



# Ladybug5 Trigger with LadybugCapPro

## Technical Bulletin

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# Introduction

The purpose of this document is to demonstrate how to setup and use the Ladybug5 camera in conjunction with Point Grey's LadybugCapPro software and SpatialExplorer to trigger and capture a stream of images.

During this procedure, the Ladybug5 must be connected locally to your workstation via the attached USB 3.0 cable. We highly recommend connecting to rover via an Ethernet connection for this procedure.

This procedure will **ONLY** work with Ladybug5 cameras that have been configured by Phoenix LiDAR Systems beginning in June 2018.

***If you have a Ladybug5 camera that was configured prior to June 2018 by Phoenix LiDAR Systems, this procedure will NOT work.***

# Pre-Procedure

- If using an ethernet cable to connect to rover, make sure that you have configured the ethernet adapter on your workstation to be able to communicate with rover. Any computer with a properly configured ethernet adapter can be used to establish a direct connection to the rover using an ethernet cable. Field computers configured by Phoenix LiDAR Systems will default to an alternative IP configuration of 192.168.200.20 when no IP address is obtained through DHCP on the primary ethernet port within 3 minutes. This will allow a computer to establish a connection to the rover via ethernet after 3 minutes of connection. Refer to the [Wired Ethernet Network Card Setup](#) in the Phoenix LiDAR Systems User Manual for more information.
- Download and install the latest version of the Ladybug SDK from [Point Grey's website](#). The Ladybug SDK contains several GUI applications such as LadybugCapPro to ensure full compatibility. Make sure to download the corresponding version (Windows 64-bit) of the Ladybug SDK.

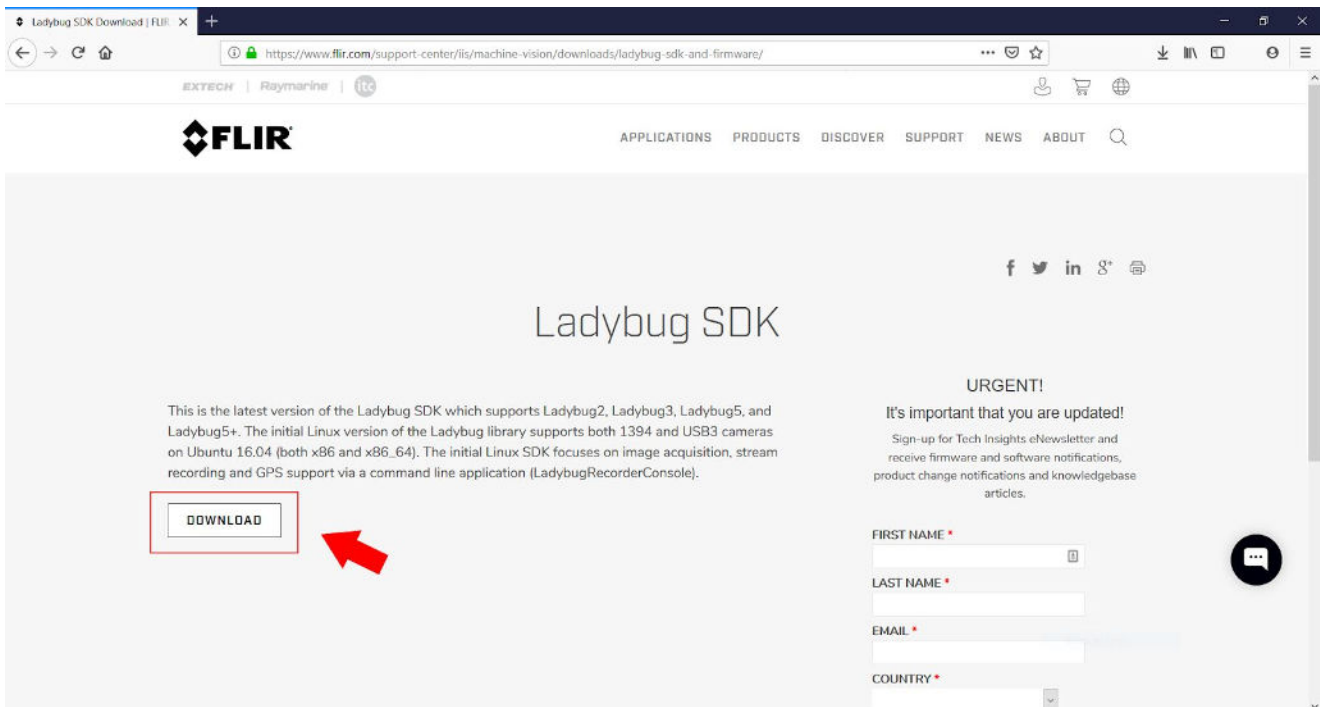


Figure 1: Download Ladybug SDK from Point Grey's website

- Download and install [Serial Port Redirector](#) from Fabulatech.com.
- **Ensure the Ladybug5 camera is connected to the nav box and powered on prior to beginning the procedure.**
  - Ladybug5 input voltage range: 12-24 V
- **Ensure SpatialExplorer is open and running in the background prior to beginning the procedure.**

# Procedure

1. Launch Serial Port Redirector. If a virtual serial port is not available, you will need to add a virtual serial port to Serial Port Redirector. A virtual COM port is necessary to establish GNSS communication between the Ladybug5 and rover.

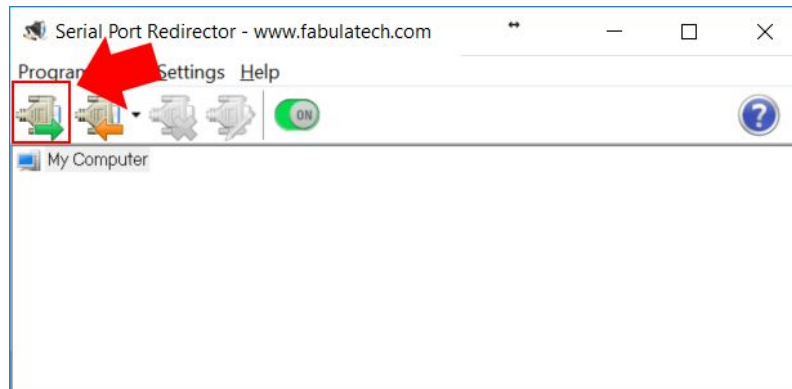


Figure 2: Serial Port Redirector interface

2. The virtual serial COM port number can be any available port number. What is important is the remote IP address and the TCP port number. The remote IP address must match the IP address of the rover (**192.168.200.10**) or the hostname (**rover-wire**). The TCP port must be **8000**. Click "OK" to create and save the virtual port.

