



# ***X80 Wireless Network*** **User's Manual**

**(For Cameras, PC Base, Cell Base and Net Base)**

Version 2.4

***[www.buckeyecam.com](http://www.buckeyecam.com)***

# Table of Contents

1. Warnings.....	2
2. Overview.....	3
3. Getting Started.....	5
4. Connecting to a PC Base.....	6
5. Connecting to a Cell Base.....	7
6. Connecting to a Net Base.....	12
7. Register Cameras.....	15
8. Camera Settings.....	17
9. Camera Installation.....	19
10. Antennas.....	22
11. Repeaters.....	24
12. Camera Technical Specifications.....	26
13. PC Base Technical Specifications.....	29
14. Cell Base Technical Specifications.....	30
15. Net Base Technical Specifications.....	32
16. Camera Base.....	33
17. Troubleshooting.....	36
18. Additional Information.....	38
19. Warranty and Service.....	39

## 1. Warnings

### 1. Warnings



Contains FCC ID:MCQ-XB900HP The enclosed device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (i.) this device may not cause harmful interference and (ii.) this device must accept any interference received, including interference that may cause undesired operation.



If the camera is used with any antenna other than the portable antenna supplied with the X Series Camera Unit or PCBase Unit, the system may not comply with the FCC regulation Part 15.247, Operation within the license-free band 902 – 928 MHz. Contact manufacturer regarding use of optional high-gain antennas with the X80 Wireless Camera System.



To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance are not recommended. The antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter.

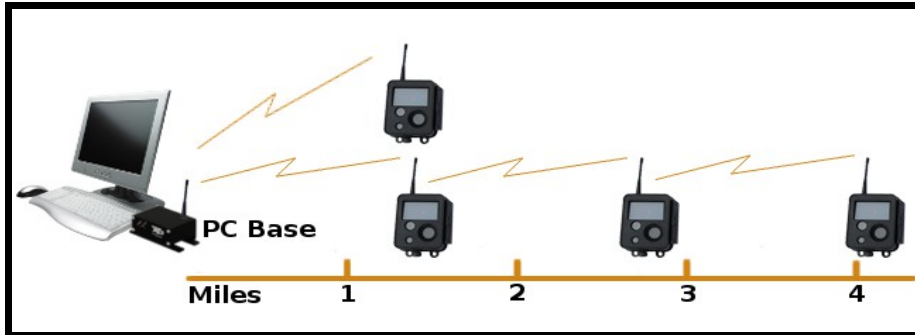


This product should not be used in any application where product failure may cause injury to persons, loss of life, or catastrophic property damage.

## 2. Overview

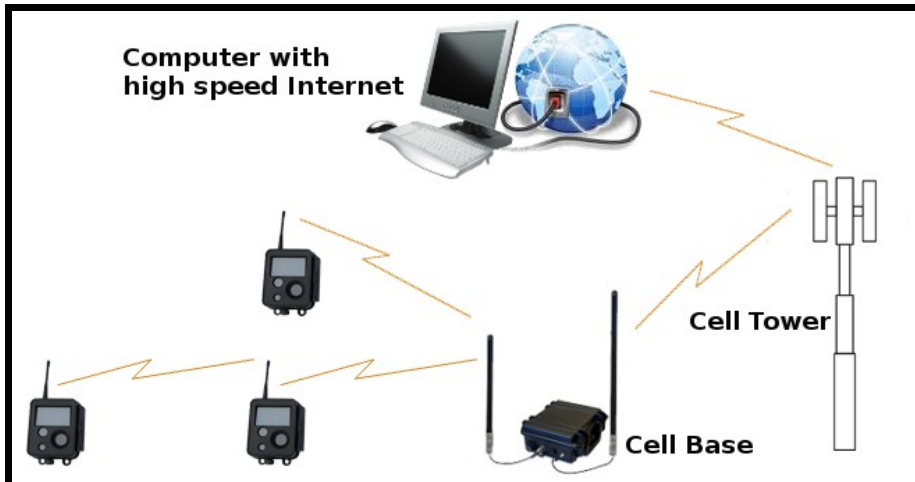
### 2. Overview

When a camera detects motion, a picture or video is taken and transmitted to a base receiver. Up to 254 cameras can be assigned to one base. Four different base options are available. Transmission distance may be up to 1-2 miles with standard antennas or up to 30 miles by using high gain antennas or repeaters



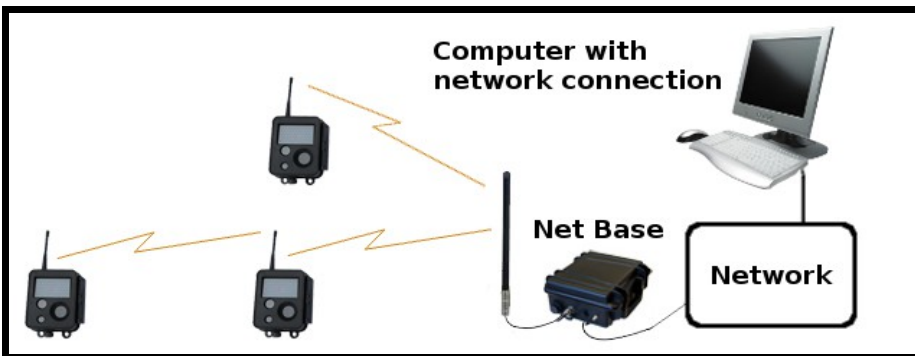
#### PC Base

- Connects to computer with USB
- Lowest cost base option
- Cell service is NOT required



#### Cell Base

- Connects to computer over Internet
- One cellular data plan is required
- Works with most cell providers



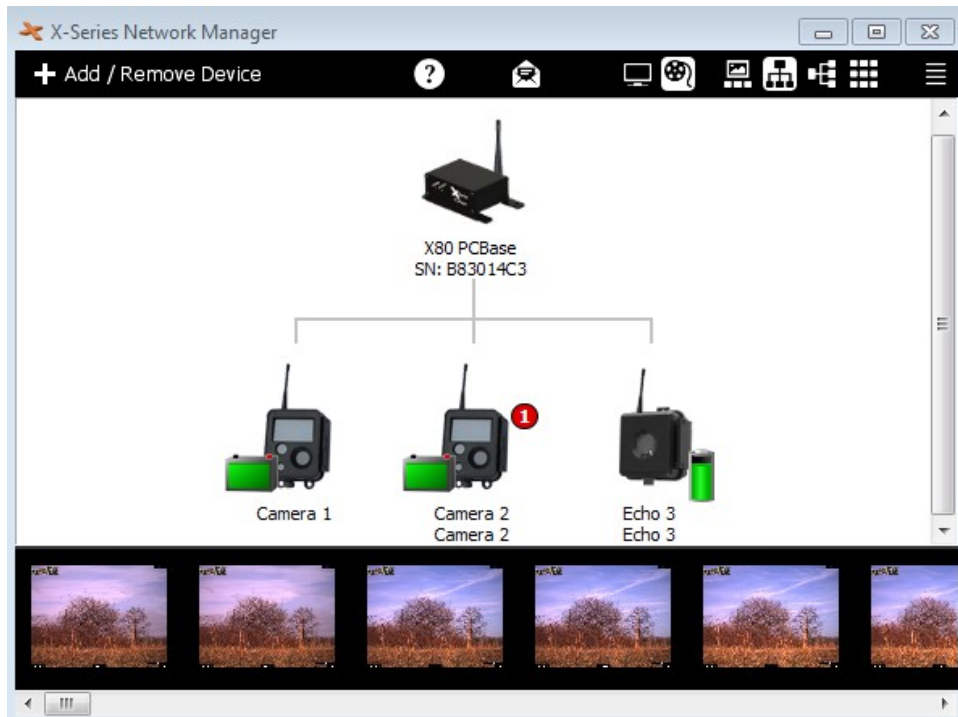
#### Net Base

- Connects to computer with Ethernet
- Uses existing network
- Cell service is NOT required



## 2. Overview

Images are received and all of the camera settings are controlled using the *X-Series Network Manager* software application.



Images can be viewed from *X-Series Network Manager*, or automatically emailed, or uploaded to your account at [livecam.buckeyecam.com](http://livecam.buckeyecam.com), making them easily accessible from smartphones or tablets.

The cameras are powered with rechargeable lead acid batteries and can take thousands of pictures on a single charge. Optional solar panel chargers are available to extend battery life indefinitely. The camera and battery pack are housed in watertight, weatherproof enclosures for reliable outdoor operation.

### 3. Getting Started

#### **3. Getting Started**

If you are using a *PC Base*, *Cell Base*, or *Net Base*, follow the steps below to set up your system. If you are using a *Camera Base*, go to chapter 13.



#### **Install X-Series Network Manager and USB Modem Driver for Windows.**

Use the supplied installation CD or download at [www.buckeyecam.com/site/support.html](http://www.buckeyecam.com/site/support.html)



#### **Connect to a Base.**

For *PC Base* refer to chapter 4.  
For *Cell Base* refer to chapter 5.  
For *Net Base* refer to chapter 6.



#### **Register cameras.**

Refer to chapter 7.



#### **Adjust camera settings.**

Refer to chapter 8.



#### **Install cameras in their permanent location.**

Refer to chapter 9.

#### 4. Connecting to a PC Base

### 4. Connecting to a PC Base

PC Base  
**1**

#### Attach antenna.

The PC Base is for indoor use only. If optional high gain antenna will be used, refer to Chapter 10.



PC Base  
**2**

#### Connect PC Base to computer with USB cable.

Minimum computer requirements are :  
Windows XP or later, 128 MB RAM,  
1.5 GB disk space, USB port.



PC Base  
**3**

#### Start X-Series Network Manager and click the PCBase icon.



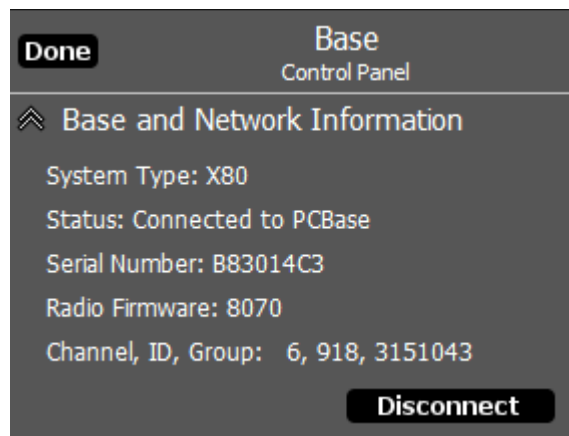
PC Base  
**4**

#### Click the Connect button.



PC Base  
**5**

#### Click the Done button.



## 5. Connecting to a Cell Base

### 5. Connecting to a Cell Base

Cell Base

1

**Make sure your Cell Base has an active cellular data account.**

If you need assistance setting up an account contact Buckeye Cam Service at 866-325-8172 ex 1195, or [www.buckeyecam.com](http://www.buckeyecam.com).

Cell Base

2

**Connect the power source.**

If you are using the AC/DC wall adapter (provided), proceed to step A1. If you are using an external battery (not provided), proceed to step B1.

A1

**Connect the pigtail to the AC/DC wall adapter.**



A2

**Connect the AC/DC wall adapter to the Cell Base.**

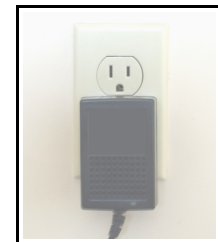


A3

**Plug the AC/DC wall adapter into an AC power outlet.**



The AC/DC wall adapter is for indoor use only.



A4

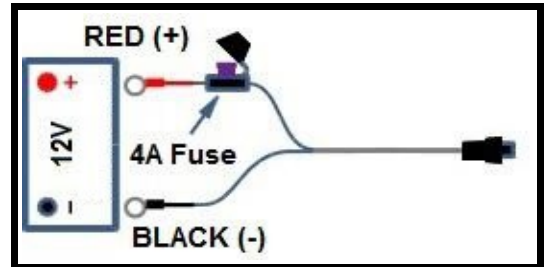
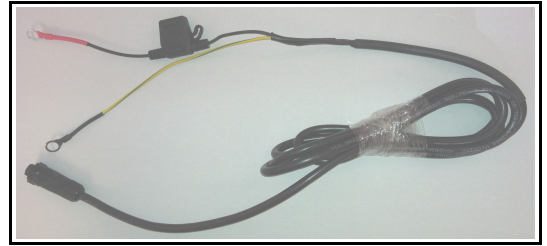
**Proceed to Cell Base step 2**

## 5. Connecting to a Cell Base

**B1**

**Connect the battery cable to the battery.**

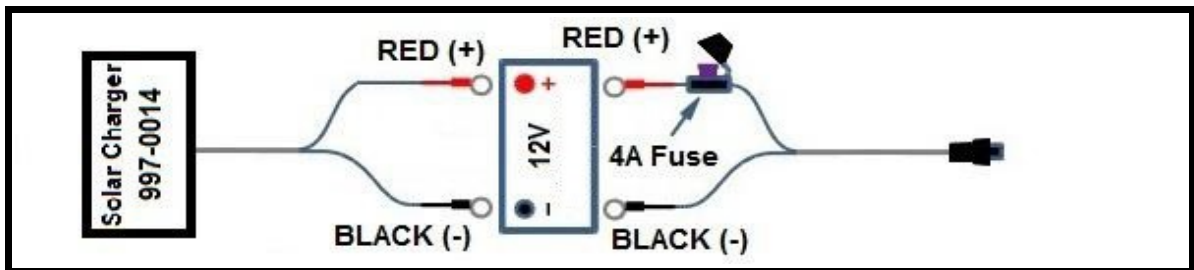
Use the provided battery cable to connect to a 12 Volt, 75 AH, SLA battery (UBL12750).  
(Battery is not provided).



