

COGNISYS SCOUT REPEATER



Owner's Manual

Revision 1.0



Copyright 2020 Cognisys, Inc.

Table of Contents

1. SAFETY INSTRUCTIONS	3
2. GETTING STARTED	3
2.1 WHAT IS THE SCOUT REPEATER?	4
2.2 WHAT IS INCLUDED	4
2.3 BATTERY INSTALLATION	4
2.4 QUICK START GUIDE	6
2.5 CLEANING AND CARE	7
2.5.1 <i>Cleaning</i>	7
2.5.2 <i>Care and storage</i>	7
2.5.3 <i>Maintaining Weatherproof Design</i>	8
2.6 WIRING DIAGRAM / CONNECTOR	9
2.7 AUX LED SELECTION	10
2.8 POWER BUTTON	10
2.9 "PAIRING" TO YOUR CAMERA BOX	10
2.10 TURNING ON THE REPEATER	11
3. SETTINGS IN THE APP	12
4. EXAMPLE	13
4.1 THE LONG HAUL	13
4.2 THE ROCK	14
5. INSTALLING THE REFLASH SOFTWARE (OPTIONAL)	16
5.1 WINDOWS INSTALLATION	16
5.2 OS X INSTALLATION	16
6. TROUBLESHOOTING	17
7. SPECIFICATIONS	18
8. WARRANTY	19
9. REVISION HISTORY	20


Table of Figures


Figure 1 – Scout Repeater Connections	9
---------------------------------------------	---



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/scout/repeater>

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 “4 - 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 Repeater.

2.1 What is the Scout Repeater?

The Scout Repeater is an accessory for the Scout Camera Box. It extends the possible distance between sensors and the Camera Box.

The Scout Repeater has several features:

- Wireless communication to the Camera Box
- Bi-directional communication with all sensors
- Fully compatible with the Camera Box App
- Perfect for difficult terrain that prevents wireless signals from reaching the Camera Box.
- Easy setup (Plug and Play)
- Weatherproof
- 200+ days battery life (wireless standby, not driving a light)
- Wide voltage Range (6 – 20V)
- Optional Internal Battery (5200mAh/14.8V -- 20800 mAh total capacity)
- Optional External Power
- Wide operating temperature range: -40C – 105C (-40F – 221F)

The Scout Repeater requires that the Camera Box is running software version 1.0.05 or greater.

2.2 What is Included

The Scout Repeater includes:

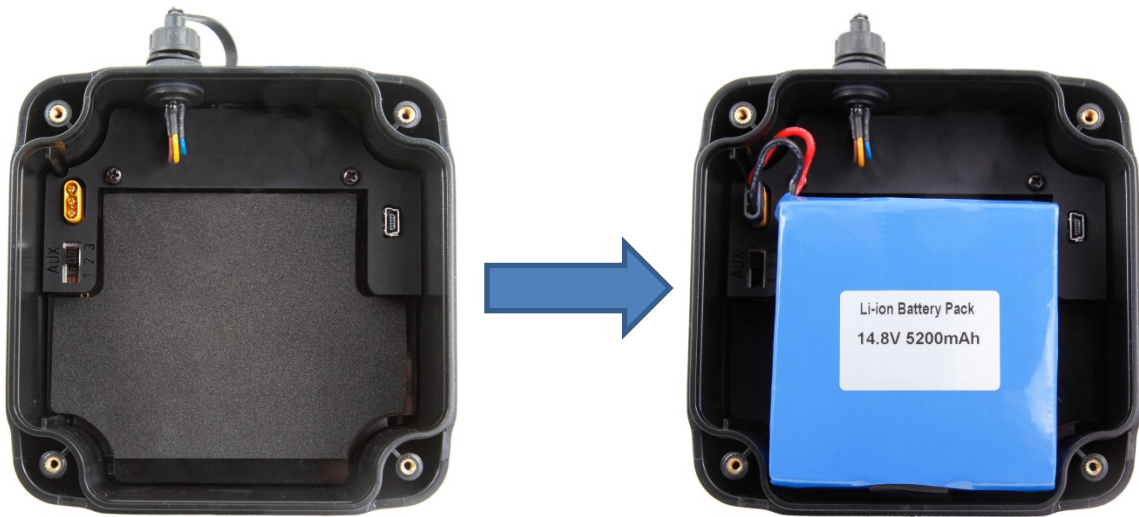
- Scout Repeater
- Quick-start guide insert

If you purchased the Scout Repeater as a kit it may include additional accessories.