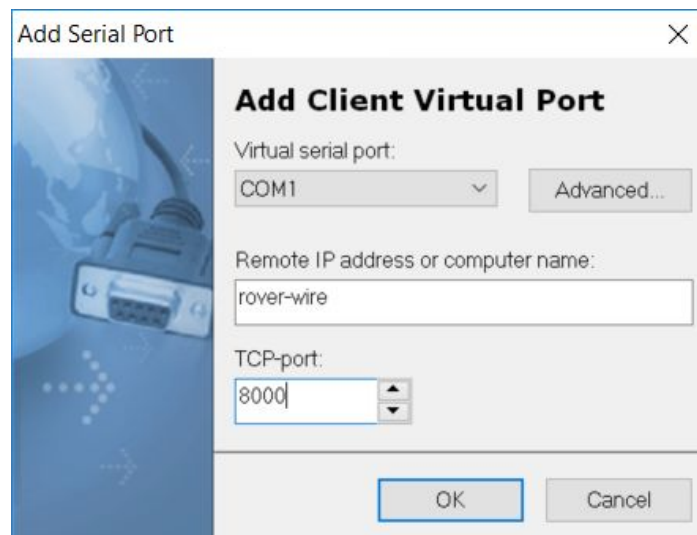


Figure 3: Virtual Serial Port parameters

3. Ensure the virtual serial port is present and properly configured. Leave Serial Port Redirector open in the background. Do **NOT** close Serial Port Redirector.