**B2**

**Connect optional solar charger (if used).**

Use Buckeye Cam part number 997-0014 or 001-0034 only.



**Battery charging may produce potentially explosive gas. Do not charge battery in a sealed enclosure.**

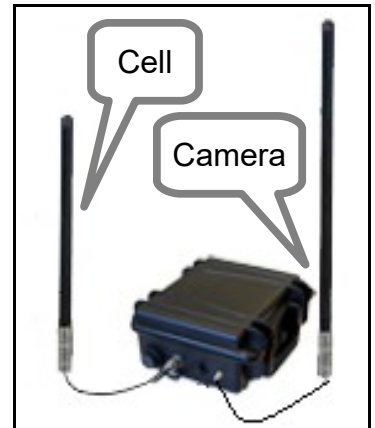
**B3**

**Connect the battery cable to the Cell Base.**



## 5. Connecting to a Cell Base

Cell Base  
**3**  
Connect the antennas.



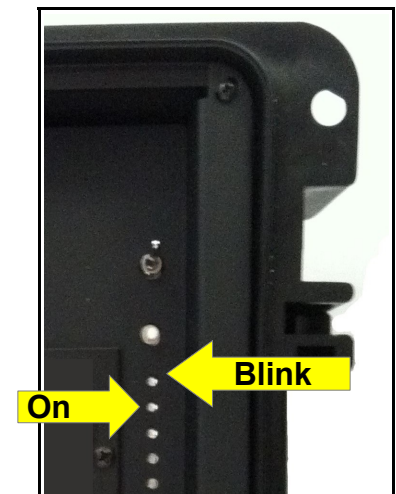
Cell Base  
**4**  
Open the enclosure lid.



Cell Base  
**5**  
Move the toggle switch down to the ON position.



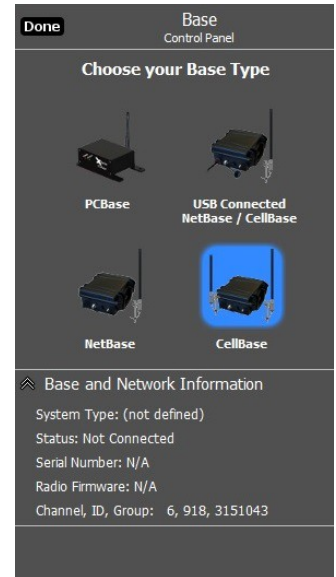
Cell Base  
**6**  
Wait for the first LED to blink slowly and the second to be on solid.  
This may take several minutes.



## 5. Connecting to a Cell Base

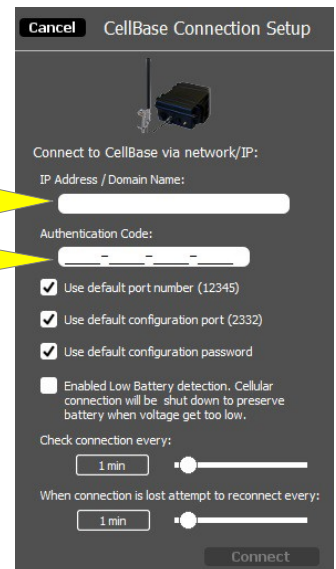
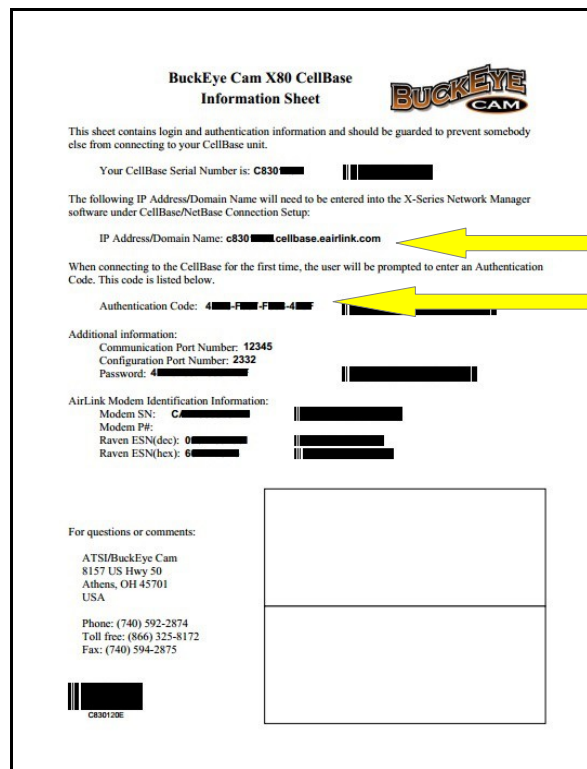
Cell Base  
**7**

Start *X-Series Network Manager* and click on the *Cell Base* icon.



Cell Base  
**8**

Enter the IP Address / Domain Name and Authentication Code from the *Cell Base Information Sheet*.



**Keep the Cell Base Information Sheet in a safe place.** You may need it again if you need to re-enter the connection setup or if you need to contact Buckeye Cam tech support.



## 5. Connecting to a Cell Base

Cell Base  
**9**

### Set connection default options.

These should be checked for normal use.

- Use default port number (12345)
- Use default configuration port (2332)
- Use default configuration password

Cell Base  
**10**

### Enable or Disable Low Battery Detection.

If this box is checked, the cellular connection will be turned off when the battery is low. This will prevent battery damage. It will be automatically turned back on if the battery charges back up to a sufficient level (e.g. by solar charger).

- Enable Low Battery detection. Cellular connection will be shut down to preserve battery when voltage gets too low.

**It is recommended to check this box if the Cell Base is powered with a battery.**

Cell Base  
**11**

### Select the check connection and lost connection times.

The connection to the Cell Base may be lost due to a temporary Internet outage or a dropped cell signal. *X-Series Network Manager* will periodically check the connection and try to reconnect if it is lost.

Check connection every:  
1 min

When connection is lost attempt to reconnect every:  
1 min

Shorter time settings will result in less down time but will use slightly more battery power.

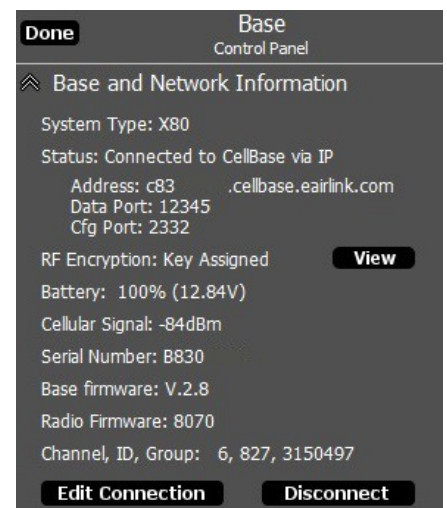
Cell Base  
**13**

### Click the *Connect* button.



Cell Base  
**14**

### Click the *Done* button.



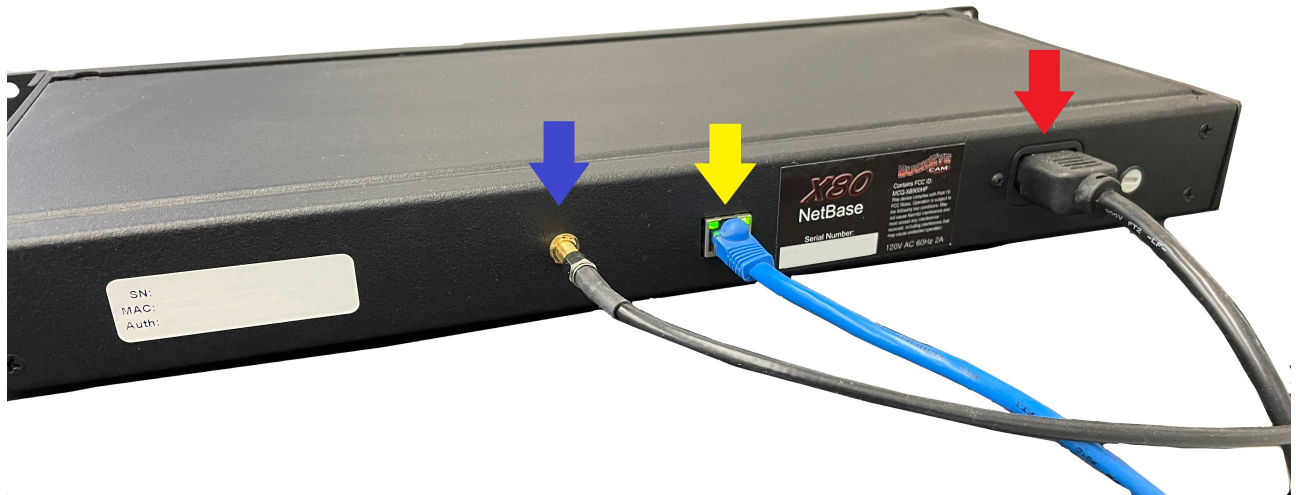
Cell Base  
**15**

### Close the enclosure lid.



## 6. Connecting to a NetBase

### 6. Connecting to a NetBase



View of back panel of NetBase

- Net Base**  
**1** Connect Net base to power through standard wall outlet (see red arrow)
- Net Base**  
**2** Connect Ethernet cable to Ethernet Port (see yellow arrow)
- Net Base**  
**3** Connect Antenna Cable to NetBase (see blue arrow)

## 6. Connecting to a NetBase



View of front panel on NetBase

Net Base  
**4**

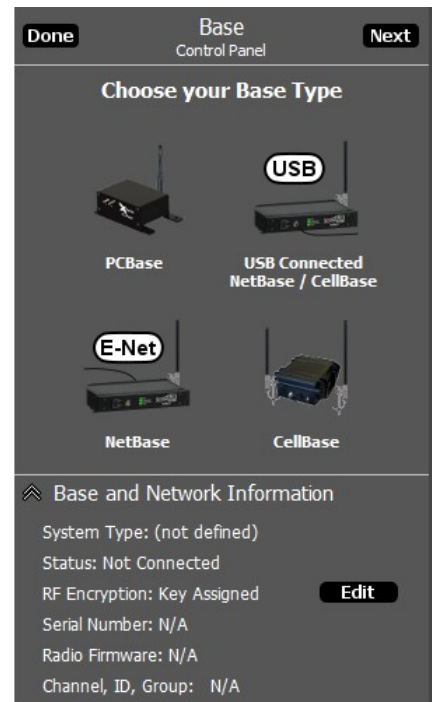
Turn Power switch ON

Net Base  
**5**

Connect USB cable to USB Port

Net Base  
**6**

Start *X-Series Network Manager* and click on the *NetBase* icon.



## 6. Connecting to a NetBase

Net Base

7

### Enter the IP Address / Domain Name.

In order for *X-Series Network Manager* to connect to a NetBase, it must know the IP address that has been assigned to it.

The IP address is assigned to the *NetBase* by a DHCP server running on the local network.

The DHCP server may be running on a gateway or router. You will need to access the client list table and find the IP address that matches the MAC address that is on the sticker inside of the *NetBase*.

You may need to refer to the gateway or router documentation for instructions on how to access the client list table.

Cancel NetBase Connection Setup

E-Net

Connect to NetBase via network:

IP Address / Domain Name:

Find NetBase by MAC address

Authentication Code:

Use default port number (10001)

Check connection every: 60 sec

When connection is lost attempt to reconnect every: 1 min

Connect

Net Base

9

### Enter the Authentication Code from the NetBase Information Sheet.

BuckEye Cam X80 NetBase Information Sheet

This sheet contains login and authentication information and should be guarded to prevent somebody else from connecting to your CellBase unit.

Your CellBase Serial Number is: e830

The following IP Address/Domain Name will need to be entered into the X-Series Network Manager software under CellBase/NetBase Connection Setup:

IP Address/Domain Name: Assigned by DHCP

When connecting to the CellBase for the first time, the user will be prompted to enter an Authentication Code. This code is listed below.

Authentication Code: 2 -29 -E -AC

Additional information:

Communication Port Number: 10001

Configuration Port Number:

Password:

AirLink Modem Identification Information:

Modem SN: 002

Modem PE:

Raven ESN(dec): 0000000000

Raven ESN(hex): 00000000

For questions or comments:

ATSI/BuckEye Cam  
8157 US Hwy 50  
Athens, OH 45701  
USA

Phone: (740) 592-2874  
Toll free: (866) 325-8172  
Fax: (740) 594-2875

Cancel NetBase Connection Setup

E-Net

Connect to NetBase via network:

IP Address / Domain Name:

Find NetBase by MAC address

Authentication Code:

Use default port number (10001)

Check connection every: 60 sec

When connection is lost attempt to reconnect every: 1 min

Connect

**Keep the Net Base Information Sheet in a safe place.** You may need it again if you need to re-enter the connection setup or if you need to contact Buckeye Cam tech support.

### 6. Connecting to a NetBase

Net Base

**10**

**Set the Check connection and lost connection times.**

The default time of 1 minute is adequate for most applications.

