



ETHERLYNX 2000+, FUSION, AND PRO CAMERA QUICK START GUIDE

Basic EtherLynx Camera Quick Start Guide.



Essential Components (Note: Lenses and Camera Mounting hardware may differ from components shown.)

Item	Description	Part Number	Item	Description	Part Number
	EtherLynx 2000+ high sensitivity camera	5L420		EtherLynx Fusion camera	5L400
	EtherLynx PRO camera	5L300		Connection box and Connection box cable	C-Box 451
	500 ft. start sensor cable	3A100		Normally closed start sensor with light	3L400
	Geared head	BG3275		Camera tripod	BG2036
	Power supply and cord	452		Capture button and	1A205
Not pictured	Timer enable option embedded in camera	5LTE		USB/Serial adapter	

Items not included

- Computer (laptop recommended) running Microsoft Windows. Your computer needs: one available USB port or a serial port, one available Ethernet port, and a DVD/CD drive.
- Flathead screwdriver.

- Step ladder and table.
- Plumb bob and string. A plumb bob is available at your local hardware store.
- Printer (optional).

Introduction

In this quick start guide, you will learn how to set up and configure the FinishLynx network, set up your EtherLynx camera and align it with the finish line using the remote positioner and remote lens, capture, evaluate, and print a FinishLynx image and results, configure FinishLynx to work with the scoreboard, and import a start list created in LynxPad.

Step 1: Install the software

A. FinishLynx

- 1) Insert the Lynx Resource CD into your computer's CD drive.
- 2) Follow the instructions on your screen to install FinishLynx. When prompted, enter the serial number found on the back of your Lynx Resource CD jewel case.
- 3) Start FinishLynx by clicking the Microsoft Windows **Start** button and selecting **All Programs | FinishLynx**.

B. USB-Serial Adaptor

1. Insert the Lynx Resource CD into your computer's CD drive.
2. Click on the link to install the USB-Serial Adaptor.

Step 2: Evaluate a sample image

1. Start FinishLynx.
2. Click **File** from the Menu bar and select **Open...**
3. Double-click **Sprint.evn**. The sample FinishLynx image appears on your screen.
Note: This sample is a two-camera image.
4. Click the mouse once on the torso of a competitor on the left side of the screen. A red hairline appears.
5. If necessary, click and hold the red crosshair in the middle of the hairline and drag it up or down until the correct lane number for that competitor is highlighted in red on the left side of your screen.
6. Press the **Enter** key on your computer. The finisher's time appears in the start list above the image.
7. Repeat these steps for all of the competitors on the screen. You have just successfully evaluated a race in FinishLynx.
8. Click **File | Close window**. If you want to reuse the image later for practice evaluation, click **No** when asked to save your changes. Close FinishLynx.

Step 3: Configure the network for Windows OS prior to Windows 7

(See Step 4: below for Windows 7,8 and higher)

1. Click the Microsoft Windows **Start** button and select **Control Panel**, or click **Start | Settings | Control Panel**.
2. Double-click **Network Connections**.
3. Right-click the **Local Area Connection** associated with the network interface card (NIC) in use and select **Properties**. The **Local Area Connection Properties** dialog appears.
4. Make sure you see a line that reads, **Internet Protocol (TCP/IP)**. You may have to scroll down to see it.
 - a. Click **Install** and select **Protocol**.
 - b. Click **Add...**
 - c. Click to select the **Microsoft TCP/IP** option and then click **OK**.
5. Check the box next to **Internet Protocol (TCP/IP)**.
6. Click to select **Internet Protocol (TCP/IP)** and then click **Properties**. The **Internet Protocol (TCP/IP) Properties** dialog appears.
7. Click the **Use the following IP Address:** button and then type the following numbers:
 - IP address: **192.168.0.5**
 - Subnet mask: **255.255.255.0**. Click **Ok** and then click **Ok** again.
8. **If you are running Windows XP, follow these steps to disable the firewall. Otherwise continue to Step 5:**
 - d. Open the Windows **Network & Sharing Center**.
 - e. Right-click the **Local Area Connection** associated with your system, and select **Properties**. The Local Area Connection dialog appears.
 - f. Click the **Advanced** tab.
 - g. Make sure the box **under Internet Connection Firewall** is *unchecked*.
 - h. Click **Ok** and then exit the Network Connections screen. **Restart your computer**.