Figure 4: Virtual Serial Port present in Serial Port Redirector

4. Launch LadybugCapPro software. Click the "Start Camera" button to launch the camera selection menu.

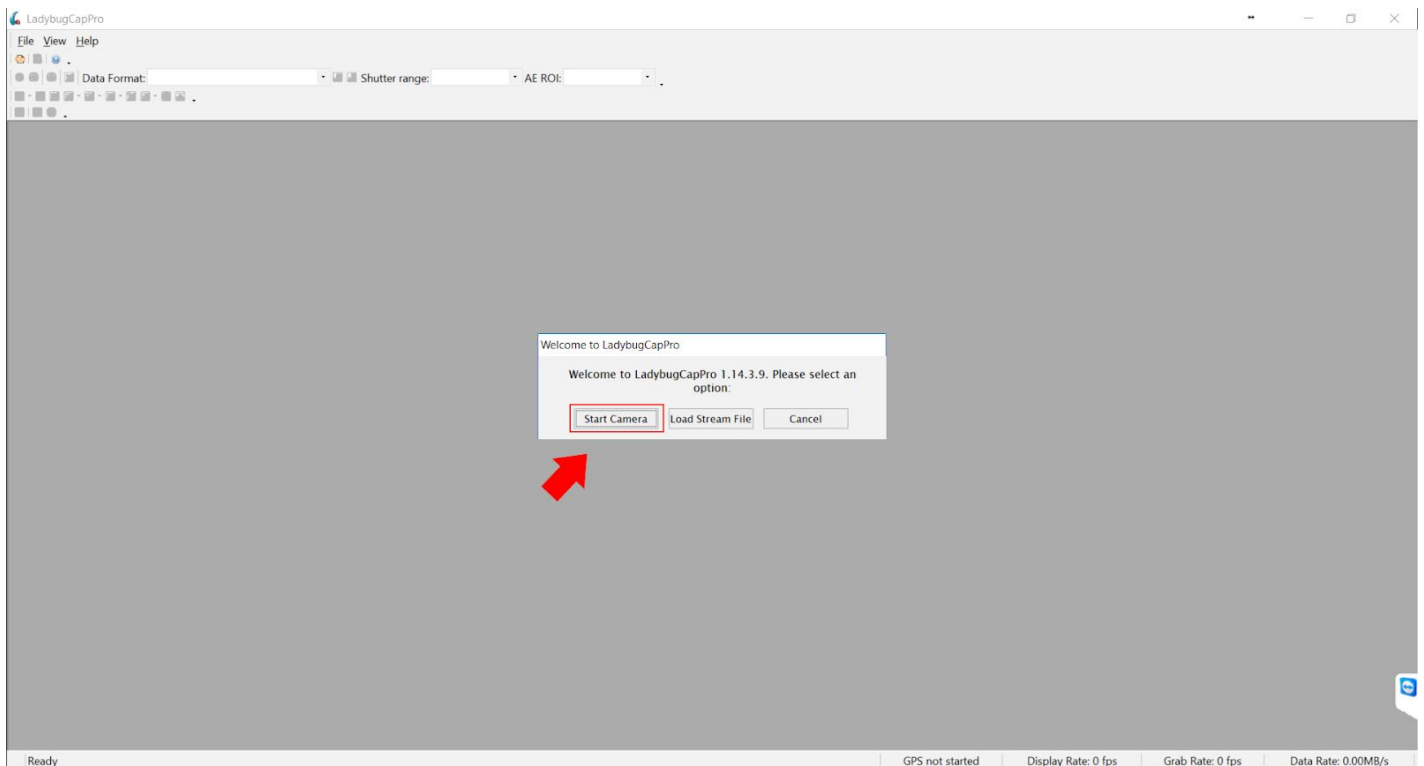


Figure 5: LadybugCapPro Welcome Interface

5. Before connecting to the Ladybug5 camera, click the “Configure Selected” button to configure a few camera parameters.

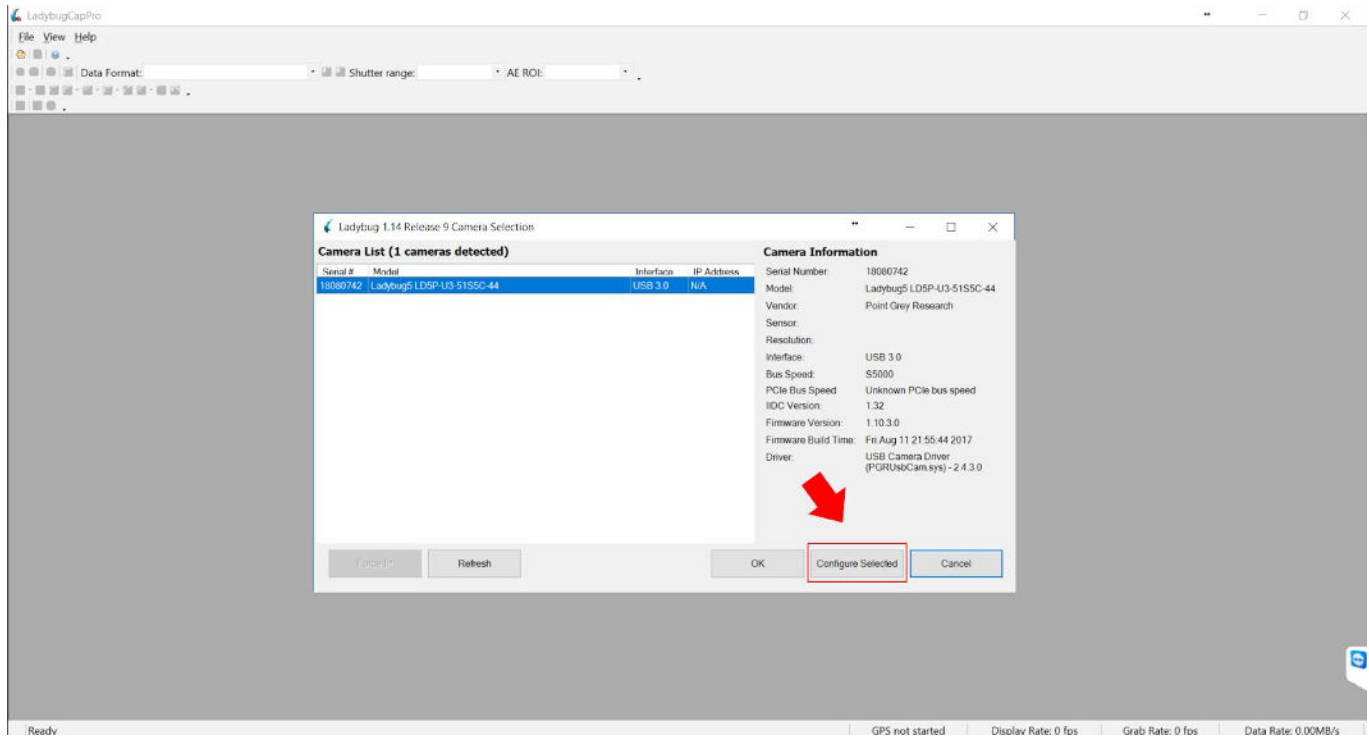


Figure 6: LadybugCapPro Camera Selection Interface

6. Click on the “Trigger/Strobe” tab to view the trigger and strobe options. If you want to trigger the camera through rover (preferred method), you must click the checkbox “Enable/disable trigger” and ensure it is checked. Under Pin Direction Control, verify GPIO 0 is set as “In” and GPIO 1 is set to “Out.” Under Strobe Control, verify the checkbox “Enable strobe for this pin” for GPIO 1 is checked, Polarity is set to “Low”, with a Duration of “10.00”.

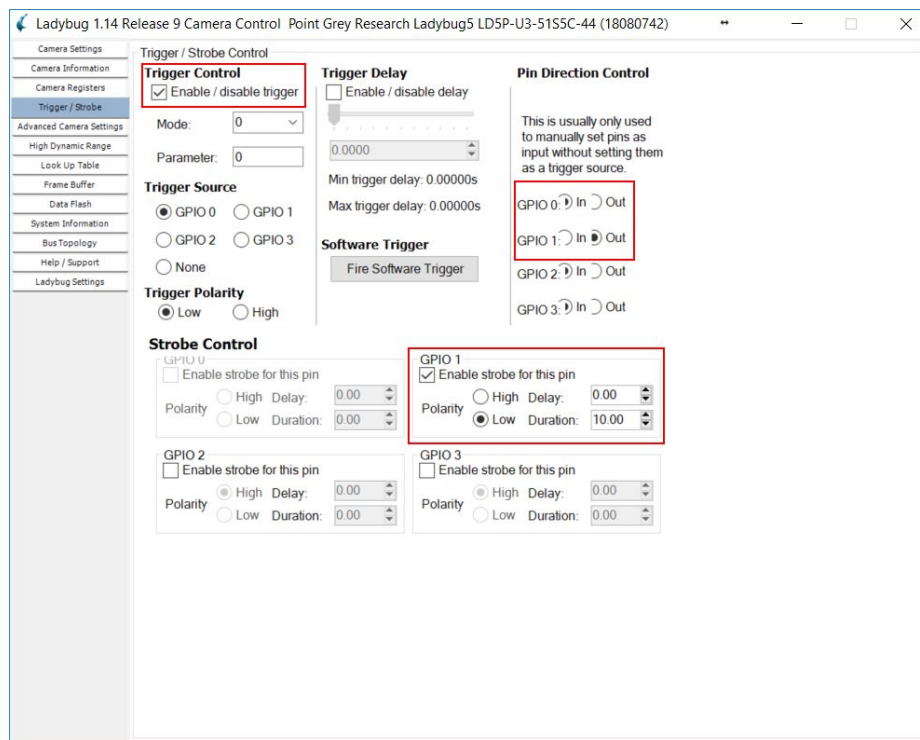


Figure 7: Trigger/Strobe LadybugCapPro Camera options

7. Alternatively, if you want the Ladybug5 camera to trigger by time on its own you must disable the Trigger control option in the “Trigger/Strobe” section. Once the trigger control has been disabled, you can then manually adjust and set the framerate within the “Camera Settings” section. ***This option only applies if you do not want to trigger the camera through SpatialExplorer.***