Net Base

**11**

**Click the connect Button.**

## 7. Register Cameras

### 7. Register Cameras

Register  
**1**

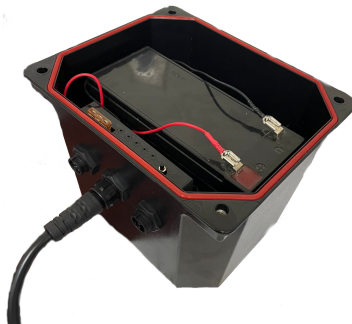
Connect the camera antenna.



Register  
**2**

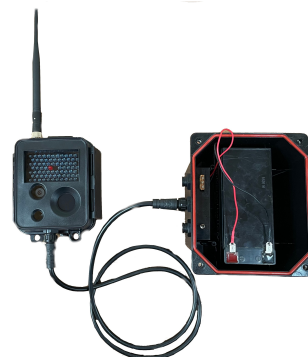
Install a UB1290 battery into the battery pack.

The red wire connects to battery (+). The black wire connects to battery (-).



Register  
**3**

Connect the camera to the battery pack using the middle connector on the battery pack .



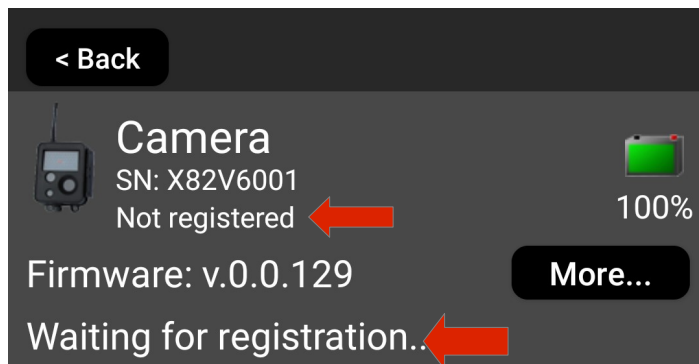
Register  
**4**

There are two ways to check if the camera is already registered to a base. Through the X80 Remote App or through the Smart Battery Pack LED indicators

#### To check Using the App:

Open the X80 Remote app and make sure you are in range of camera (for more information on downloading and using app refer to chapter 12).

If the camera is **NOT** registered you will see an image similar to the one on the right.



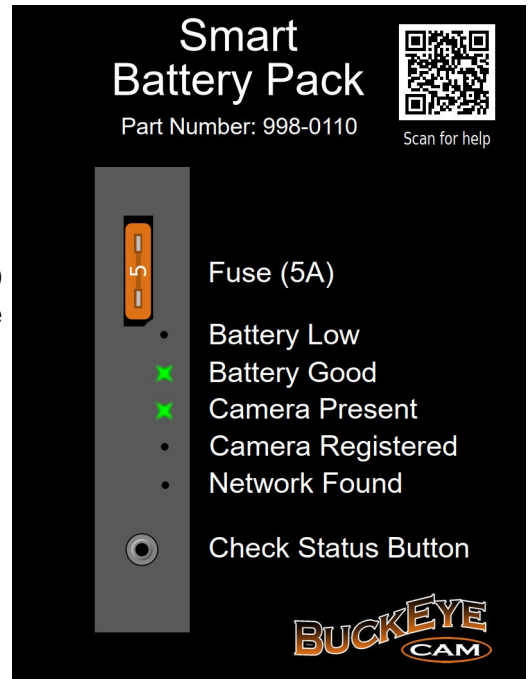
## 7. Register Cameras

### To check Using the Smart Battery Pack:

Press the Check Status Button. For more information on how to interpret the smart battery pack LED indicators refer to chapter 13.

If the camera **IS NOT** registered you will see the LED indicators in the same configuration to the one on the right.

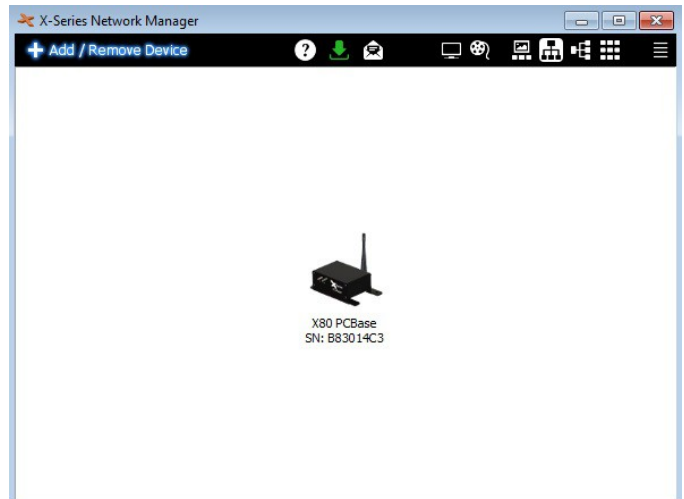
Notice: The LED for “Camera Registered” is not illuminated.



Register

5

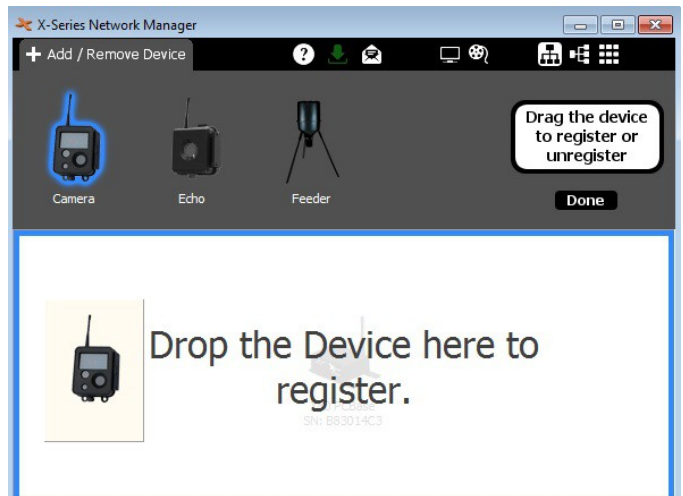
If Camera is Unregistered, one option to register the camera is to open the *X-Series Network Manager* and click *Add/Remove Device*.



Register

6

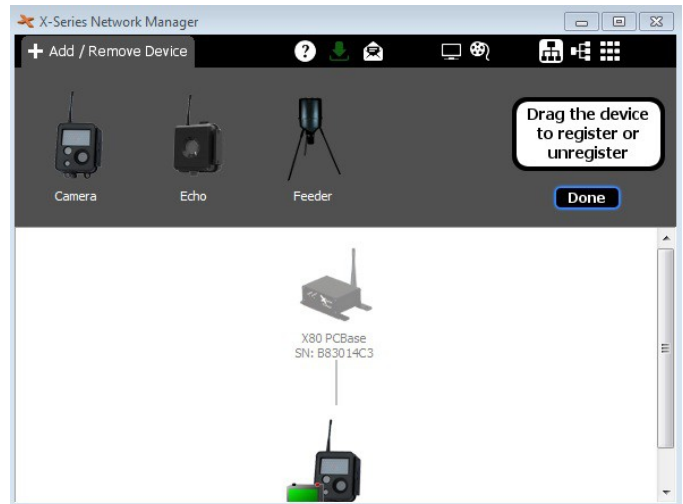
Drag the camera icon and drop it into the network view.



## 7. Register Cameras

Register  
7

Repeat for all cameras.  
Click *Done* when finished.



Register  
8

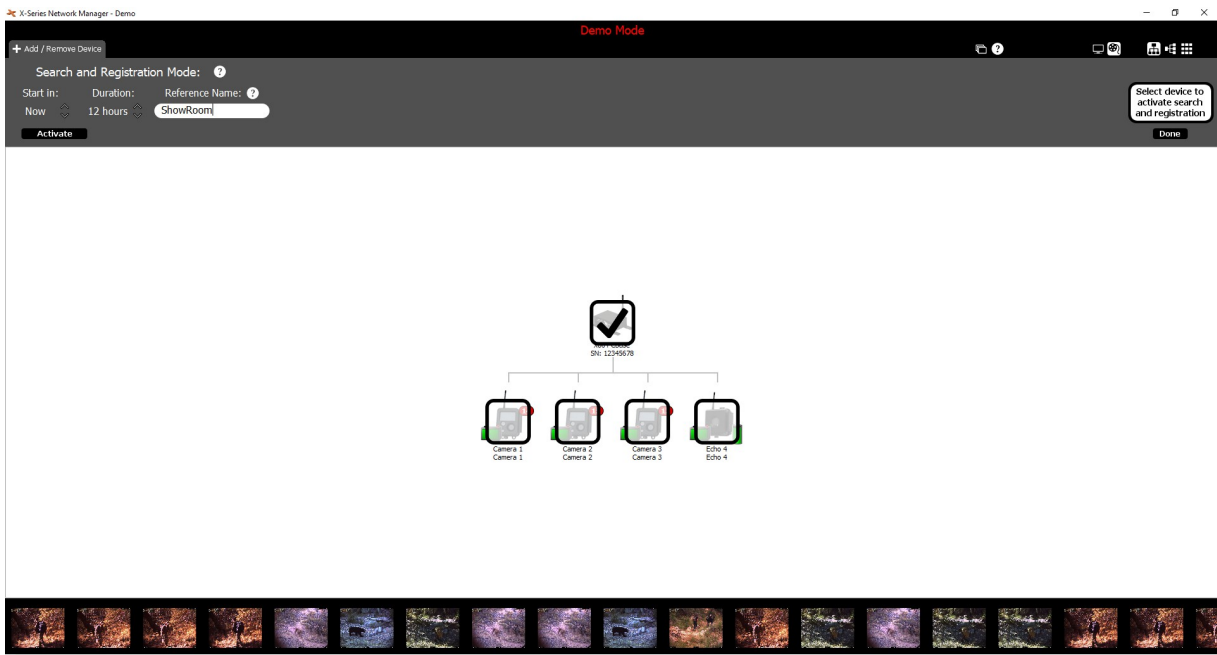
A second option to register the camera is through the X80 Remote App with remote registration.

To allow Remote Registration open the *X-Series Network Manager* and click *Add/Remove Device*.

On the right hand side of the screen, click the “**More...**” button (shown on the right).



The screen below will appear. Here you can set the Duration and give a Reference Name. Put a checkbox on the device/devices that you want to activate Search and Registration on and then Hit the “**Activate**”.

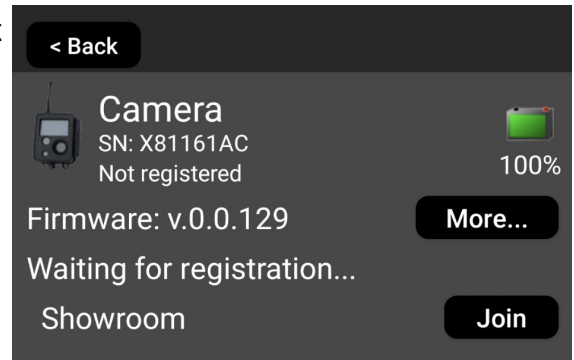




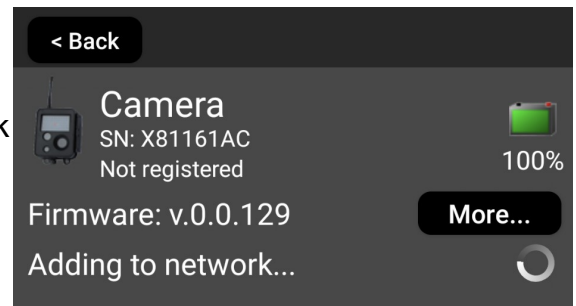
## 7. Register Cameras

Open the X80 Remote App in the field to remote register a device.

When a camera is unregistered in the app, it searches for networks that it could join. This process can take a few minutes. If it finds a network (that was enabled through X-Series Manager Software) , it will be displayed on the screen with a “Join” button. In the example image on the right, the network “Showroom” was found.



If you find a network that you would like to join, click the “Join” button. You will see the “Adding to Network...” message appear. Do not close the app while the adding to network is displayed. Once the camera has been added, the App will close. You can reopen the app and you should now see the camera as registered in the app.

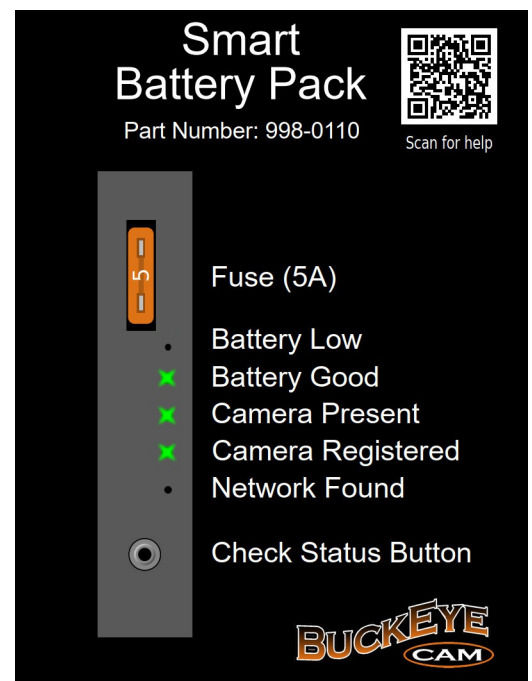


Check to make sure camera is registered.

### To check Using the Smart Battery Pack:

If the camera **IS** registered you will see the LED indicators in a configuration similar to the one the right.

Notice: The LED for “Camera Registered” is illuminated.