Step 4: Configure the network for Windows 7 & 8 (if applicable)

Note: Sections 1 and 2 should be completed on both FinishLynx and Meet Management computer.

1. Go to the windows **Control Panel**. On the top right is **View By** with a drop down arrow. Click the drop down arrow and choose Small or Large Icons.
2. Find and double click on **Network and Sharing Center**. They are listed alphabetically by icon name.
3. This will open the **Network and Sharing Center**. On the left is a blue section titled Control Panel Home.
4. Click on the **Change Adapter Settings** icon.

5. A new window will open displaying your network connections. Right click on the **Wireless Network Connection** and select **Disable** from the list of items. This is only necessary for the FinishLynx Capture computer.
6. Right click on the **Local Area Connection** and select **Properties** from the list of items. A new window will appear with a list of connection items. Click to select **Internet Protocol Version 4 (TCP/IPv4)** and click the **Properties** button.
7. A Properties window will appear and is typically set to **Obtain an IP address automatically**. Click to select the radio button for **Use the following IP address**. In the box for IP address, enter 192.168.0.5 for FinishLynx and hit **Tab** key to auto fill in Subnet mask 255.255.255.0
8. Click OK and navigate back to the Control Panel. In the control panel click on the Windows Firewall icon. Under Control Panel Home, on the left, click on **Turn Windows Firewall on or off**.
9. Turn off both Home and Public Firewalls (Domain for Windows Pro).

Step 5: Go to the track!

Bring your FinishLynx System and an assistant to the track. Make sure there is **power** near the finish line.

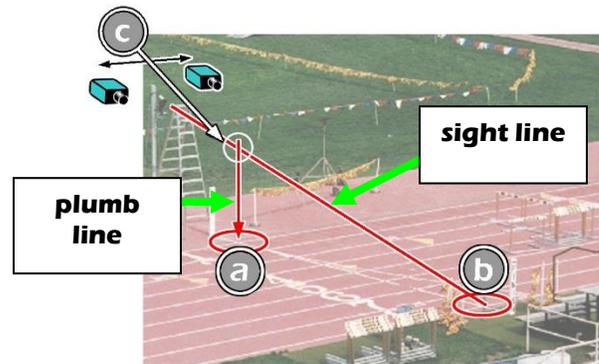
Set up a table near the finish line, on the infield if a power source is available there. The finish line should have black lane marker boxes painted where it crosses each lane line. If not, we suggest you put black tape over the finish line to designate lane lines. This will help you align the camera and get a clearer FinishLynx image.

Step 6: Set up the camera and tripod

Setup the tripod in line with the finish line, preferably on the infield and approximately **10 feet back**. **Note:** Minimum recommended camera distance from track is 8 feet (at this distance you may not be able to see the feet of the athlete in Lane 1 – being able to see the feet is not a requirement for accurate timing on the Torso of the athlete). If you need to be closer than this you may have to use the optional 6mm lens supplied with your Competition package.

1. Extend the tripod legs so the geared head is approximately 7 ft high.
2. On the near side of the finish line, hold a plumb bob so that it is suspended directly above the middle of the finish line. This is the **plumb line**, shown as **a** in the image below.
3. Tie string to the screw on the top of the tripod head. Have your assistant take the other end of the string to the far side of the finish line and hold the string taught. This is the **sight line**, shown as **b** in the image below.

4. Move the tripod to the left or right until the plumb line and sight line touch at position **C** in the image below. The tripod is now in the plane of the finish line.