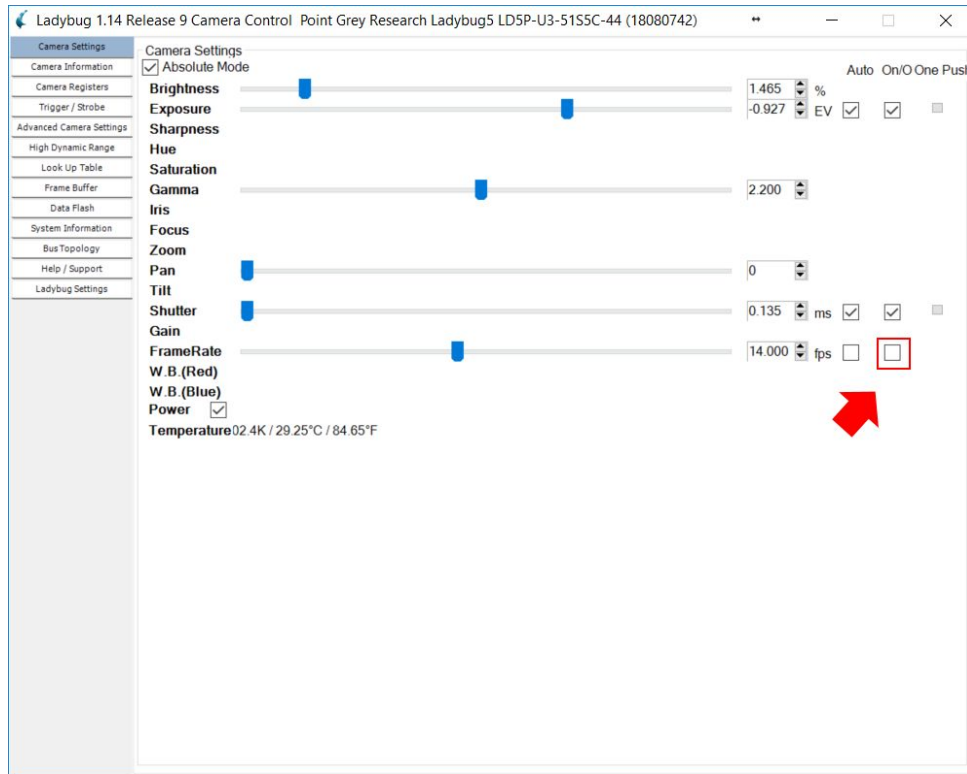


Figure 8: Adjust Framerate in Camera Settings (only if triggering camera by time on its own).

8. Once the camera parameters have been set, close the Camera Control interface and click the “OK” radio button in the Camera Selection menu to establish the connection with the Ladybug5 camera.

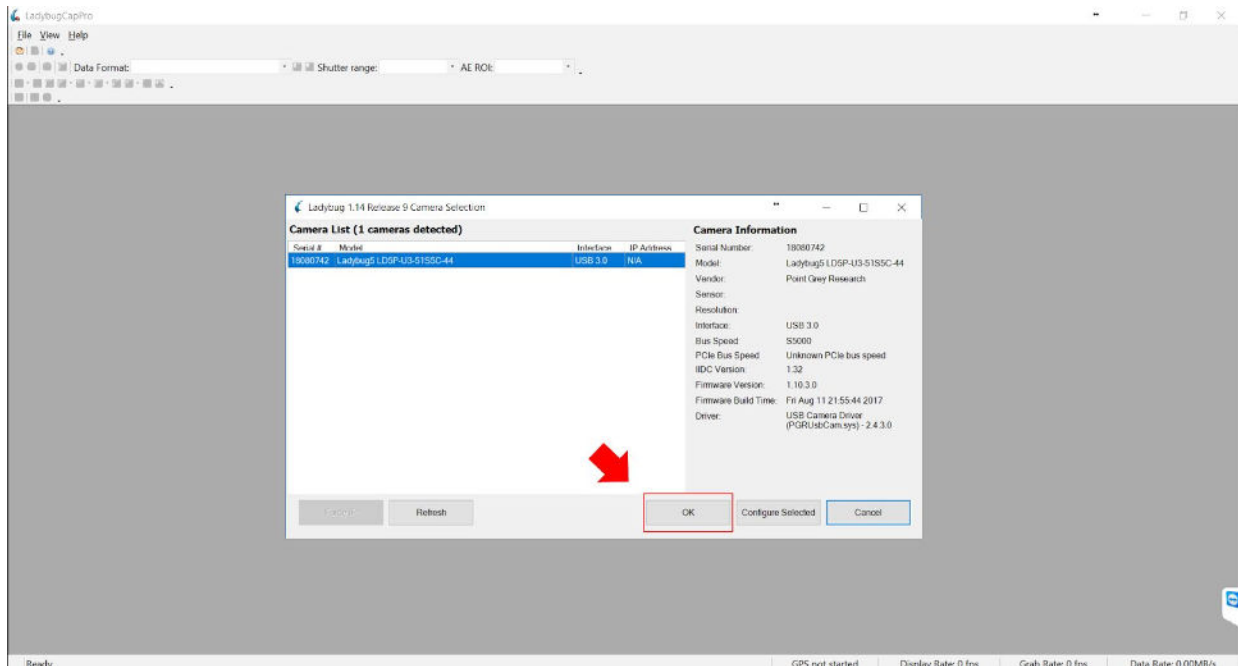


Figure 9: Click OK to connect to Ladybug5 camera

9. Upon establishing a connection to the Ladybug5 with LadybugCapPro, you will need to verify the LadybugCapPro GPS COM port parameters to make sure they make the parameters of your Virtual COM Port. Of importance is the Port number; it has to match the port number of your virtual COM port as well as the Baud rate. Additionally, ensure the checkbox labeled "Start GPS when starting LadybugCapPro" is enabled.

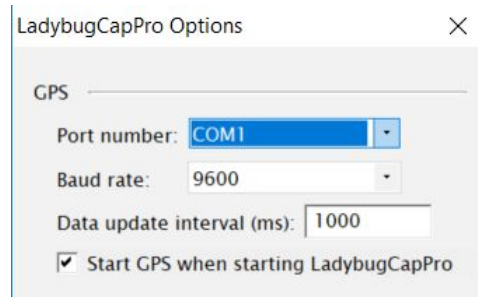


Figure 10: LadybugCapPro GPS Options

10. Make sure the option "**Start GPS Positioning**" is selected. If it is running, it will display "Stop GPS Positioning." Additionally, make sure the option "**Start GPS Time Sync**" is enabled. These two options will provide software and hardware timestamps for your images. It is possible you may need to restart LadybugCapPro and reconnect to the Ladybug5 to ensure both services are enabled and running.