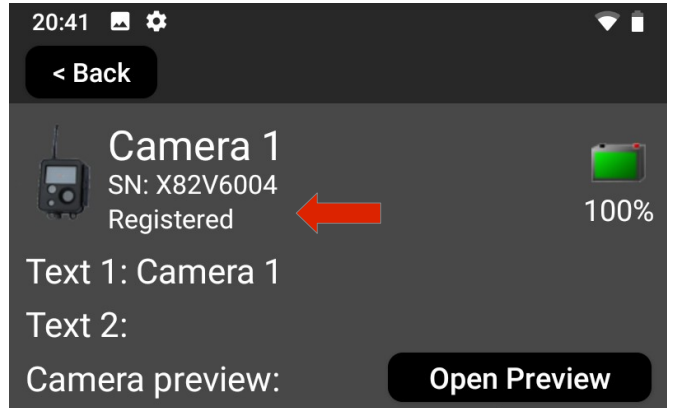


## 7. Register Cameras

### To check Using the App:

Open the X80 Remote app and make sure you are in range of camera (for more information on downloading and using app refer to chapter 12).

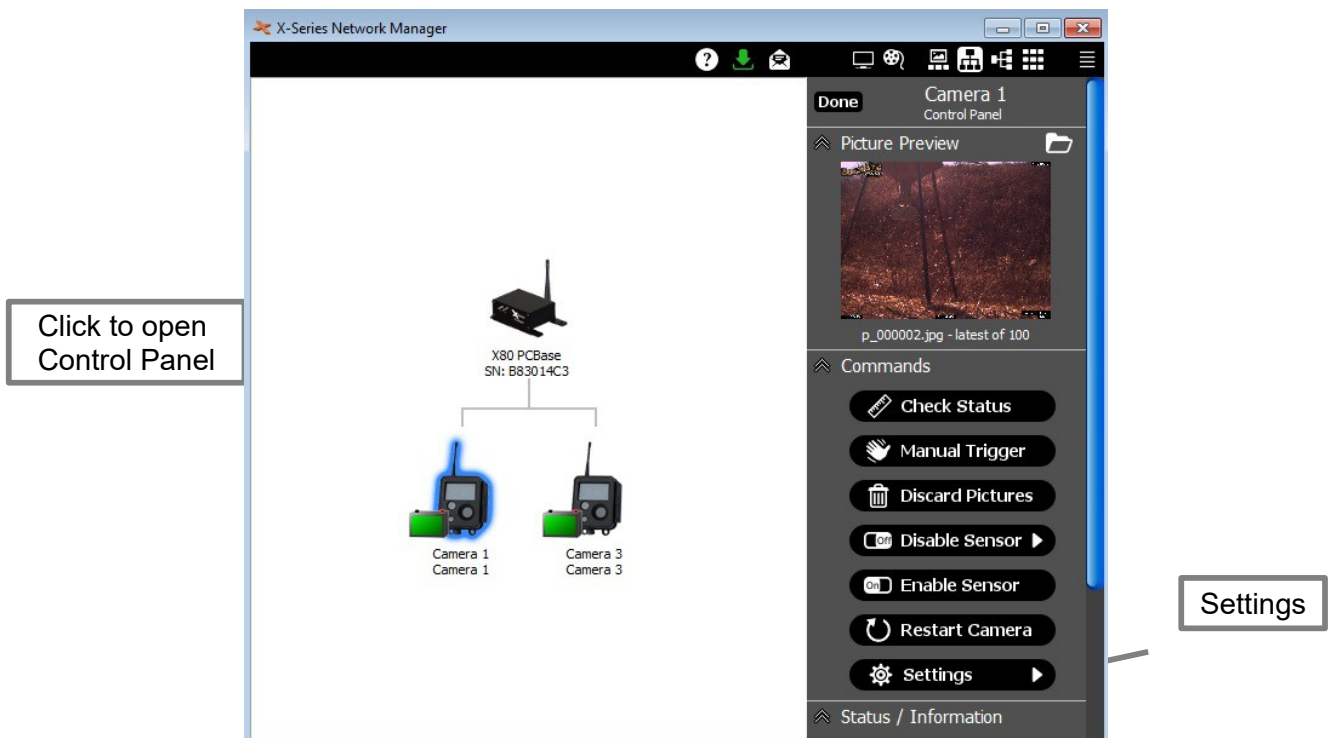
If the camera **IS** registered you will see an image similar to the one on the right.



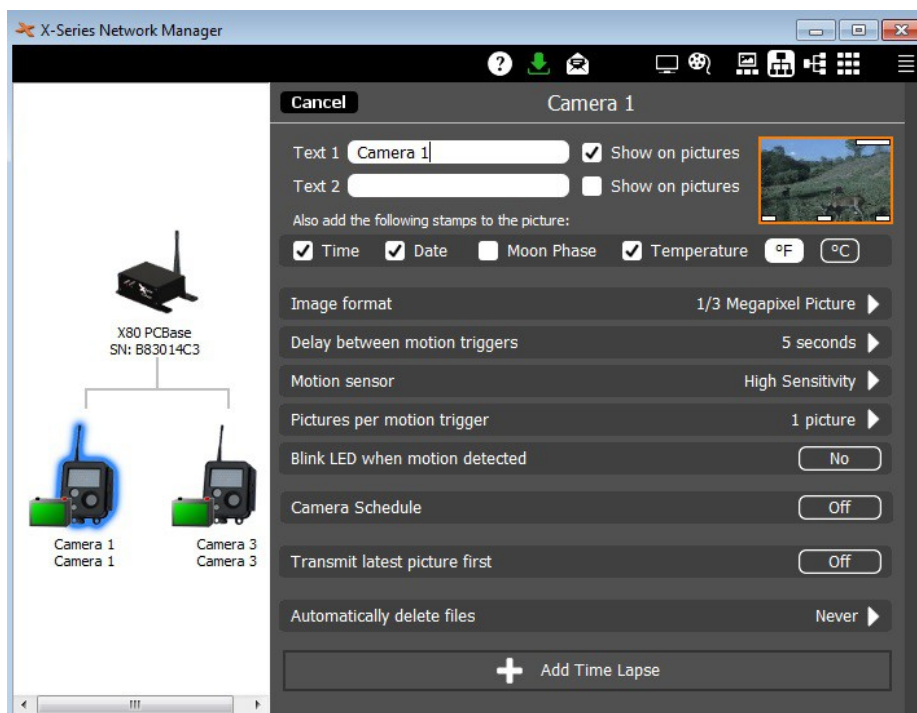
## 8. Camera Settings

### 8. Camera Settings

To access the camera settings for any camera, click on the camera icon in the network view to open the camera *Control Panel*.



Click on the *Settings* button from the camera *Control Panel*. ( Note: The *X-Series Network Manager* window is re-sizable. If you do not see the *Settings* button, you may need to use the scroll bar on the right side of the window to scroll down. )



## 8. Camera Settings

### Stamps on pictures

Time, Date, Moon Phase, and Temperature may be added to pictures by checking the appropriate box. Custom text may be entered in the Text 1 and Text 2 fields. This text may be added to pictures by checking the box next to each field.

### Image format

Click on the arrow to select the image format. Select the picture resolution – or video.

### Delay between motion triggers

Click on the arrow to select the delay between motion triggers. If a camera receives a motion trigger, it will not respond to another trigger until the delay time has elapsed.

### Motion sensor

Click on the arrow to select the motion sensor sensitivity. To disable the motion sensor, set the sensitivity to Off.

### Pictures per motion trigger

Click the arrow to select the pictures per motion trigger value. When the value is set to 1, the camera will take 1 picture each time it is triggered. To take multiple pictures with each trigger, set the value greater than 1. For example, if the value is set to 3, the camera will take 3 pictures, as fast as possible, each time it is triggered.

### Blink LED when motion detected

Click the Yes/No toggle button to enable or disable a blinking LED when the camera detects motion. This is a visible red LED on the front of the camera. It is very useful for doing a “walk test” in front of the camera to verify that it is triggering correctly. (Note: If camera concealment is important, this option should be set to No after the camera is installed in the permanent location.)

### Camera schedule

Click the On/Off toggle button to turn the camera schedule on or off. Using the camera schedule, the camera may be disabled at certain times of the day, or use different settings a different times of the day.

### Transmit last picture first

Click the On/Off toggle button to turn on “transmit last picture first”. This setting controls how the camera transmits pictures when there is more than one picture waiting to be transmitted. If this button is set to Off, the pictures will be transmitted in the order they were taken. If it is set to On, they are transmitted latest picture first.

### Automatically delete files

Click the arrow to change this setting. This can be used to have *X-Series Network Manager* automatically delete pictures from your computer after a certain period of time. If it is set to Never, *X-Series Network Manager* will never delete pictures from your computer.

### Time Lapse

Click the Add Time Lapse button to setup a time lapse schedule.

## 9. Camera Installation

### 9. Camera Installation

Install

1

#### Attach camera to a solid structure.

The supplied spring buckle strap may be used to attach the camera to a tree, vertical post, or other solid structure.

Alternatively, it may be attached with a screw or nail using the hole in the top of the mounting bracket.

The best height for the camera will depend on the primary target of interest. Usually, the camera should be placed at about the height of the center of mass of the primary target of interest.

For maximum motion trigger distance, the face of the camera should be perpendicular to the ground.

If maximum motion trigger distance is not critical, the camera may be placed at an angle.



Install

2

#### Connect battery pack.

If you have not done so already, install the battery (see Chapter 13).

The supplied spring buckle strap may be used to attach the battery pack to the same solid structure as the camera.

It may also be attached with a screw or nail using the hole in the top of the bracket.

Alternatively, the battery pack may be placed on the ground. This may make it easier to conceal.

The battery pack is watertight, however it should not be submerged.

Once the battery pack is in place, connect it to the camera with the supplied cable.



## 9. Camera Installation

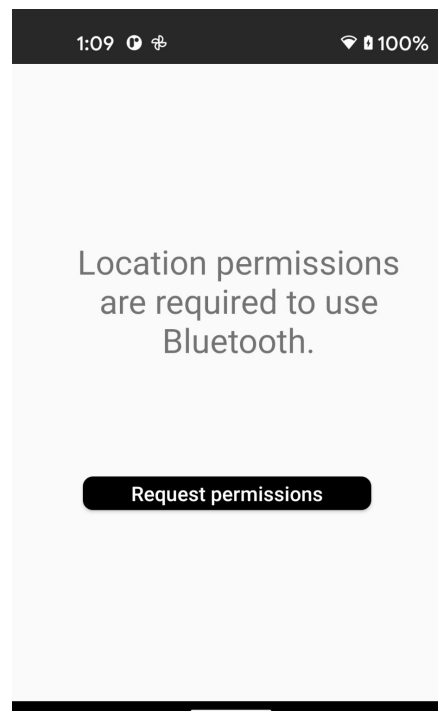
Install  
**3**

Make sure the Base is installed and powered up and the camera is registered (i.e. PC Base, Cell Base, Net Base, or Camera Base).

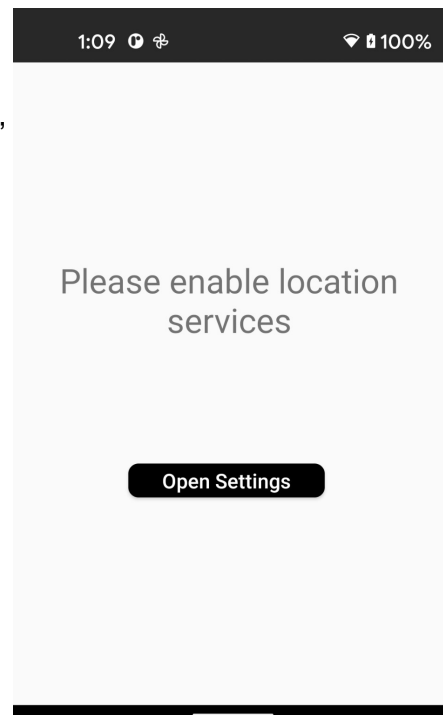
Install  
**4**

Open the X80 Remote App on your Android or IOS Device:

If you do not have location services or Bluetooth allowed for the app, this screen will appear. When you select the “Request Permissions” button, a popup question “Allow X80 Remote Access?” will appear. Select “**While Using the App**” to give access to the App.



If you deny or there is some problem the following screen will appear. From this screen you must click the “Open Settings” button. This will take you to your settings for the app. Click on the “Permissions” button. This will show you what permissions you have allowed and denied for the app. Click “Location” which should be under a Denied tab. Click the “**Allow only while using the App**” button to give access to the app.

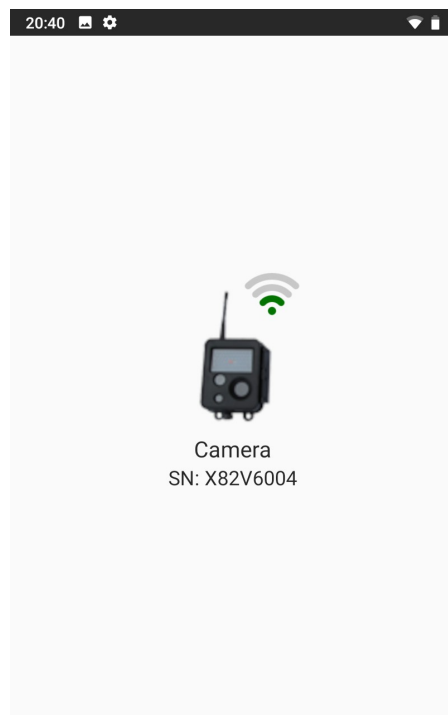


## 9. Camera Installation

If you are in Bluetooth range of the camera and have allowed the location and Bluetooth services, you should see the camera appear on the screen.

If you see the message: “No X80 Devices Found” you are not in the low-power Bluetooth range of the camera and need to get within 20 ft of the camera.

After you see the camera appear on the screen, tap on the camera icon.

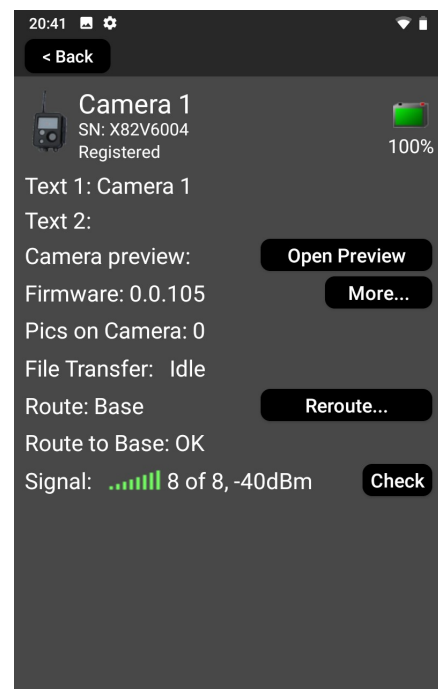


Tapping on the camera icon will take you to the main control screen where you can view the camera status.

You can reroute your camera to available devices on your system using the “**Reroute...**” button.

The “**Open Preview**” button allows you to see pictures and complete a “walk test” and see the result right on your phone. More on this in Section 5.

You can check the signal of the camera to the base or repeater by using the “**Check**” button. If the camera cannot get a signal to the Base, you can try moving it to a different location. If that is not an option, refer to *Chapter 10, Antennas* and *Chapter 11, Repeaters*.



Transmission distance may be up to 1-2 miles line-of-sight using the standard antennas. This distance may be reduced if there are obstructions between the camera and the Base.



## 9. Camera Installation

Install

5

Do a “walk test”.



One key feature of the X80 Remote app is the ability to easily see the results of the walk test on the app.

### To Perform a Walk test:

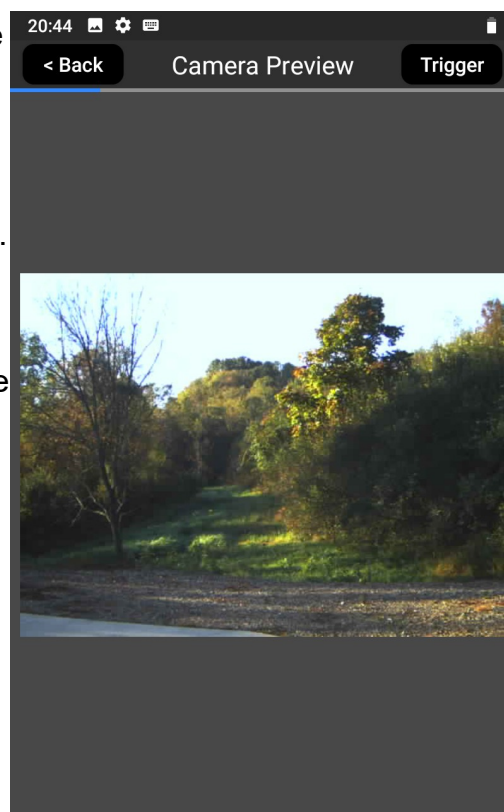
First, Click the **Open Preview** button to activate the camera preview mode. This puts the camera in preview/ walk test mode.

A screen very similar to the one shown on the right will appear when in camera preview mode. You can now walk in front of the camera and test the motion sensor. A red LED indicator on the front of the camera will blink when the motion sensor is triggered and the image will be transmitted to the app.

You can also click the **“Trigger”** button to manually trigger the camera and the image will be taken and transmitted to the app.

You can adjust the mounting angle of the camera until the image field of view is as desired image is taken.

To exit camera preview mode (walk test mode) simply click the back button which will take you back to main control panel.



## 9. Camera Installation

Install

6

Repeat these steps for all cameras.

**Note:** The X80 Remote App may be installed on any Android or IOS mobile device, or you may purchase the optional Ruggedized Handheld Interface from [buckeyecam.com](http://buckeyecam.com)





## 10. Antennas

### **10. Antennas**

The standard antennas provided with X80 cameras are small omnidirectional antennas that attach directly to the camera. The type of wireless transmission used is radio frequency (RF) line-of-sight. Generally speaking, this means that you need to have a limited amount of obstructions between the transmitting and receiving devices in order to get an acceptable transmission signal.

Standard antennas WILL transmit through:

- Most types of trees
- Wood frame walls

Standard antennas WILL NOT transmit through:

- Think pine trees (conifers)
- Metal buildings or structures
- Earth or large hills

For many applications, the standard antennas will work well. The transmission distance with standard antennas may be up to 1-2 miles under ideal conditions (i.e. very few obstructions).

For applications where a good signal to the Base cannot be obtained using the standard antennas, two options are available: high gain antennas and/or using cameras as repeaters. This chapter will discuss high gain antennas.

Two types of high gain antennas are available: omnidirectional and directional (Yagi).

#### **High Gain Omnidirectional Antennas**

- Transmit and receive equally in all directions (i.e. 360°)
- Should be mounted vertically.
- Mount high to avoid obstructions

#### **Typical Uses for Omnidirectional Antennas**

- Base antenna (typically, 40" Omni)
- Repeater camera antenna (26" Omni)

#### **High Gain Yagi (Directional) Antennas**

- Transmit and receive mostly in one direction
- Should be pointed at the receiver
- Mount high to avoid obstructions
- Provides the highest gain

#### **Typical Uses for Yagi (Directional) Antennas**

- Camera antenna for improved signal (Mini Yagi)
- Camera antenna for very long distances (56" Yagi)
- Camera antenna when transmitting through trees or brush

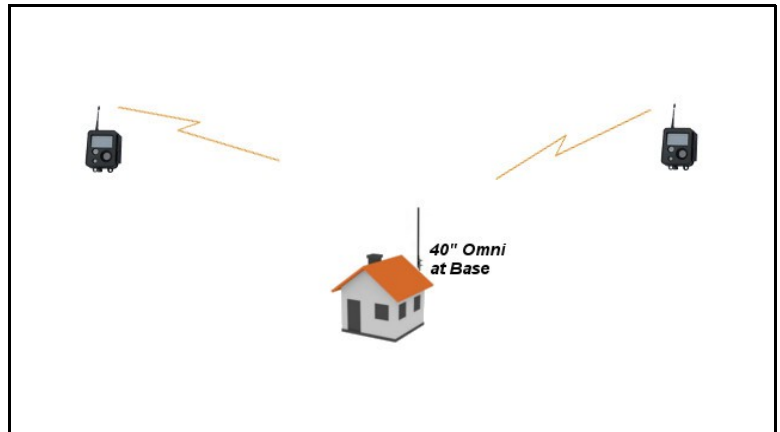


## 10. Antennas

The following illustrations show examples of the most common antenna setups. Transmission distances may vary due to many factors such as, terrain, trees, brush, or various types of radio frequency interference.

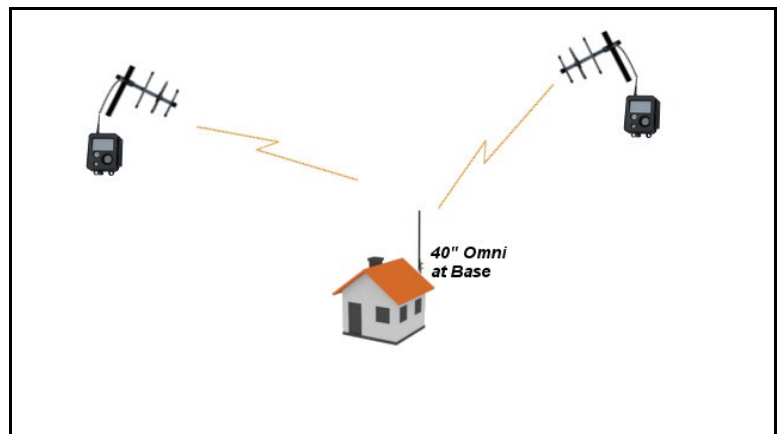
### 40" Omni at Base, Standard at Cameras

- Most common antenna upgrade
- Mount Omni as high as possible
- Use 400 series cable
- Typical transmission range up to 2 miles



### 40" Omni at Base, Yagi at Cameras

- Mount Omni as high as possible
- Use 400 series cable
- Mini Yagi or 56" Yagi at cameras
- Point Yagi antennas to the Base



It may be possible to increase transmission distance to many miles. This will usually require an advanced antenna setup. For assistance in selecting the right antenna for your application, contact Buckeye Cam at [www.buckeyecam.com](http://www.buckeyecam.com) or by phone at 866-325-8172.



**Installing antenna masts may present a serious life threatening risk due to potential falls or contact with power lines. Installation should only be done by a qualified professional in accordance with all appropriate codes.**

## 11. Repeaters

### 11. Repeaters

Any X80 camera can act as a repeater camera. This feature is very useful for extending transmission distance or transmitting over large hills or obstacles.

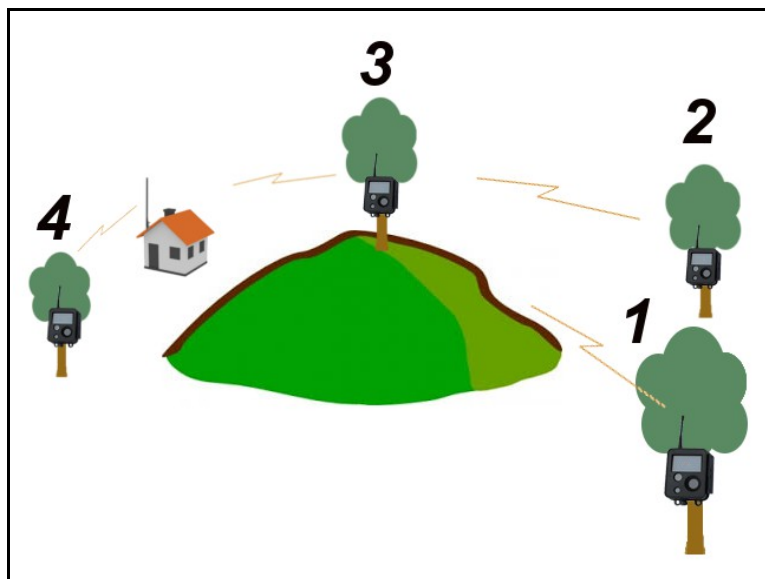
#### Transmit over hills using a repeater.

In this example, camera 1 and camera 2 cannot get a signal to the Base due to a large hill blocking the line-of-sight.

Camera 3 has a clear line-of-sight to the Base and is able to get a good signal, so camera 1 and camera 2 are routed through it.

Camera 3 receives all of the images from camera 1 and camera 2 and transmits them to the base (it also acts as a normal camera).

Camera 4 transmits directly to the Base.



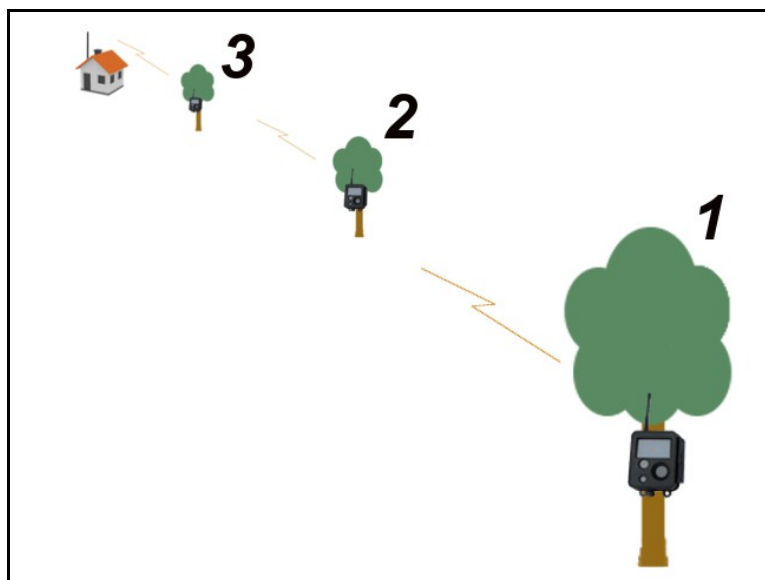
#### Extend transmission distance using repeaters.

In this example, camera 3 can get a good signal to the base. Camera 2 and camera 1 cannot get a signal to the base because they are too far away.

Camera 2 can get a signal to camera 3, so it is routed through camera 3.

Camera 1 can get a signal to camera 2, so it is routed through camera 2.

Camera 3 receives all of the images from camera 1 and camera 2 and transmits them to the base (it also acts as a normal camera).



#### Notes on using cameras as repeaters

- Repeating through cameras will cause some transmission delays.
- When a camera is acting as a repeater, it can still function as a normal camera.
- If a camera has multiple cameras routed through it, upgrading the antenna to a high-gain Omnidirectional antenna may improve performance (see *Chapter 10, Antennas*).

## 11. Repeaters

### Setting up a repeater network with multiple cameras

Repeaters

1

**Install cameras in their permanent location**

Repeaters

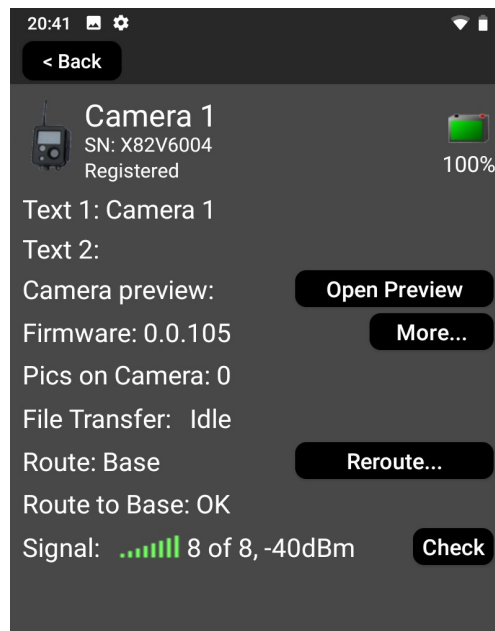
2

**Open the X80 Remote App and check signal to the Base (see *Chapter 9, Camera Installation*).**

Click the “**Check**” button on the main control window of the app for the camera. If you are interested in rerouting the camera, proceed to step 3.

For best results, route cameras directly to the base when possible.

**To setup a repeater network, there must first be at least one camera that can get a signal directly to the base.**



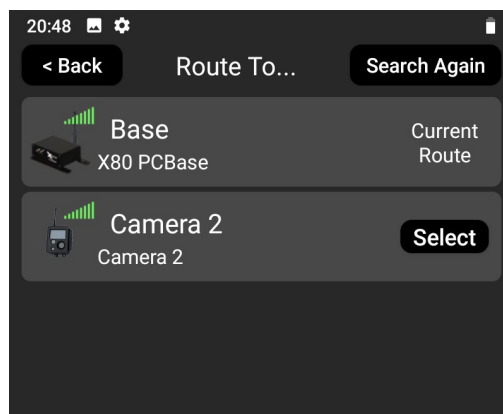
Repeaters

3

**To change the routing click the “Reroute..” button (see *Chapter 9, Camera Installation*).**

When the “**Reroute..**” button is clicked, a screen similar to the image on the right is displayed. This screen shows other devices on the network that you can route through and their signal strength. It also shows which device that camera is currently routed to.

If you believe that there are other cameras that are in range that are not listed on the screen, you can click the “**Search Again**” button to search for those camera again.



Repeaters

4

**Click the “Select” button to change the routing.**

Clicking the “**Select**” button will change the routing. After routing is changed you will see the *Current route* label change to the new route you have selected.

## 12. The X80 Remote App For Android and IOS(iPhone)

App

1

### Finding the app from the appropriate app store.

For Android users: Go to Google Play store and Search for X80 Remote App or scan the following QR Code with your mobile device.



For Iphone(IOS) users: Go to App store and Search for X80 Remote App or scan the following QR Code with your mobile device.



App

2

### Download and installing the app.

After finding the app on the appropriate app store, download and Install the app to your mobile device or tablet.

App

3

### Make sure that the camera's Bluetooth is enabled.

There are three ways ensure that the cameras Bluetooth is enabled:

1. **Turn the Bluetooth setting in the X-Series Network Manager software to always on**

Navigate to the Bluetooth enabled setting and turn to always on. This will ensure that the camera's Bluetooth module is always on and able to talk to



the app. If this setting is on, you do not have to do part two because the module will always be on.

2. **Wake up the camera's Bluetooth temporarily by selecting the check status button on Smart Battery Pack.**

Remove the lid of the battery pack and press the check status button on the Smart Battery Pack. This will wake up Bluetooth for 5 minutes.

3. **Power Cycle the camera.**

If using older style battery boxes, unplug the camera and then plug it back in. This will cause the Bluetooth to wake up in the camera. **NOTE: This will cause any pictures waiting to be transmitted to be lost.**

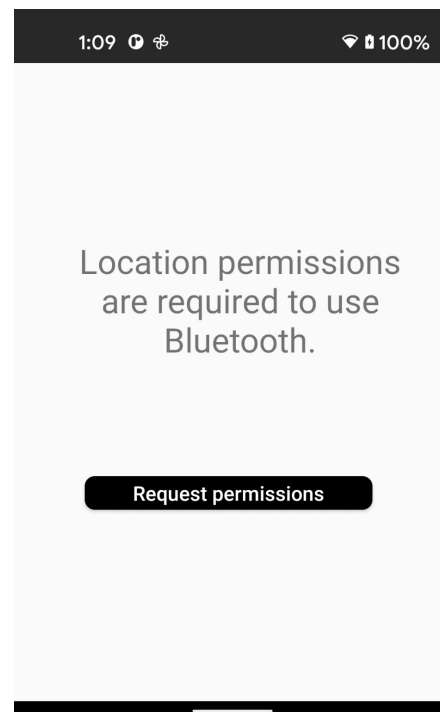
## 12. The X80 Remote App For Android and IOS(iPhone)

App

4

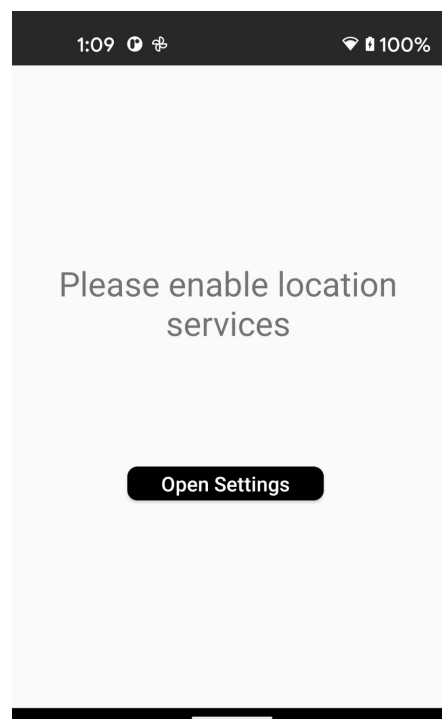
### Opening the X80 Remote app

If you do not have location services or Bluetooth allowed for the app, this screen will appear. When you select the “Request Permissions” button, a popup question “Allow X80 Remote Access?” will appear. Select “**While Using the App**” to give access to the App.



If you deny or there is some problem the following screen will appear. From this screen you must click the “Open Settings” button.

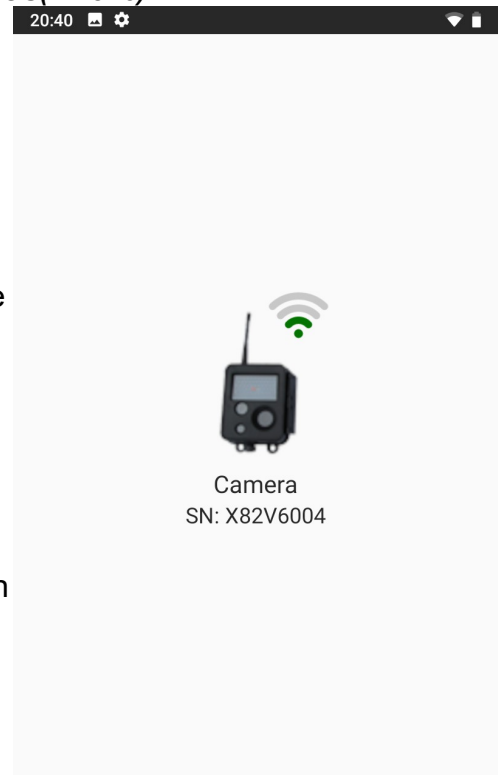
This will take you to your settings for the app. Click on the “Permissions” button, this will show you what permissions you have allowed and denied for the app. Click “Location” which should be under a Denied tab. Click the “**Allow only while using the App**” button to give access to the app.



## 12. The X80 Remote App For Android and IOS(iPhone)

When you open the X80 Remote app and have allowed the permissions, the first screen you see will show you which camera(s) are in Bluetooth range. If there are more than one, they all will be displayed. In the example to the right there is one camera in range. If no cameras are in range you will see **“No X80 devices are found”**. If you see this message make sure:

1. Your Bluetooth on you phone is enabled.
2. Make sure camera Bluetooth is enabled.
3. Walk closer to device to ensure that you are in range.



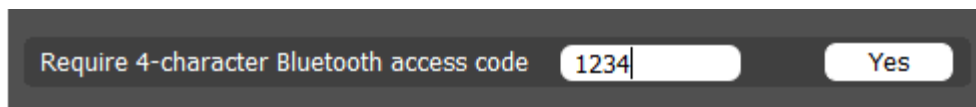
App

5

### Opening up the main control window for the camera

To open up the main control window for a camera you just simply tap on the camera icon you would like to open.

Note: If you have enabled the optional Bluetooth password setting in the X Series Network Manger software you will be prompted to enter that password before accessing the main control window for the camera.



**If you forget the password, you can press the Check Status button on the smart battery pack or power cycle to allow temporary access to the camera without needing the password.**

After tapping on the camera(and entering access code if needed) the main control panel will appear for that camera.

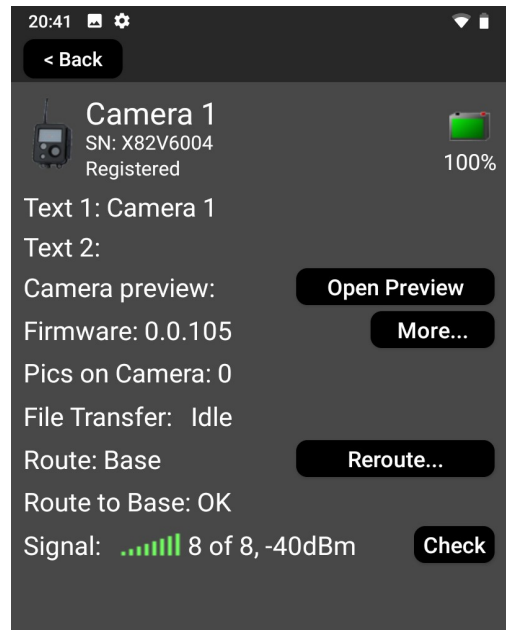
## 12. The X80 Remote App For Android and IOS(iPhone)

### Camera Registered vs Unregistered main control window

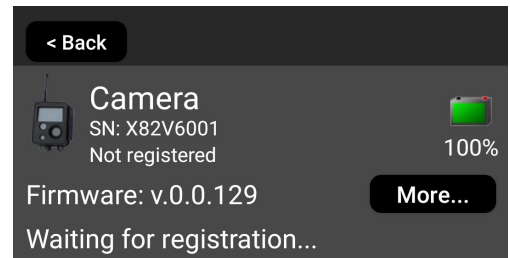
App

6

If the camera has already been Registered, a screen similar to the the one on the right will be be displayed.



If the camera is unregistered it will display a screen similar to the one on the right. You will need to register the camera to a network to interact with it on the app( for more information on registration visit chapter 7).





## 12. The X80 Remote App For Android and IOS(iPhone)

### Camera Preview and Walk Test

App

7



One key feature of the X80 Remote app is the ability to easily see the results of the walk test on the app. In Camera Preview mode the camera will send images directly to the app for immediate viewing instead of the base.

#### To Perform a Walk test:

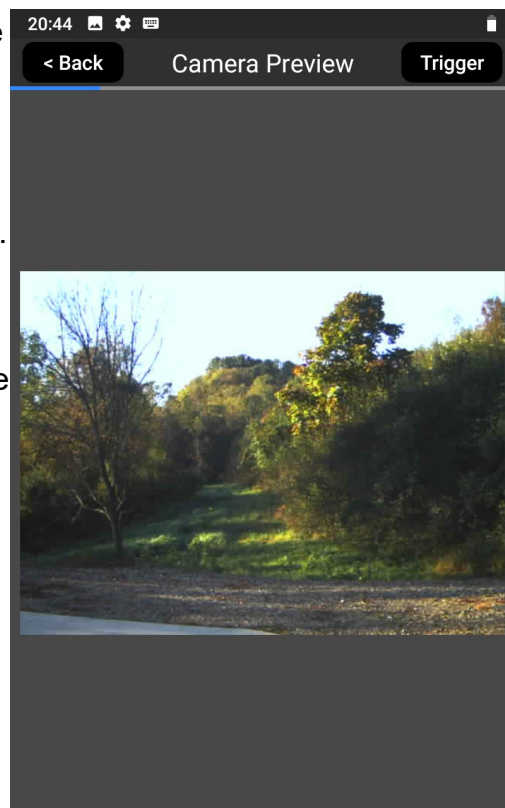
First, Click the **Open Preview** button to activate the camera preview mode. This puts the camera in preview/ walk test mode.

A screen very similar to the one shown on the right will appear when in camera preview mode. You can now walk in front of the camera and test the motion sensor. A red LED indicator on the front of the camera will blink when the motion sensor is triggered and the image will be transmitted to the app.

You can also click the **“Trigger”** button to manually trigger the camera and the image will be taken and transmitted to the app.

You can adjust the mounting angle of the camera until the image field of view is as desired image is taken.

To exit camera preview mode (walk test mode) simply click the back button which will take you back to main control panel.



## 12. The X80 Remote App For Android and IOS(iPhone)

App

8

### Routing your camera

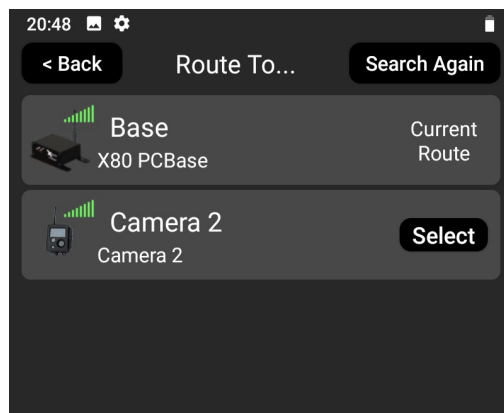
On the main control window for a camera you can see where the camera is currently routed. In the example below the camera is routed to the base and says “Route : Base” indicating that it is routed to the base.



Route: Base Reroute...

To change the Routing of a camera, press the “**Reroute...**” button.

When the “**Reroute..**” button is clicked, the “Route to ..” screen is displayed. This screen shows other devices on the network that you can route through and their signal strengths. It also shows which device that camera is currently routed to.



To perform a reroute just simply hit the “**Select**” button the device you want to reroute to. This will take you back to the main control window for the camera and you will see the route information change.

If you believe that there are other cameras that are in range that are not listed on the screen, you can click the “**Search Again**” button to search for those cameras again.

**When possible, routing directly to the base is preferred.**

App

9

### Checking camera's firmware versions

You can see the camera's firmware version listed in the main control window.



Firmware: 0.0.105 More...

## 12. The X80 Remote App For Android and IOS(iPhone)

App

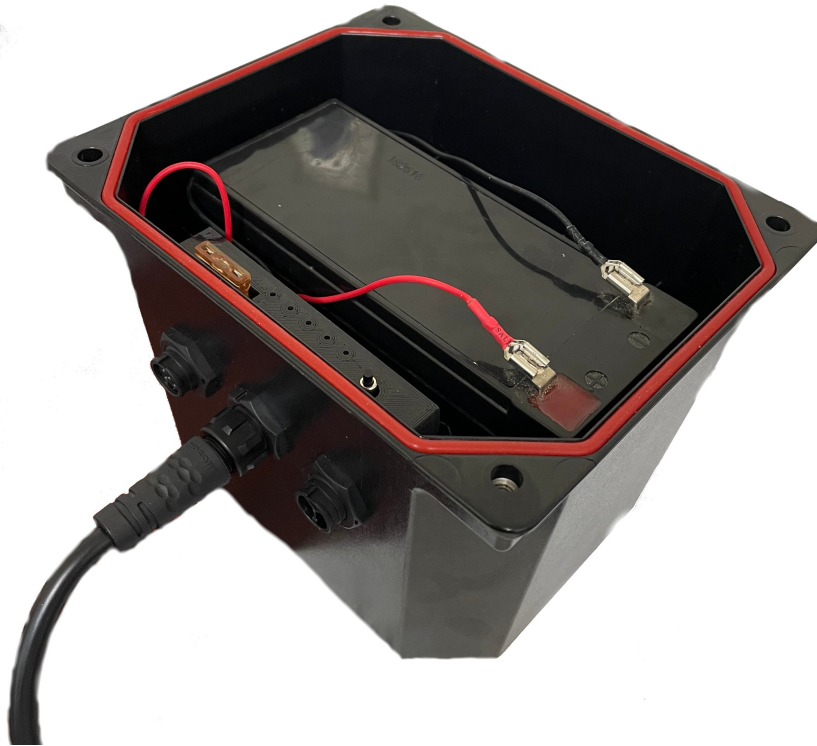
10

### Checking camera's signal

To check a cameras signal simply press the “**Check**” button on the main control window. This will show you the signal strength and gain from the camera to the base/ device it is currently routed to.

Signal:  8 of 8, -49dBm

**13. Smart Battery Pack**



Battery Pack

**1**

**Battery Installation**

Install a UB1290 or equivalent battery into the smart battery pack. The red wire connects to battery (+). The black wire connects to battery (-).

Battery Pack

**2**

**Installing the battery pack on site.**

There are two main options when installing the battery pack on site:

1. Placing the battery pack on the ground
2. Attaching the battery pack to tree or pole with the included bracket on bottom of battery pack.

If attaching to tree or pole, you can use either the included spring buckle strap or use a screw through the hole in the included bracket.

Battery Pack

**3**

**Connecting Smart battery Pack to Camera**

Using the supplied cable, connect the middle connector of the battery pack to the camera.

Battery Pack

4

### Using the LED Indicators

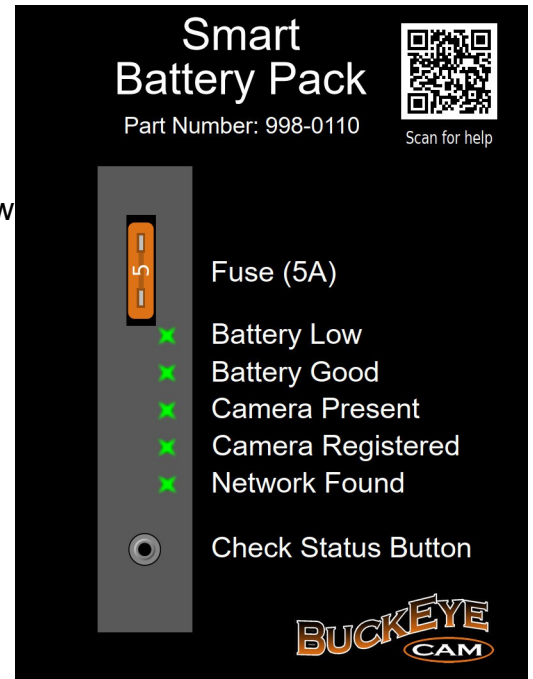
On the lid of your smart battery pack there will be a sticker like the one shown on the right.

Press the “Check Status Button” and after a few seconds the LED's will light up in some configuration based off of the battery level, if the camera is present, if the camera is registered, and if a network has been found.

After the LEDs are illuminated you can refer to the sticker on your lid(also shown on the right) to understand the state of your camera and trouble shoot any problems.

NOTE: If the LED is illuminated then that means the statement to the right of the LED on the sticker is true.

For Example: The camera battery is good but the camera is not registered, the LED for “Battery good” would be illuminated and the LED for the “Camera Registered” would not be illuminated.



Battery Pack

5

### The Check Status Button

As mentioned above, the check status button can give some very useful information on the LED indicators. **It also has the very important feature of temporarily turning on the Bluetooth for your camera.** If the Bluetooth always on setting for a camera has not been turned on in the X-Series network Manager, then you will have to press the check status button to enable the Bluetooth on camera in order for it to be visible on the app.

Battery Pack

6

### Special light pattern when smart battery pack is updating firmware

When the smart battery pack is doing a firmware update and you press the check status button, you will see a “dancing light” pattern. The pattern will be will alternate between 3 LED's on & 2 off and 2 LED's on and 3 off. If you see this pattern wait a few minutes and then press the check status button again to see if the battery pack is still updating its firmware. Continue this until the firmware update has been completed. Once Completed, pressing the check status button will resume normal operation and not show a “dancing light” pattern.



## Installing Solar Panels

Adding a solar panel can greatly extend the battery life of your camera under the right conditions.

There are two main options when installing the a solar panel on site:

1. Placing the solar panel on the ground
2. Attaching the solar panel to tree or pole using the supplied solar panel mounting bracket. This bracket can be screwed into the tree/pole or secured through the spring buckle strap.



After installing the Buckeye Cam approved solar panel, connect it to the connector on right side of battery box (shown in red circle in image above) with the supplied cable.



Please visit:

<https://store.buckeyecam.com/accessories/batteries-and-chargers/solar-panels/>

to view our entire line of solar panels.

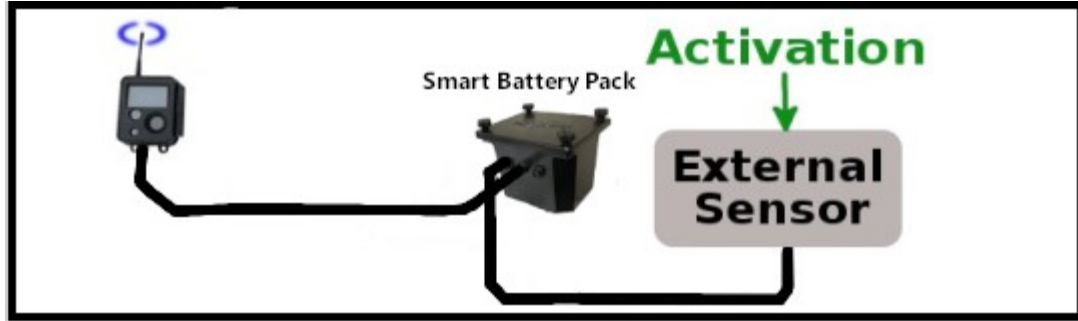
**NOTE: Connecting a solar panel from another manufacturer could result in damage of the Battery Pack.**

**Battery  
Pack**

**8**

**Installing a external trigger device**

In the future the smart battery pack will allow external devices to trigger the X80 cameras. This feature allows a camera to be triggered by various types of sensors in addition to the motion detector (i.e. seismic, magnetometer, pressure pad, etc.).





## 14. Camera Technical Specifications

### 14. Camera Technical Specifications

The X80 camera contains a 5 Megapixel image sensor. When the camera is triggered by motion, a picture or video is immediately taken. If there is enough available light, the camera will take color images. If there is not enough available light, a black and white infrared image will be taken.

For infrared images, the scene is illuminated with an infrared flash that is invisible to the human eye.

The parts of the camera are shown below:

1. Antenna
2. Infrared flash
3. Images sensor
4. Light sensor
5. Motion detector
6. Latch
7. Battery connector



The camera may be opened using the latch, to access the status display and control panel buttons. If battery power is properly connected, pushing any button will activate the status display.

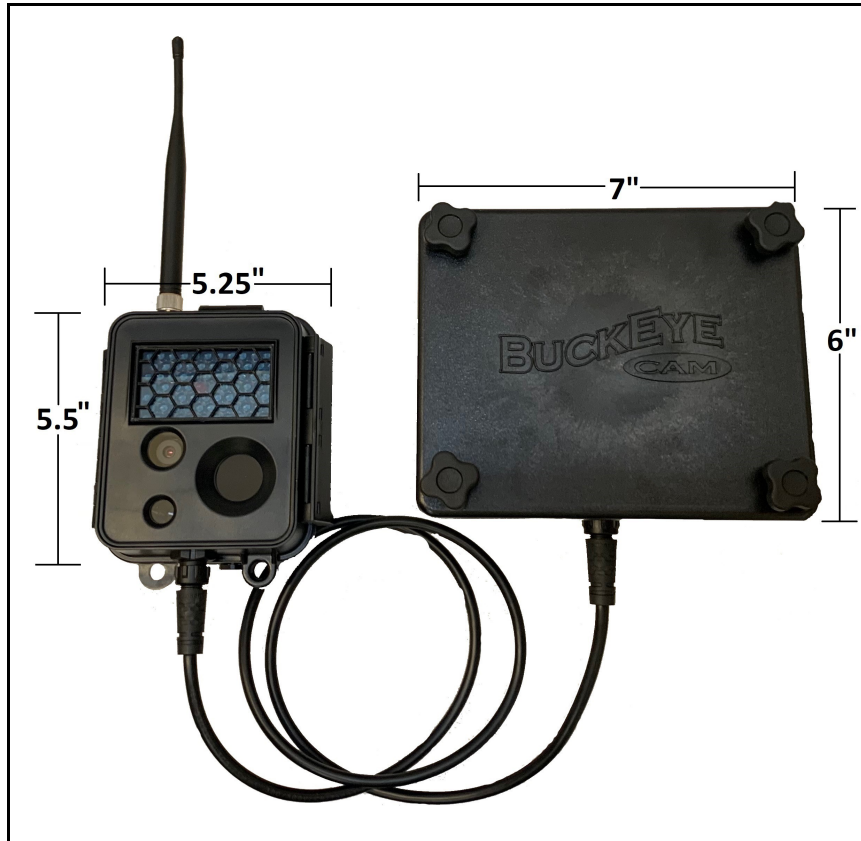
**The camera is watertight when the latch is closed and sealed properly. However, when the camera housing is opened it is NOT watertight. The camera should not be opened when it may be exposed to rain, snow, or other sources of water.**

Power is supplied to the camera from an external battery pack. The battery pack contains a 12 Volt sealed lead-acid type battery.

The camera and battery pack are watertight and weatherproof when the latches are closed and sealed properly.

The standard color of the camera and battery pack is matte black. Optional camo finishes are available in both desert and woodland patterns.

#### 14. Camera Technical Specifications



## 14. Camera Technical Specifications

Camera Specification Table <sup>1</sup>

Picture Format	User Selectable. 5 Megapixel (Mp), 3 Mp HD, 3Mp 1080 HD, 1 Mp, 720 HD, 0.3 Mp
Video Format	640 x 360 pixels
Video Frame Rate	Up to 15 frames per second.
Video Length	5 to 60 seconds.
Motion Detector Type	Passive Infrared (PIR)
Motion Detector Range <sup>2</sup>	User adjustable. Up to 100 feet
Motion Detector Detection Angle <sup>3</sup>	Approximately 10 degrees
Reaction Time <sup>4</sup>	0.2 Seconds
Delay Between Pictures	User selectable. 1 second to 2 hours.
Stamps on Picture	User selectable. Date, Time, Temperature, Moon Phase, and 2 custom text fields.
Additional Optional Settings <sup>5</sup>	Custom camera schedules. Time lapse photography. Pictures or video emailed or uploaded to secure LiveCam Web-site.
RF Transmission Range <sup>6</sup>	Up to 2 miles with standard antennas. Up to 30 miles with high-gain antennas and/or repeaters
Transmission Speed <sup>6</sup>	Up to 8 kilo bytes per second (Approx. 6 sec for 0.3Mp picture)
Maximum allowable antenna gain	15.1 dBi (including cable losses)
Number of Cameras Assigned to One Base	Up to 254
Operating Temperature	-40 to 140 F
Battery Type	12V SLA UB1270 sold separately
Supply Current (Typical) <sup>7</sup>	3 mA when in low power sleep mode (i.e. no activity) 60 mA when transmitting 40 mA during 20 second idle state after transmission 2 A when IR flash is on
Solar Panel	Optional solar panels sold separately
Communication Frequency Band	902 to 928 MHz, software selectable channel mask for interference immunity
Transmitter Output Power	Up to 250 mW
Spread Spectrum	FHSS
Regulatory Approvals	
FCC (USA)	MCQ-XB900HP
IC (Canada)	1846A-XB900HP
C-Tick (Australia)	Yes
Anatel (Brazil)	Pending
RF Encryption	AES-128

<sup>1</sup> Specifications are subject to change and may not be available in all firmware or software versions.