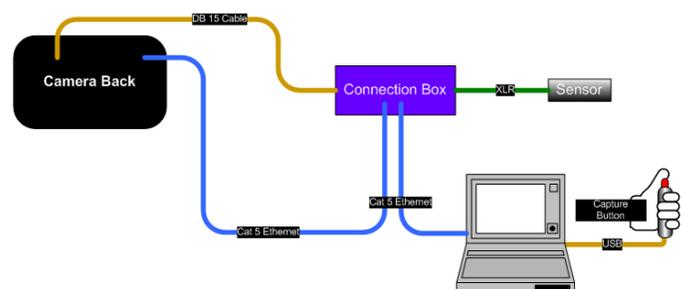


Step 7: Attach the camera to the tripod

1. Secure the geared head to the top of the tripod.
2. Note how the camera mounting plate is attached to the top of the geared head. Then, pull back on the lever at the top of the geared head to release the mounting plate.
3. Tighten the mounting plate to the bottom of the camera by turning the screw with a flathead screwdriver.
4. Attach the camera and mounting plate to the tripod by clicking the mounting plate into place on the geared head.
5. With the camera lens lined up with and facing the finish line, make minor adjustments to the tripod legs so both bubbles on the tripod are centered.
6. Turn the black knob on the geared head that controls the **tilt** of the camera so that it is at about a 30 degree angle to the ground.

Step 8: Connect the cables

Single Camera Setup

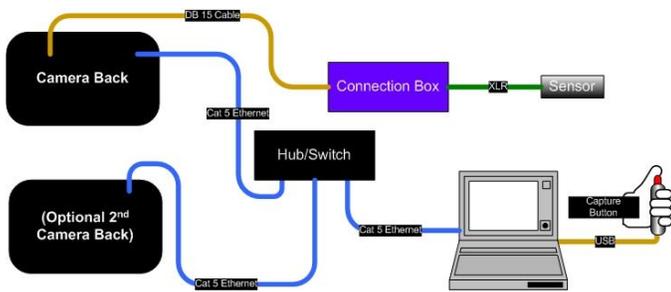


1. Connect the female end of connection box cable to the port on the back of the camera labeled **Connection Box** and the male end to the left side of the connection box.
2. Connect one of the Ethernet cables to the back of the camera labeled **10 Base T** and to one of the connection

box ports labeled **Ethernet**. Set the “Hub” switch on the connection box to “No.”

3. Connect the other Ethernet cable to the network connection on your computer and the other end to the remaining **Ethernet** port on the connection box.

Multiple Camera Setup



4. Connect the female end of connection box cable to the port on the back of the camera labeled **Connection Box** and the male end to the left side of the connection box.
5. Connect one of the Ethernet cables to the back of the camera labeled **10 Base T** and to one of the connection box ports labeled **Ethernet**. Set the “Hub” switch on the connection box to “No.”
6. Connect the other Ethernet cable to the network connection on your computer and the other end to the remaining Ethernet port on the connection box.

All Cameras

7. Connect the male end of the start sensor cable to the connection box where it says **Start**. Attach the start sensor to the other end of the cable and keep the start sensor close by.
8. Connect the capture button cable to the 9-pin serial port on the back of your computer, or to the supplied USB to Serial converter.
9. Connect the black power cord to the back of your camera and plug the other end into the power source.
10. Check that the communication lights next to link ports illuminate.

Step 9: Align the camera

You may need to stand on a step ladder while adjusting the camera. Turn the computer so you can see the image on it as you align the camera.

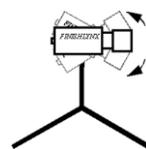
1. Start FinishLynx. Wait while the green status bar in the lower right corner of the screen completes its cycle.

NOTE If running a wireless Ethernet card, you must disable it while the camera is booting.

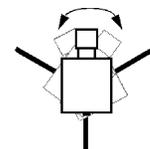
2. Click , the red camera alignment icon in the top left hand corner of the FinishLynx **Hardware Control** screen.

The icon turns green, and image appears on the computer monitor. Because you are only taking a picture of the finish line, the picture on your computer screen does not resemble anything recognizable. In the next steps, your goal is to obtain an image with a white background (the color of the finish line) and black lane lines.

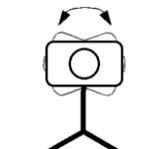
3. Click . The **Camera Settings** dialog appears.
4. Click the **Parameters** tab.
5. In the **Gain Method:** line, click **Manual** and type **30** in the **Gain** field, and then click **Ok**.
6. Turn the *aperture ring* on the camera lens so it is aligned with the **f1** opening.
7. Focus the camera by looking at a point approximately 1/3 of the way up the finish line (lane 3 if you are on the infield)
8. If your picture looks washed out by too much light, adjust the aperture to a higher f-number, to let less light in.
9. Have your assistant run through the finish line and watch where he/she appears on the computer monitor. The goal is for the runner’s torso to be fully visible in both the inside and outside lanes. Now, have your assistant run through the inner-most and outer-most lanes. Adjust the **tilt** of the camera until he/she is clearly visible on both ends of the finish line.
10. If the image does not look like a white background with black lane lines, **pan** the camera from left to right through the finish line until it does.
11. If your image still shows a colored background with white lane lines, try adjusting the camera **swivel** until the background becomes white and black lane lines appear.