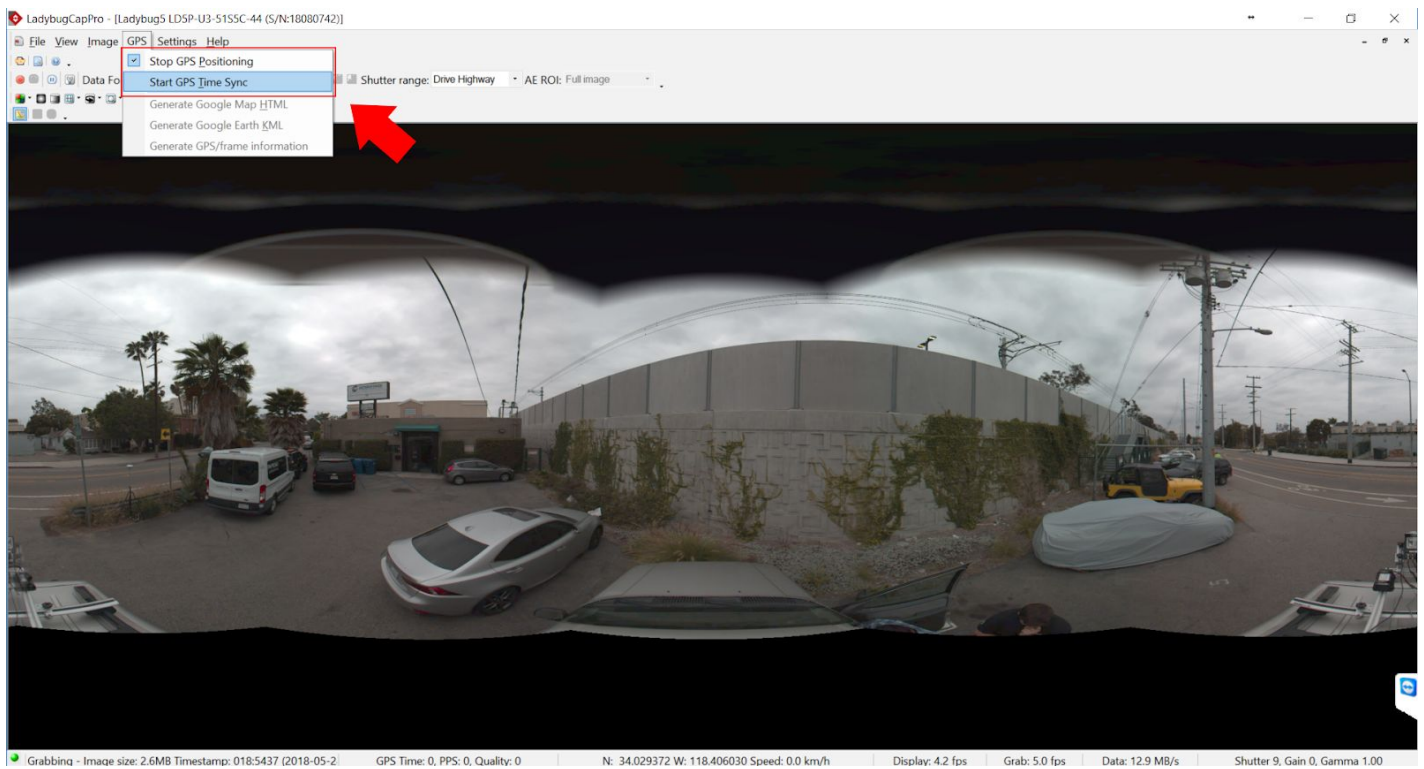


Figure 11: Start GPS Positioning and Start GPS Time Sync



11. In Serial Port Redirector, you should see the status of the virtual COM port as “Connected” to the Ladybug5 camera via LadybugCapPro.