2.3 Battery Installation

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

The Repeater is designed to use the Cognisys 5200mAh Scout Li-Ion battery pack. You simply plug the battery pack in!



To install the battery:

1. Be sure the Repeater is clean prior to replacing the batteries otherwise dirt may compromise the weatherproof seal.
2. Remove the four screws from the back-side of the Repeater using a Philips screwdriver.
3. Remove the Repeater back cover.
4. Install the 5200mAh battery and plug it in.
5. Align and push back cover onto the Repeater.
6. Install screws being careful not to cross-thread them – **do not overtighten!**

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

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

If you are using external power you should absolutely have a fuse in the wiring (or similar protection device).

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

2.4 Quick Start Guide

Want to be up and running in two minutes or less? Here's the quick-start guide in case you misplaced it:

SCOUT Repeater



External Power

Internal Li-Ion Battery Connection

Aux LED Switch

USB Port

When first turned on the Repeater will pair automatically to a powered up Camera Box that is within range. To clear the paired Camera Box press and hold the power button until the indicator LED goes out.

Scan the QR code for the owner's manual and connection diagrams or visit:

www.cognisys-inc.com/scout/repeater

Phone: 231-943-2425
support@cognisys-inc.com
www.cognisys-inc.com



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 connector be sure to attach the protective cover or water may leak into the controller causing damage.
- Do not drop the unit (the housing is made of a strong polycarbonate but it DOES have its limits)
- Do not allow dirt to get into the weatherproof seal. This could cause seal failure and damage to the Repeater.
- **Remove the battery prior to long term storage.**

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

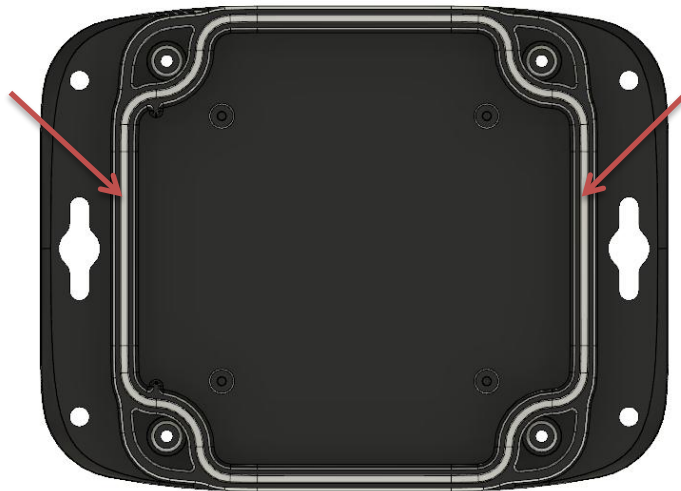
2.5.3 Maintaining Weatherproof Design

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

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

It's very important to keep the housing's silicone seal clean. A single hair or grain of sand could potentially cause the housing to leak and damage the equipment. To clean the seal remove the back cover from the housing, and rinse the back cover in fresh water and shake dry (drying with a cloth may cause lint to compromise the seal). Allow the seal to dry prior to reassembly.

Below is an image indicating the seal location. It is recessed in a groove in the back cover of the equipment.



2.6 Wiring Diagram / Connector



Figure 1 – Scout Repeater Connections

There is one external connector on the Scout Repeater:

1. External Power (3-pin)

This allows you to optionally power the Repeater from your own power source for even longer battery life.

The Scout Repeater uses weather-resistant connectors and cables. If the Repeater will be used outside during rain, snow, or condensing humidity be sure to have the power cable locked in place. If not using the external power jack keep the connector cap installed.

2.7 Aux LED Selection



This switch selects how the external power LED behaves on the Repeater once it is turned on.

There are three available selections. If this switch is set to “1”, the LED is disabled during wake-up and communication (dark mode). If set to “2”, the LED will briefly blink when it wakes up after seeing a wireless signal from a sensor. If set to “3”, the LED will briefly blink when wireless messages are being forwarded back and forth between the Camera Box and sensors.

2.8 Power Button

The power button is on the side of the Repeater:



Press this button to turn on the Scout Repeater. To turn it off simply press and hold this button for approximately two seconds until the red LED goes out.

2.9 “Pairing” to your Camera Box

The Scout Repeater needs to know which Camera Box you would like to use it with. This pairing process only needs to be done once. The process is easy:

1. Turn on your camera box (it’s okay if it goes back to sleep).
2. **Make sure only one Camera Box is within wireless range.**
3. Turn on the Repeater.
4. The Repeater will scan all available wireless channels looking for the Camera Box. Once it finds one the process is complete!

Note: This process is very quick – less than a quarter of a second! If you see your Repeater LED indicator ramping up and down slowly in intensity that means it can't find the Camera Box. Double-check that you've turned the Camera Box on!

If you ever change the "Wireless Channel" of your Camera Box or you want to change the Repeater to use a different Camera Box on another "Wireless Channel" you'll need to start the pairing process over. To do this:

1. Start with the Repeater turned off.
2. Press and hold the power button until the red LED indicator goes out (about 5 seconds).
3. Release the power button.
4. Repeat the "Pairing" process above.

2.10 Turning on the Repeater

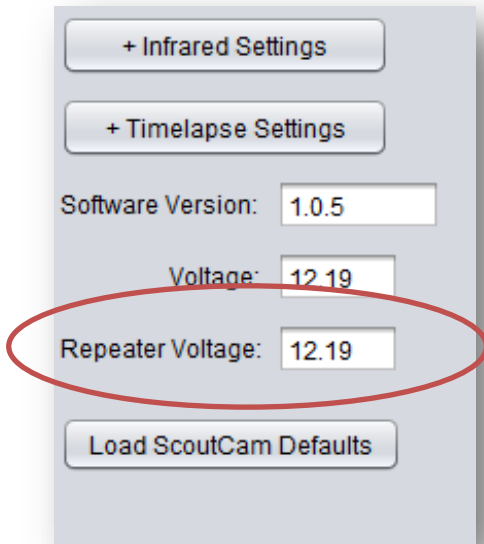
To turn on the Repeater simply press and release the power button. Upon power-up, the Repeater will attempt to connect to the Camera Box. If the Camera Box is out of range or turned off, the Repeater will flash (on/off) the red LED indicator a few times to let you know it can't communicate. No worries though! It doesn't **need** to talk to the Camera Box at this point – the indicator is just to help you know that *maybe* something isn't quite right with the camera trap setup.

Note: You don't have to turn on the Scout equipment in any order – the indicator is just a helpful reminder.

Once the Repeater is on the LED indicator will slowly dim down until it is out.

3. Settings in the App

There are no adjustable settings in the app. The only thing reported is the current voltage of the Repeater at the bottom of the “Camera” tab. This is also a good way to know that the repeater is on and functioning within your camera trap setup.

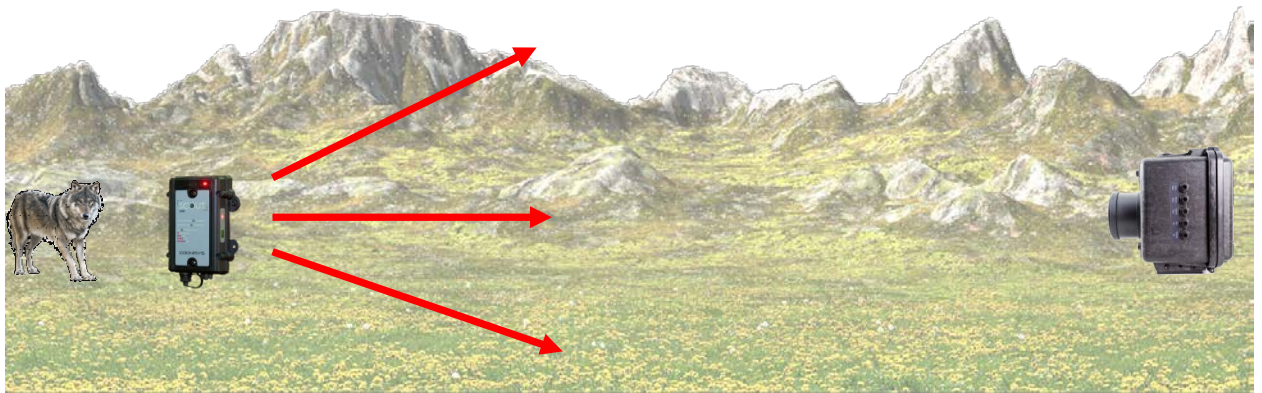


4. Example

In the following section we will walk you through a real-world setup/example using your Scout Camera Box and Repeater. 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!

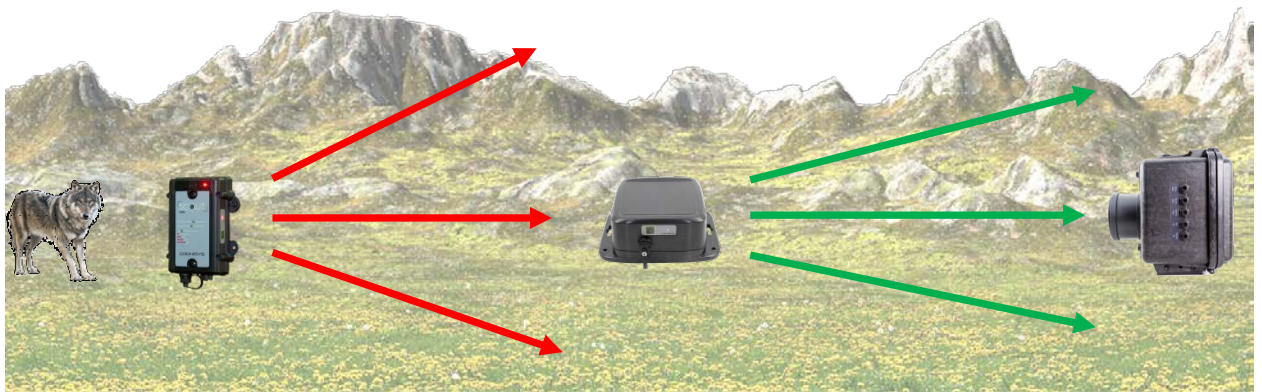
4.1 The long haul

In this example you simply have a large distance between the sensor(s) and the camera box/flash.



The signal isn't going to make it from the sensor to the camera box. Sad day!

A simple placement of the repeater will save the day:



Try and elevate the repeater if possible to maximize the range.

4.2 The Rock

Scout equipment uses a frequency 2.4GHz. What does that mean? It's pretty fast. It's the same frequency as some Wifi equipment. Fast is usually good. After all you want the sensors, camera box, and especially the flash(es) to respond as soon as possible. The downside of using this frequency is that it doesn't do well going through things. A few trees? No problem. Vegetation? Not going to stop it. A boulder the size of a small house? Houston: We have a problem.