<sup>2</sup> Motion detector range may be affected by camera mounting angle and ambient temperature.

<sup>3</sup> Approximately the center of camera field of view.

<sup>4</sup> Time from the moment motion is detected until the picture (or video) is captured.

<sup>5</sup> An optional LiveCam account requires a paid subscription.

<sup>6</sup> Transmission range and speed will depend on the type of antennas that are used and the surrounding terrain.

#### **14. Camera Technical Specifications**

<sup>7</sup> Average supply current will vary depending on the number of images taken, signal strength, IR usage, etc..

### 3. PC Base Technical Specifications

### 3. PC Base Technical Specifications



PC Base Specification Table <sup>1</sup>

Environmental Requirements	Indoor use only, ambient temperature 32 to 140F
Power Requirements	Less than 500 mA, powered from USB connection
Approximate Dimensions (inches)	2.5 x 1.5 x 2.25
RF Transmission Range <sup>2</sup>	Up to 2 miles with standard antennas. Up to 30 miles with high-gain antennas and/or repeaters
Maximum allowable antenna gain	15.1 dBi (including cable losses)
Communication Frequency Band	902 to 928 MHz, software selectable channel mask for interference immunity
Transmitter Output Power	Up to 250 mW
Spread Spectrum	FHSS
Regulatory Approvals	
FCC (USA)	MCQ-XB900HP
IC (Canada)	1846A-XB900HP
C-Tick (Australia)	Yes
Anatel (Brazil)	Pending
RF Encryption	AES-128

<sup>1</sup> Specifications are subject to change and may not be available in all firmware or software versions.

<sup>2</sup> **Transmission range and speed will depend on the type of antennas that are used, the surrounding terrain and amount of interference received.**

## 14. Cell Base Technical Specifications

### 14. Cell Base Technical Specifications



Cell Base Specification Table <sup>1</sup>

Environmental Requirements	Enclosure is watertight and weatherproof when latched. Operating temperature -40 to 140F
Power Supply (for indoor use)	AC/DC wall adapter <sup>2</sup>
Power Supply (for outdoor use)	12 Volt 27DP-DL marine battery (or equivalent) <sup>3</sup>
Solar Panel	Optional solar panel sold separately. Use Buckeye Cam Part 997-0014 or 001-0034 only.
Supply Current (Typical) <sup>4</sup>	Less than 200mA when idle Average of 350mA when transmitting
Approximate Dimensions (inches)	10.5 x 10.5 x 4.5
Number of Transmitters	2 Camera RF Communications – RF 902-928 MHz, FHSS Cellular Connection to Computer – LTE Cellular Gateway
RF Transmission Range <sup>5</sup>	Up to 2 miles with standard antennas. Up to 30 miles with high-gain antennas and/or repeaters
Max. allowable RF antenna gain	15.1 dBi (including cable losses)
RF Frequency Band	902 to 928 MHz, software selectable channel mask for interference immunity
RF Transmitter Output Power	Up to 250 mW
RF Spread Spectrum	FHSS
Max. allowable Cellular antenna gain	6 dBi (including cable losses)
Cellular LTE Frequency Bands <sup>6</sup> (North America)	Band 2 (1900 MHz), Band 4 (1700/2100 MHz), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), Band 25 (1900 MHz Block G)
Cellular EV-DO Frequency Bands <sup>6</sup> (North America)	BC0 (Cellular 800 MHz), BC1 (PCS 1900 MHz) BC10 (Secondary 800 MHz)
Cellular HSPA Frequency Bands <sup>6</sup> (North America)	Band 1 (2100 MHz), Band 2 (1900 MHz), Band 4 (AWS 1700/2100 MHz), Band 5 (850 MHz), Band 8 (900 MHz)
Cellular EDGE Frequency Bands <sup>6</sup> (North America)	GSM 850 (850 MHz), GSM 900 (900 MHz), DCS 1800 (1800 MHz), PCS 1900 (1900 MHz)

#### 14. Cell Base Technical Specifications

Cellular LTE Frequency Bands <sup>6</sup> (International)	Band 1 (2100 MHz), Band 3 (1800 MHz), Band 7 (2600 MHz), Band 8 (900 MHz), Band 20 (800 MHz)
Cellular HSPA Frequency Bands <sup>6</sup> (International)	Band 1 (2100 MHz), Band 2 (1900 MHz), Band 5 (850 MHz), Band 6 (800 MHz), Band 8 (900 MHz)
Cellular EDGE Frequency Bands <sup>6</sup> (International)	GSM 850 (850 MHz), GSM 900 (900 MHz), DCS 1800 (1800 MHz), PCS1900 (1900 MHz)
Cellular Transmitter Output Power	Maximum: +33 dBm (2 Watts) GSM / EDGE Typical: +24 dBm (0.25 Watts) LTE
Regulatory Approvals	
FCC (USA)	MCQ-XB900HP
IC (Canada)	1846A-XB900HP
C-Tick (Australia)	Yes
Anatel (Brazil)	Pending
RF Encryption	AES-128

<sup>1</sup> Specifications are subject to change and may not be available in all firmware or software versions.

<sup>2</sup> Only use the AC/DC wall adapter that is supplied with the Cell Base. Wall adapter is for indoor use only.

<sup>3</sup> See the "Connecting to a Cell Base" section of this manual for battery connection instructions.

<sup>4</sup> Supply current numbers may vary depending on the amount of images transmitted, signal strength, cell carrier, etc..

<sup>5</sup> **Transmission range and speed will depend on the type of antennas that are used, the surrounding terrain and amount of interference received.**

<sup>6</sup> The frequency band that is used will be dependent on the cellular carrier and the cell service that is available in the area of use.



## 15. Rack Mount NetBase Technical Specifications

### 15. Rack Mount NetBase Technical Specifications



Rack Mount NetBase Specification Table

Buckeye Cam Network Type	X80 <sup>1</sup>
Physical	
Rack Hight	1U
Rack Width	19"
Dimensions	Width: 19" Height: 1¾" Depth: 9¾"
Weight (without accessories)	3.3lb (1.5Kg)
Interface	
Front panel	USB port
Rear panel	Ethernet, 10/100 RF conector AC Power
Network Configuration Options <sup>2</sup>	DHCP User defined IP and Subnet Mask
RF	
Communication Frequency Band	902-928MHz
Spread Spectrum	FHSS
Transmitter Output Power	Up to 250mW
RF Connector	RPSMA
Power	
Voltage	120V AC, 60Hz
AC Current Draw (Typical)	25mA
Fuse Current Rating	2A
Fuse Type	3AG
Power Connector Type	IEC60320 C14
Regulatory Approvals	
FCC (USA)	Contains FCC ID MCQ-XB900HP
IC (Canada)	Contains IC 1846A-XB900HP
C-Tick (Australia)	Yes
RF Encryption	AES-128

<sup>1</sup> Compatible with all X80 devices including Cameras, Echo, Activator, Feeder Controller

<sup>2</sup> Selected and configured via USB port using X-Series Network Manager software.

## 17. Troubleshooting

### **17. Troubleshooting**

#### **Can't connect to PC Base with X-Series Network Manager.**

Make sure the computer meets the minimum requirements: Windows XP or later, 128 MB RAM, 1.5 GB disk space, USB port.

Make sure the USB drivers are installed on the computer. They can be downloaded at <http://www.buckeyecam.com/site/support.html>

Try closing X-Series Network Manager and unplug the USB cable. Plug the USB cable back in, start X-Series Network Manager and try to connect again.

#### **Can't connect to a Cell Base with X-Series Network Manager.**

Make sure the power supply is connected properly, either a 12 V battery or AC/DC wall adapter.

Make sure the Off/On toggle switch is in the On position.

Make sure you have an active cellular data account.

Make sure you have entered the IP Address/Domain name and Authentication code correctly from the Information Sheet.

Disable any anti-virus or firewall software that may be blocking the connection.

Make sure that there is a good cell signal in the area where the Cell Base is. Does your phone have good service?

#### **Can't connect to a Net Base with X-Series Network Manager.**

Make sure the AC/DC wall adapter is plugged in properly.

Make sure the Off/On toggle switch is in the On position.

Make sure you are connected to the local network with an Ethernet cable.

Make sure you have the correct IP address/Domain name entered.

Make sure you have the authentication code entered correctly from the Information Sheet.

#### **Camera can't get a signal to the PC Base from a camera using standard antennas.**

Make sure the antenna is connected properly.

There must be a limited amount of obstructions between the camera and the PC Base. There should be few trees, no large hills, buildings or structures.

Make sure the distance between the PC Base and the camera is less than 2 miles.

Try moving the PC Base. Do not put the PC Base in a basement. If possible, move it to a window that is facing the direction of the camera.

Upgrade the PC Base antenna to a 40" Omnidirectional mounted as high as possible using 400 series cable available from Buckeye Cam.

### ***17. Troubleshooting***

#### **Can't get a signal to the PC Base from a camera using a Yagi (Directional) antenna.**

Make sure the antenna is pointed in the direction of the PC Base (see Chapter 10).

The antenna cable should be 400 series cable from Buckeye Cam.

Raise antenna higher if possible.

Upgrade the PC Base antenna to a 40" Omnidirectional mounted as high as possible using 400 series cable available from Buckeye Cam.

#### **Can't get a signal to the Cell Base from a camera using standard antennas.**

If the Cell Base is installed outdoors, try moving it closer to the camera, or to a more central location if multiple cameras are registered to it.

There must be a limited amount of obstructions between the camera and the Cell Base. There should be few trees, no large hills, buildings or structures.

Try mounting the antenna higher. If longer cable is required, use 400 series cable from Buckeye Cam.

Upgrade the antenna at the camera to a Yagi (Directional) antenna. The Yagi antenna at the camera should be pointed in the direction of the Cell Base.

## **18. Additional Information**

### **Video Tutorials**

X-Series Network Manager video tutorials are available at [www.buckeyecam.com](http://www.buckeyecam.com).

### **LiveCam**

Images that are received by *X-Series Network Manager* may be automatically uploaded to an optional LiveCam account. Images that are uploaded to LiveCam may be viewed from any computer that has an Internet connection by logging into your LiveCam account. The account may be public or private. The LiveCam service requires a yearly subscription fee.

To setup a LiveCam account, visit [www.buckeyecam.com](http://www.buckeyecam.com)

### **Other X80 Series Wireless Devices**

The Buckeye Cam *X80 Series* also includes auxiliary sensors, repeaters, actuators, and game feeder controllers. All of the available devices work seamlessly together and may be controlled and monitored with the *X-Series Network Manager* software application.

Visit [www.buckeyecam.com](http://www.buckeyecam.com) for the latest product information.

## 19. Warranty and Service

### **19. Warranty and Service**

For service or repair, contact ATSI/Buckeye Cam at:

ATSI

8157 US Hwy 50 • Athens, OH 45701

(866) 325-8172 • (740) 592-2874

Fax (740) 594-2875

[www.buckeyecam.com](http://www.buckeyecam.com)

Athens Technical Specialists, Inc. (ATSI) warrants Products (BuckEye Cam™ ) sold by it and guarantees to correct, by repair or replacement at our option, any defects of material and workmanship which develop under normal and proper use within six (6) months from the date of the original purchase when inspection proves the fault to be of manufacturing. Circuit board components only receive a twelve (12) month warranty. All such Products must be returned to our service center, transportation charges prepaid. This warranty does not apply to any of our Products which have been repaired or altered by unauthorized persons or service centers in any way so as, in our judgment, to injure their stability or reliability, or which have been subject to misuse, negligence, or accident or which have had their serial number altered, effaced or removed.

We will not assume any expense or liability for repairs made by other parties without our written consent. ATSI is not responsible for damage to any associated equipment or apparatus, nor shall we be held liable for loss of profit or other special damages. There is no other guarantee or warranty except as herein stated. The Buyer, his employees, or others assumes all risks and liabilities for the operation, the use and the misuse of the product described herein and agree to defend and to save the seller harmless from any and all claims arising from any cause whatsoever, including seller's negligence for personal injury incurred in connection with the use of the said product.

ATSI reserves the right to discontinue models at any time or change specifications, price or design without notice and without incurring any obligation. The express warranties are in lieu of all other warranties, guarantees, promises, affirmations, or representations, express or implied which would be deemed applicable to the goods sold hereunder. No express warranties and no implied warranties, whether of merchantability, fitness for any particular use or purpose, against infringement, or otherwise (except as to title) other than those expressly set forth herein, shall apply.