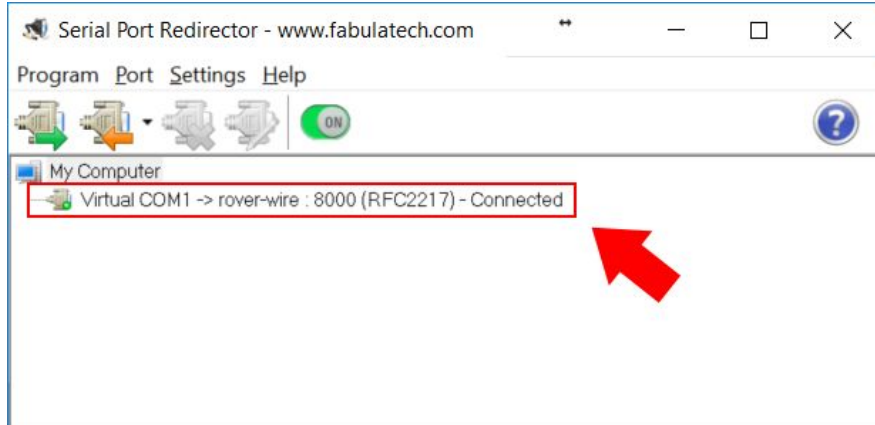


Figure 12: Virtual COM port status connected to LadybugCapPro

12. Set the “Data Format” to JPEG (12-bit) - GIS.

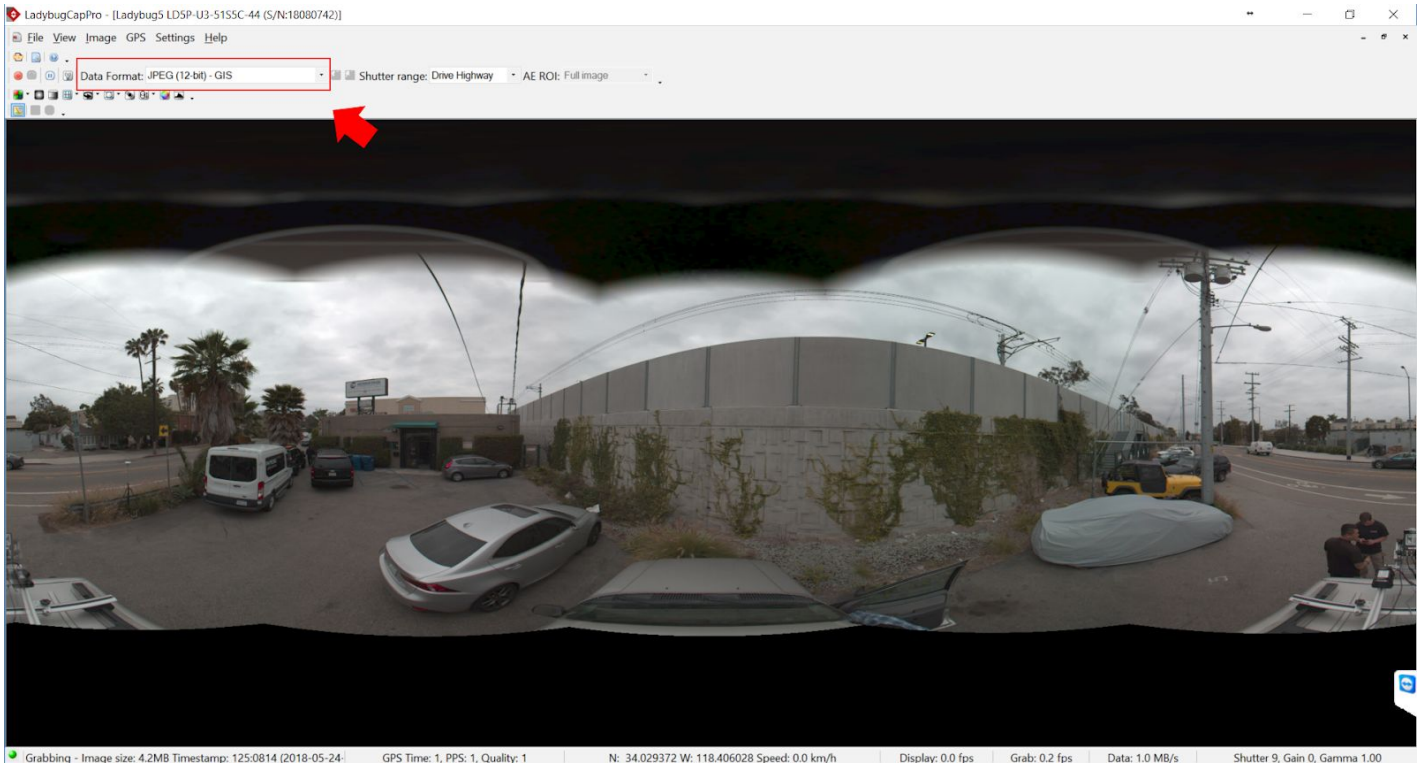


Figure 13: Setting Data Format in LadybugCapPro

13. Depending on where you will be driving, select the appropriate Shutter range (Drive Highway, Drive City, Indoor, Low noise).

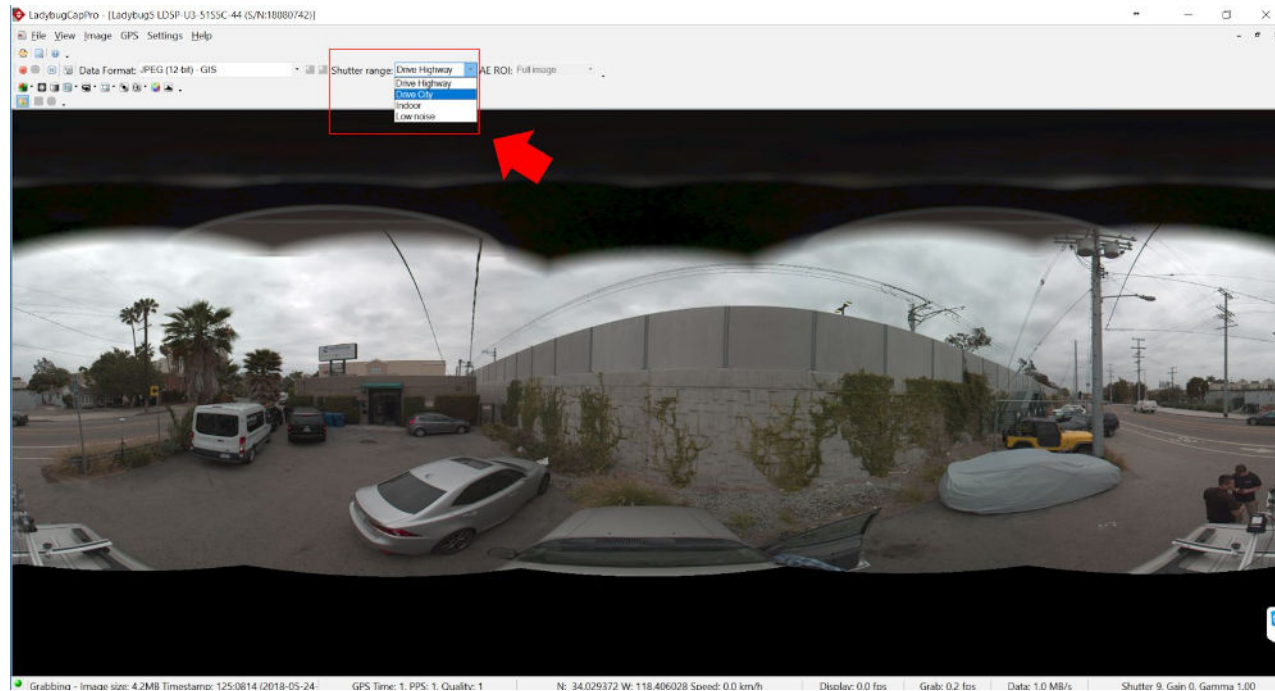


Figure 14: Selecting Shutter Range in LadybugCapPro

<b>Drive Highway</b>	Maximum shutter is set to as short as possible to prevent motion blur. Best used outdoors or images may be too dark. This is the default.
<b>Drive City</b>	Maximum shutter set for city driving speed (40 km/h or 25 m/h) to prevent motion blur.
<b>Indoor</b>	Maximum shutter is slightly longer than the driving modes, for use in indoor or lower light applications.
<b>Low Noise</b>	Maximum shutter range allowed for lowest noise. This may introduce motion blur.

**Before triggering the camera with SpatialExplorer, ensure to record a new stream.**

14. Click the “Record new stream” radio button and choose a location to save the image stream. Once recording is in progress, you can **ACT**ivate the camera via SpatialExplorer.

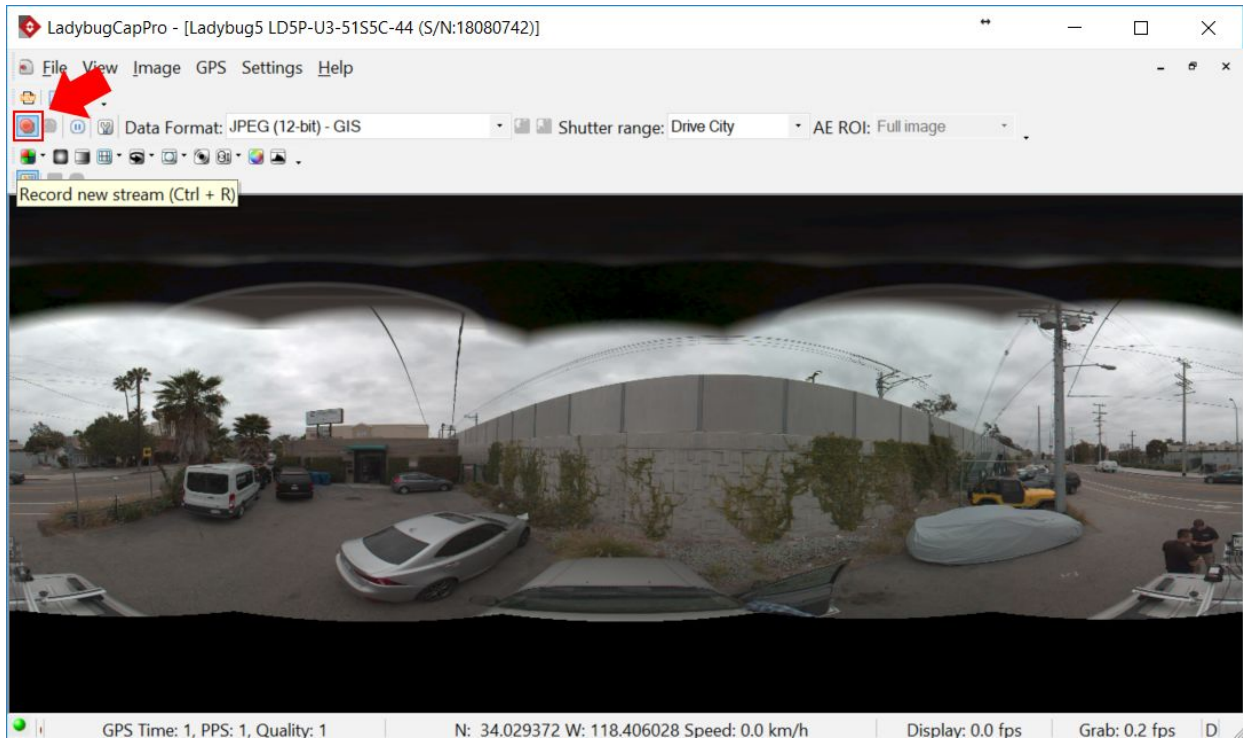


Figure 15: Record new stream in LadybugCapPro

15. To verify that the GPS Time Sync is indeed enabled within LadybugCapPro, ensure the values “**GPS Time: 1, PPS: 1, Quality: 1**” are displayed near the bottom of the interface. **These values will not update until a picture is taken.**

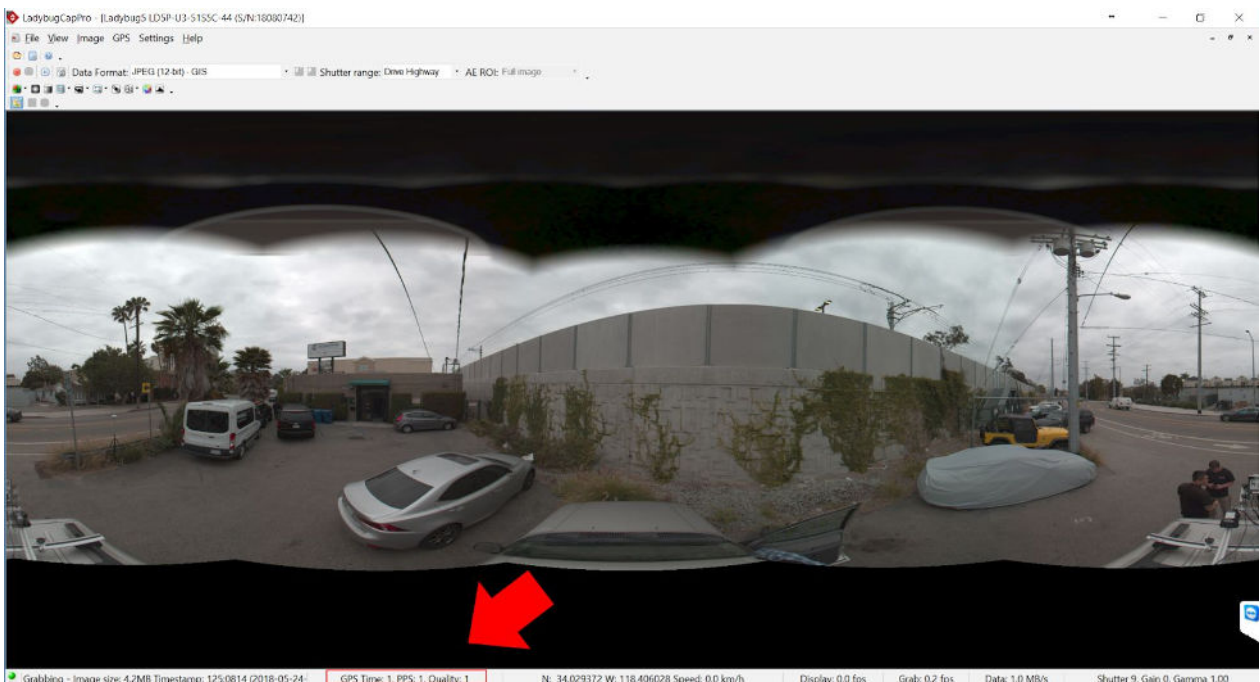
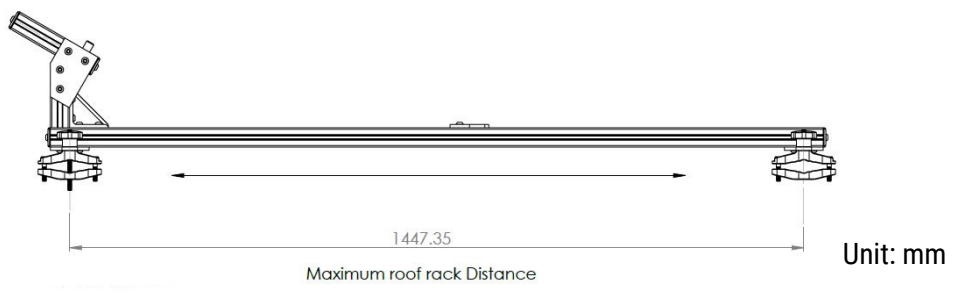
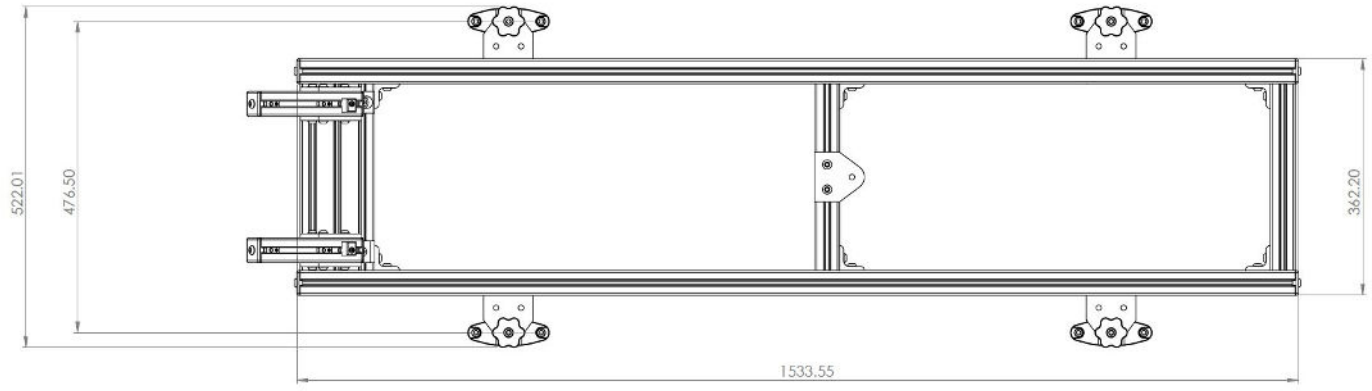


Figure 16: GPS Time Sync verification

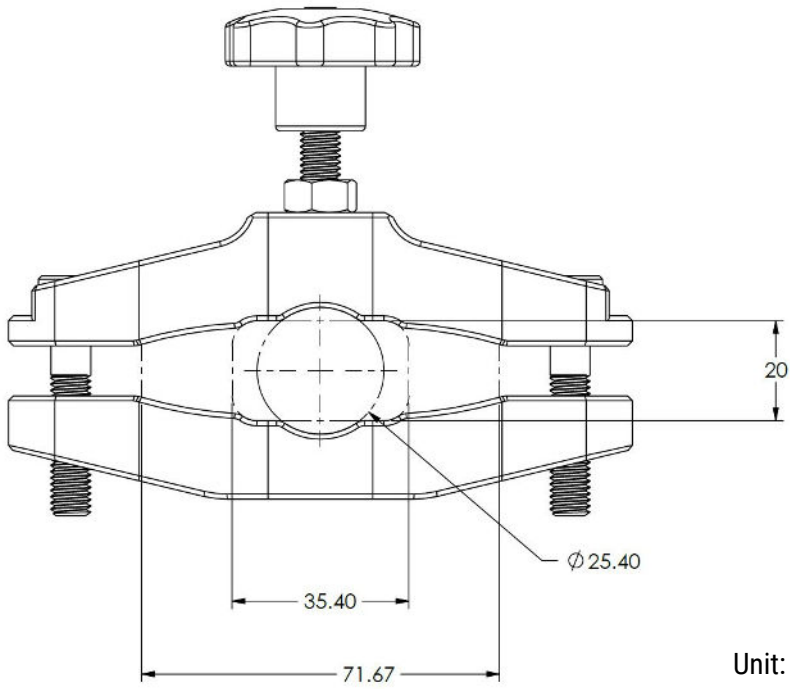
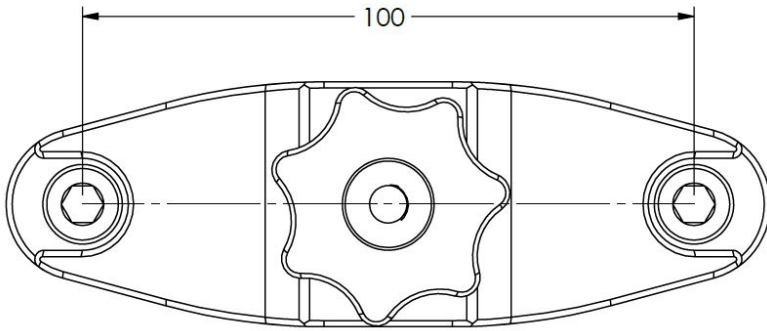
BEFORE CONTINUING, MAKE SURE TO VERIFY GPS TIME SYNC READS:  
**“GPS TIME: 1, PPS: 1, Quality: 1”**  
 DO **NOT** CAPTURE AND RECORD IMAGERY WITHOUT GPS TIME SYNC.

# Dimensions

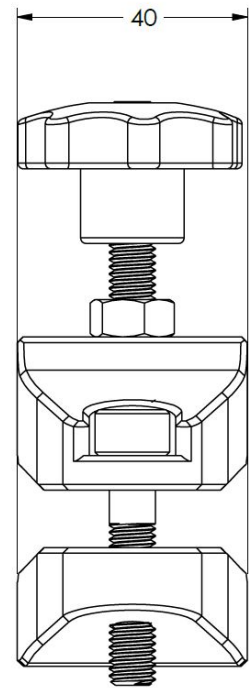
## Roof Rack



# Clamp



Unit: mm



This content is subject to change.

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