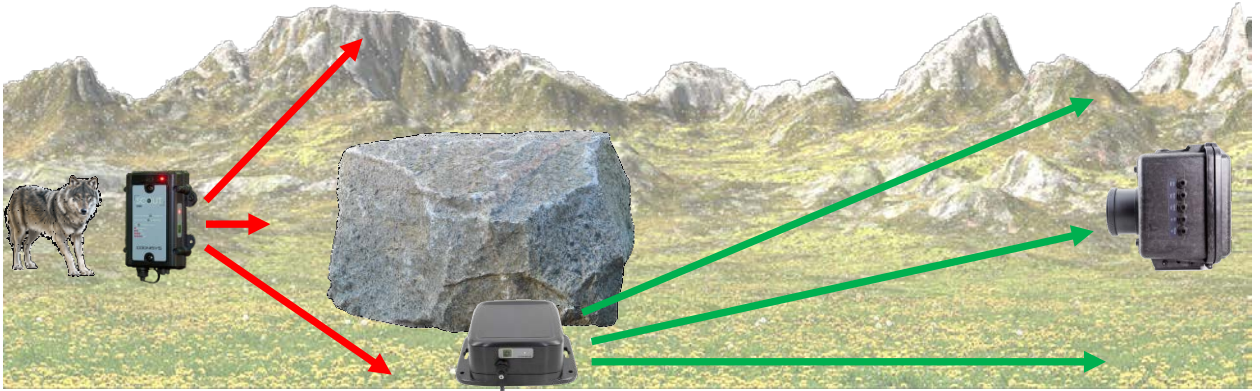
Why, you might ask, would someone have their sensors on one side of a boulder, and the camera on the other? Usually you want to take a picture of a critter pretty close to where the sensor is since that is the point they were detected. You would be correct! But for this situation we're shooting video. In this case, the sensor is vertically down 10 meters and there is a natural path coming up and around the boulder. Think of the cinematography. The sensor detects the critter, the camera starts recording, and then, as if out of nowhere, this magnificent critter walks up a path, around a corner, and into the field of view. Nice!

But all of that wonderful footage isn't going to happen if the sensor can never get the signal to the camera box to start recording. It's just a nice dreamy video that will never be. That's where your shiny new Scout Repeater comes into play.

Here's a graphic showing the problem:



With a little clever placement of the repeater you can work around that boulder:



As with the “Long Haul” example above, try and elevate the repeater if possible to maximize the range.

The final step as with all camera trapping is to *test-test-TEST*. Make sure that the repeater placement is good and that you’re getting some fantastic video of yourself (pretending to be an animal) before you consider everything done.

5. 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.

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

Reflash requires a firmware package (instructions included). You can find the package here: <https://www.cognisys-inc.com/store/scout-repeater.html#resources>

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>

5.1 Windows Installation

Windows installations should automatically detect and download the USB drivers required. Once the installation is complete you will have a “Start Menu” folder called Cognisys. Underneath that you will find the Reflash icon.



5.2 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 “5 - Installing the Reflash software”.

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



6. Troubleshooting

Problem	Cause	Solution
Does not turn on when power button is pressed.	Battery not installed.	Install battery.
	Battery discharged.	Attach battery to charger and re-install.
	External power wired backwards.	Check battery polarity.
LED ramps up/down at power-up.	Not paired.	See section "2.9" for details.
LED flashes at power-up.	Camera box not turned on.	See section "2.10" for details.
Need to restore factory settings	You just want to start over!	With the Repeater turned off, press and hold the power button until the red power light goes out. Release the power button.

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

7. Specifications

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

Specifications	MIN	NOM	MAX	UNITS
Dimensions (including cover flange)		118 x 118 x 60		mm
Dimensions (including cover flange)		4.6 x 4.6 x 2.4		inches
Input Voltage	6	14.8	20	Vdc
Input Current 12V	-	492	-	uAdc
Input Current 16.8V	-	374	-	uAdc
Battery life (internal 5200mAh Li-Ion) ¹	-	200		days
Wireless Range ²		15	30	m
		50	100	feet
Operating Temperature	-40	25	105	C
	-40	77	221	F

- 32-bit high performance low current ARM Processor
- Wireless connectivity: Proprietary 2.4GHz
- Powered by Scout Li-Ion battery pack and/or external power
- USB for reprogramming

¹ Based off of Scout 5200mAh battery pack.

² Several factors can affect the wireless range. Congestion, terrain, etc.

8. Warranty

Limited Warranty

The Scout Repeater, Aux Box, Receiver, 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.

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.

9. Revision History

Revision	Date	Change
1.0	10/22/2020	Initial Release