the 3.5mm shutter cable or the GoPro 3-pin connector. This assumes the camera supports video recording using a shutter release cable. Here are the settings to optimize the performance:

5.1.1 Sony RX0 Cameras

These cameras use the same settings as the A7SII and are explained in detail here: [Sony Camera Trapping Settings](#)

This requires the Sony Video Switch: [Sony Video Switch](#)

This setup assumes it takes one shutter press to start video recording and another to stop it. It is absolutely critical that you verify the pre-trigger time (the duration the half-press is held down) is sufficient to wake the camera and have it respond to the start recording signal (the first shutter press). If it is not long enough you could run into a situation where it misses the first start recording shutter activation but catches the second one. This means the camera would be recording for the entire duration that you DON'T want it to! (All the time between detected events) You might come back to a full memory card if this happens...

The Scout system follows this process:

1. The infrared beam or PIR detects a subject and wakes the Camera Controller
2. The Camera Controller holds down the half-press on the camera for the duration of "pre-trigger".
3. Then the Camera Controller activates the shutter button to start video recording.
4. It waits for the "off time" (your record duration).
5. Finally it activates the shutter button again to stop video recording.

5.1.2 GoPro Hero 10 Bones

The first step in configuring your Hero 10 Bones is to choose whether you want to do stills or video. Please refer to the camera owner's manual for how to use button presses or QR codes to select the mode/settings you desire. The easiest way to change modes on the camera is to first press the power/mode button to turn on the camera, and then quickly press the power/mode button. One LED flash for video and two flashes for photos. Once you've set the mode press and hold the power/mode button to turn off the camera. That is a critical step otherwise the camera will remain powered!

Now that the camera is set up it is time to adjust the Scout Camera Controller settings. In the app go to Camera Settings->Camera 1.

For Video enter the following:

pics: 2

Delay: 0.0 seconds

On Time: 0.5 seconds

Off Time: (your record time – we recommend at least 10 seconds)

The video clips will be approximately 2-3 seconds shorter than the "Off Time" due to the camera's shutter lag. You can optionally select the "Extend Off" setting to keep the camera recording if a sensor detects something again.

For Stills:

pics: (how many pictures you want)

Delay: 0.0 seconds

On Time: 0.5 seconds

Off Time: (the time between pictures)

When taking stills, you should NOT use the "Extend On" or "Extend Off" setting.

5.5 Maximum Battery Life

Battery life is a tricky business. There is some magic chemistry going on inside of those little things that can significantly affect the performance of your Scout equipment. Of course, you'll probably want to use rechargeable or Li-Ion batteries because the landfills likely don't need any more batteries tossed in them. Here are some general tips:

1. Set the "Wifi Timeout (See "4.2.6.4 - Timeout") to something relatively short. This is just how long that the app isn't running before Wifi automatically turns off.
2. If the Camera Controller isn't powering your camera be sure to have "Camera Power" disabled (See "4.2.7.1 - Camera Power").
3. Make sure "LED Debug" is disabled. (See "4.2.7.3 - LED Debug").
4. If possible keep the Camera Controller box out of direct sunlight. Electronics tend to draw more current when warm.

Following these steps can help you get in excess of three months of battery life from the Scout Camera Controller!

5.5.1 AA Batteries

1. If using AA batteries use low self-discharge (LSD) rechargeable batteries such as Eneloop. Otherwise you could be losing 2% of your battery life per day just from the battery itself. At high temperatures (the Receiver/PIR/Camera Controller in the Sun) it could be as high as 6% per day!
2. Speaking of temperatures – batteries are typically rated at 25C. They lose some of their capacity at warmer temperatures but at cold it's *really* bad. A 2500 mAh battery at -20C (-4 F) could only have 500mAh of capacity. So if your Scout gear normally had 100 days of battery life it would be cut down to 20 days – a big difference! If you're planning on long-term deployments at cold temperatures you may want to consider our Li-Ion pack or an external battery pack.
3. Use batteries of the same age and type. Mixing in an old battery with new ones could cause the old battery to be over-discharged damaging the battery and significantly decreasing the over-all battery life of the system.
4. The Scout Receiver displays the current voltage it is receiving from either the internal or external battery pack. You can also get this from the ScoutCam app. Don't be alarmed if the voltage displayed drops quickly if you take batteries from the charger and put them in the Receiver. It's normal for rechargeable batteries to drop their voltage in a day or two after coming off the charger. The Scout Receiver isn't being more hungry than necessary!
5. AA Batteries are typically "empty" when each cell is at 0.9V. So if your Receiver says the input voltage is 5.4V (6 cells x 0.9V) there isn't much capacity left. For the Camera Controller that would be 7.2V.

5.5.2 Li-Ion Pack

Rechargeable Lithium Ion batteries are a great alternative to AA batteries. They're lighter weight per watt than AA batteries and can significantly increase the run time of the Camera Controller. If you are using the Camera Controller to power your camera (or other accessories) we highly recommend using our Li-Ion pack. We even offer an optional cable that lets you run two Li-Ion battery packs together – perfect if the Camera Controller is powering your camera.

1. Like AA-batteries, Li-Ion batteries are susceptible to extreme temperatures. At cold (-20C / -4F) you should expect no more than 50% of the rated capacity for the battery pack.
2. Li-Ion has a slightly lower maximum operating temperature – 60C (140F). Keep in mind this is the battery temperature, not the air temperature. If the camera box is exposed to sunlight the internal battery may be significantly warmer than ambient temperature.
3. If using our Li-Ion pack with the Camera Controller it will automatically turn off when the pack reaches its minimum voltage (about 12V). Do not store the Li-Ion pack in a fully discharged state as this can significantly degrade its capacity.
4. Li-Ion batteries self-discharge at a rate of about 3% per month.
5. Li-Ion batteries have a much higher charge density than AA and lead-acid batteries. More power per weight!
6. Li-Ion batteries should only be charged at room temperature. Be sure to let the battery acclimate itself prior to charging.

6. Installing the Reflash software (optional)

What is “reflash”? It’s a small program that allows you to update the firmware on your Scout Products. **You do not need this program to use your Scout equipment.** Rest assured if you just purchased your Scout it ships with the latest software available. If, however, new firmware becomes available you may want to upgrade your controller. Do you have to upgrade your firmware? No. Should I upgrade your firmware? Maybe. We say “maybe” because as new firmware is released we are adding and improving features. This means changes to the user interface and things might not look exactly how they did before you updated the firmware. So if you discover that a new feature is available that you absolutely have to have, then by all means go ahead and reflash your controller. Just keep in mind that things might look and behave a little different! The other consequence to reflashing your controller is that you *may* lose any stored settings. Reflashing may require updating other Scout equipment in your system as well.

Scout products can only be updated over USB. The reflash process takes just a few seconds.

Reflash requires a firmware package (instructions included). You can find the package here: [Scout Camera Box Firmware](#)

Whether you use Windows or OS X, you will **need** Oracle’s Java installed for Reflash to load. You can download it here: <http://java.com/download>

6.5 Windows Installation

Windows installations should automatically detect and download the USB drivers required. Some operating system settings can prevent automatically downloading the drivers. If that is the case, use the above link in section “6 - Installing the Reflash software

Once the installation is complete you will have a “Start Menu” folder called Cognisys. Underneath that you will find the Reflash icon.



6.6 OS X Installation

Reflash requires Java 1.7 or later from Oracle. This version of Java requires that your OS X version be 10.7.3 (Lion) or above. It has not been tested with older versions of Java or earlier versions of OS X and is not supported.

Use the above link in section “6 - Installing the Reflash software”.

Once installation completes you will have a “Reflash” icon on your Launch Pad:



7. Troubleshooting

| Problem | Cause | Solution |
|--|--|---|
| Does not turn on when power button is pressed | Batteries not installed. | Insert a battery pack. |
| | Battery polarity is incorrect. | Verify all batteries are installed correctly. |
| | Batteries are low or a bad battery cell. | Verify the quality of the batteries (multi-meter, test with other equipment) |
| | Wifi button was pressed | Press the power button to initially turn on the unit |
| LED's keeps turning off | Low batteries | Use fresh batteries |
| | Low-power mode entered | This is normal if no app is communicating with the controller. Tap the Wifi or Power button to wake from sleep mode |
| Green LED is blinking | LED Debug is enabled | When "LED Debug" (under "Power Settings") is enabled, you will get a very quick blink of the green LED. This can be useful for verifying that the controller is still operational. Deselect "LED Debug" to have the LED stay off when sleeping. |
| Camera does not activate when beam is broken (or when the "activate" button is pressed). | "Camera Settings" are incorrect. | See 4.2.2 for proper settings. They could be too fast for your camera. |
| | Camera is off. | Turn on the camera. |
| | Camera has auto-focus turned on. | If the camera cannot achieve focus lock it may not take a photo. Turn off auto-focus on the lens. |
| | Shutter cable not fully seated. | With new products the connectors can be quite stiff. Be sure the shutter cable is fully seated into the camera. |
| Camera takes multiple pictures. | Camera set to burst shooting mode. | Turn your camera to "single shot" mode. |
| | "Camera Settings" are incorrect. | See section 4.2.2 for adjusting the number of pictures. |
| App can't connect to Camera Controller | Wifi disabled on phone/tablet/computer | Turn on Wifi and make sure device isn't in airplane mode. |
| | Wifi turned off on Camera Controller | Press the Wifi button so the blue LED lights. |
| | Controller is sleeping | Wake the controller by pressing either button, or tap the power |

| | | |
|----------------------------------|------------------------------|--|
| | | button on a PIR sensor, or on the receiver go to Settings->Wake CamCtrl. |
| | Firewall is preventing it | Try temporarily disabling the firewall to see if the connection then works. If so, review your firewall settings to allow permissions for the app. |
| Need to restore factory settings | You just want to start over! | With the Camera Controller powered off, press and hold the power button until the green power light goes out. Release the power button. Optionally you can load the defaults from the settings page. See section 4.2.11. |

If you cannot resolve a problem with your Scout Camera Controller, please contact us at support@cognisys-inc.com. We want to make sure that you are completely satisfied!

8. Specifications

Specifications are intended for reference only. The design may be modified to improve features or functionality without notice.

| Specifications | MIN | NOM | MAX | UNITS |
|--|-----|-----------|-----|-------|
| Input Voltage ¹ | 5 | 9.6 | 20 | Vdc |
| Input Current – Full on (8AA batteries / Li-Ion pack) ¹ | - | 60/33 | - | mAdc |
| Input Current – Sleep (8AA batteries / Li-Ion pack) ¹ | - | 0.65/0.44 | - | mAdc |
| Shutter Output Current Sink | - | - | 1 | Adc |
| Battery life (internal - Eneloop batteries at 25C) ² | - | 100 | 140 | days |
| Real-time clock life without batteries | - | 16 | - | hours |
| Wireless Range ³ | | 15 | 30 | m |
| | | 50 | 100 | feet |
| Operating Temperature | -40 | 25 | 80 | C |
| | -40 | 77 | 176 | F |

- 32-bit power optimized ARM Processor
- Wifi 802.11 a/b/g/n
- Wireless connectivity: Proprietary 2.4GHz
- Real-time clock for time-windowed triggering (two windows provided)
- Powered by 8 AA batteries, Li-Ion battery pack, or external power
- Power for camera (with optional dc coupler / dummy battery)
- Camera flash sync input
- All outputs are open drain (Can be used for shutter or other equipment)
- USB for reprogramming

¹ AA batteries at 1.2V/cell, Li-Ion pack at 16.8V. Not supplying power to camera.

² See section “5.5 - Maximum Battery Life” for additional information on battery life.

³ Several factors can affect the wireless range. Congestion, terrain, etc...

9. Warranty

Limited Warranty

The Scout Receiver, PIR, Transmitter, Base Transmitter, Flash, and Camera Controller (hereby referred to as "Scout Equipment"), software, and related equipment is provided by Cognisys, Inc. "as is" and "with all faults." Cognisys, Inc. makes no representations or warranties of any kind concerning the safety, suitability, lack of viruses, inaccuracies, typographical errors, or other harmful components of Scout Equipment and its related software. There are inherent dangers in the use of any product, and you are solely responsible for determining whether Scout Equipment is compatible with your equipment and other software installed on your equipment. You are also solely responsible for the protection of your equipment and backup of your data, and Cognisys, Inc. will not be liable for any damages you may suffer in connection with using or modifying Scout Equipment and/or its related software.

All electronic products are warranted to be free from defects in materials or workmanship for two (2) years from the date of purchase. Within this period, Cognisys Inc. will, at its sole option, repair or replace any components which fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor, provided that the customer shall be responsible for any transportation cost. This warranty does not cover failures due to abuse, misuse, accident or unauthorized alterations or repairs. This warranty is non-transferable.

THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING ANY LIABILITY ARISING UNDER ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, STATUTORY OR OTHERWISE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, WHICH MAY VARY FROM STATE TO STATE.

IN NO EVENT SHALL COGNISYS BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

Cognisys, Inc. retains the exclusive right to repair or replace the product or offer a full refund of the purchase price at its sole discretion. SUCH REMEDY SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.

10. Revision History

| Revision | Date | Change |
|----------|------------|-----------------|
| 1.0 | 06/19/2023 | Initial Release |
| | | |
| | | |