Tilt



Pan



Swivel

12. After the image on the computer shows a white background and black lane lines and your assistant appears in the inner and outer-most lanes, adjust the camera lens focus ring again until all lanes appear crisp and in focus.

Step 10: Adjust FinishLynx camera settings

1. Click **Camera Settings Icon**  to open the Camera Settings dialog.
2. Click to select the **Setup** tab:
 - a. **Name:** enter a name to identify the camera(s)

- b. **Image Orientation**: select the correct orientation for finish (infield would be Left orientation)
 - c. **Identify By**: select Lane for track **competition**
 - d. **Lanes**: enter the number of lanes on the track; the remaining should be left as default.
3. Click to select the **Parameters** tab
 - a. **Rate**: Type a value in the field between 1000 - 2000 for sprints (400m and under) or type 500 for distance events. For sprints try and keep the ratio of "Frames Per Second" to "Pixel height" close to 2:1, for Distance Races keep the ratio at 1:1. Change these values when moving between sprints and distance races, or else the competitors in your FinishLynx image appear distorted.
Note: Image distortion does not affect timing accuracy.
 - b. **Frame Height**: will **vary** by camera models, >500 is recommended for most track competitions;
 - c. **Gain Method**: set to **AGC** for outdoor light and set to **Manual** during the alignment process and for artificial light. Adjust the value based on quality of image in alignment mode.
 4. Click to select the **Inputs** tab:
 - a. **Start Sensor**: is defaulted to **Closed** for the wired gun start
 5. Click to select the **Capture** tab:
 - a. **Capture Method**: select **Manual**.
 6. Click **OK** to close the **Camera Settings** and it is advised to restart the FinishLynx software.
 7. Set White Balance
 - a. Open a **new** event in FinishLynx by clicking  in the top left corner of the screen.
 - b. Capture a small amount of image containing a white object, such as a **person** wearing a white t-shirt.
 - c. Right-click and draw a box around a small amount of the **white** image. You may need to zoom in to the image to do this.
 - d. Click **Image** from the Menu bar and select **Set white balance**.

Step 11: Time an Event

1. Create a New Event by clicking on the New Event Icon , or by selecting **File | New**, or by using the key shortcut **Ctrl N**.

A new Event window will open.

The system is now ready to accept the next start signal from the gun and begin running the timer so that when results are read they will show fully automatic times.

2. Name the Event

Click on **File | Save** and type in the name of the event.

NOTE: An Event name will be prefixed by a lower case "a" if the event is ready to receive the next start signal, also a yellow indicator box will appear next to the camera information icon.

3. Check the Start Sensor

It is important to test the Start Sensor at each new starting line. Have the starter tap the start sensor sharply against a hard surface, or clap their hands together to simulate the firing of the gun. A new start time should appear in the list of start signals.

4. Reset the Start Sensor after Testing

If you have tested the Start Sensor, or received a false start, you will need to reset the Start Sensor. To do this, hold down the **CTRL** key and type a letter "A".

5. Activate the Capture Button

If image does not appear on the screen when the Capture Button is pressed, the capture button needs to be activated for this event.

To activate the button click on the Activate Capture Button icon. 

8. Check for Start Signal

When the gun fires, the little letter "a" will go away from in front of the event in the window list in the menu bar, the **Running Time Box** will turn yellow and the time will start running.

9. Capture Image

Press the Capture Button to begin capturing image into the selected race. Release the button to stop capturing image. Pressing the Capture Button will cause image to appear on the screen - and be stored in the computer's memory.

It is easy to check whether you are, in fact, taking pictures of a finish - if the window you are capturing into is at the front, the image will appear on the screen in front of you as the button is pressed.

10. Evaluate the Image

Follow the steps outlined in **Step 2: Evaluate a sample image**

Notes: