ZEB VISION

Hardware User Guide

Notes

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1. Introduction

The ZEB Vision can be used with the ZEB Horizon system to capture 360° panoramic photography in 4K definition for point cloud visualisation and colourisation. Data is captured as the user walks through the area of interest. The ZEB Vision uses GeoSLAM's leading SLAM algorithm to automatically and accurately position panoramic photos on a point cloud for an interactive viewing experience.

Provided the simple guidelines set out in this manual are adhered to, accurate 3D point clouds can be generated in a fraction of the time taken with traditional terrestrial laser scanning methods.

2. List of Parts

Along with the components in a standard ZEB Horizon system, the ZEB Vision also includes the items listed below.

Part no.	Description
K_GS_ZEB_VISION	ZEB Vision camera and mount
	ZEB Vision ethernet cable
	3mm HEX Key
	ZEB Horizon Hard Case

Figure 2-1

3. Data Capture

3.1. Firmware Update

If you are retrofitting a ZEB Vision camera to an existing ZEB Horizon system, please ensure you have the latest version of the firmware installed. Instructions for this process can be found in Appendix A.

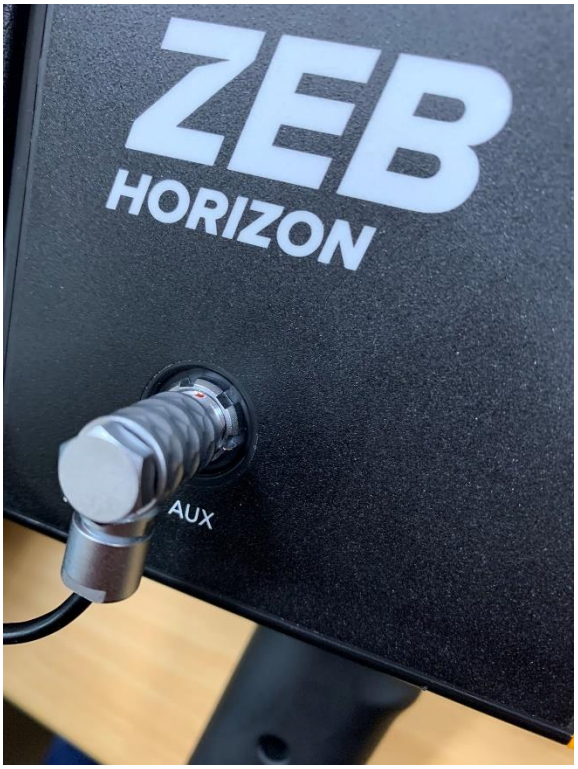
3.2. Mounting and Installation

After unpacking your ZEB Vision kit, please follow these simple steps to ensure the system is set up correctly for use.

Step 1. Remove the four rubber dampers from the back of the ZEB Horizon scanner.

Step 2. Attach the ZEB Vision camera to the back of the ZEB Horizon scanner using the captive screws provided in the mount. The 3mm HEX key found in the screw accessory kit can be used to tighten these screws and secure the camera in place.

Step 3. Insert the CAM and AUX cables into the relevant ports on the sides of the ZEB Horizon scanner head. Ensure the red dots are aligned before insert the cables.



Step 4. Insert one end of the main cable into the port on the side of the ZEB Horizon scanner head. Insert the other end of the cable into the port on the ZEB Horizon datalogger. Ensure the red dots are aligned before inserting the cables into the ports.

3.3. Collecting Data

The ZEB Vision camera will be powered by the ZEB Horizon system. Ensure the camera is fully connected before powering on the Horizon system, otherwise it will not be detected and no images will be captured. Once the ZEB Horizon initialisation process has been completed successfully, images will begin to be taken.

The LED on the camera will be illuminated green when powered on.

For best practices on capturing data for colourisation, please consult the guidance outlined on GeoSLAM Academy.

3.4. Downloading Images

Insert one end of the ZEB Vision ethernet cable into the back of the ZEB Vision camera and secure by tightening the screw. Insert the other end of the cable into a PC.

3.4.1. Establishing a Connection

The Vision camera is set to Local Link IP address 169.254.0.206 which enables connection to a Windows™ PC set to default Ethernet setting - DHCP “Obtain IP address automatically” without the need to configure the IP settings.

To check the Ethernet settings on a Windows™ PC go to:

Control Panel > Network and Internet > Network Connections

Right click on the Ethernet adapter to be checked and select:

Properties > Internet Protocol Version 4 (TCP/IPv4)

Select the ***Obtain the IP address*** automatically option button if not already set as shown in Figure 3.1 and click ***OK*** to close the Network Properties dialogue boxes.

Connect an Ethernet cable between the datalogger and the web enabled device and power the data logger ON

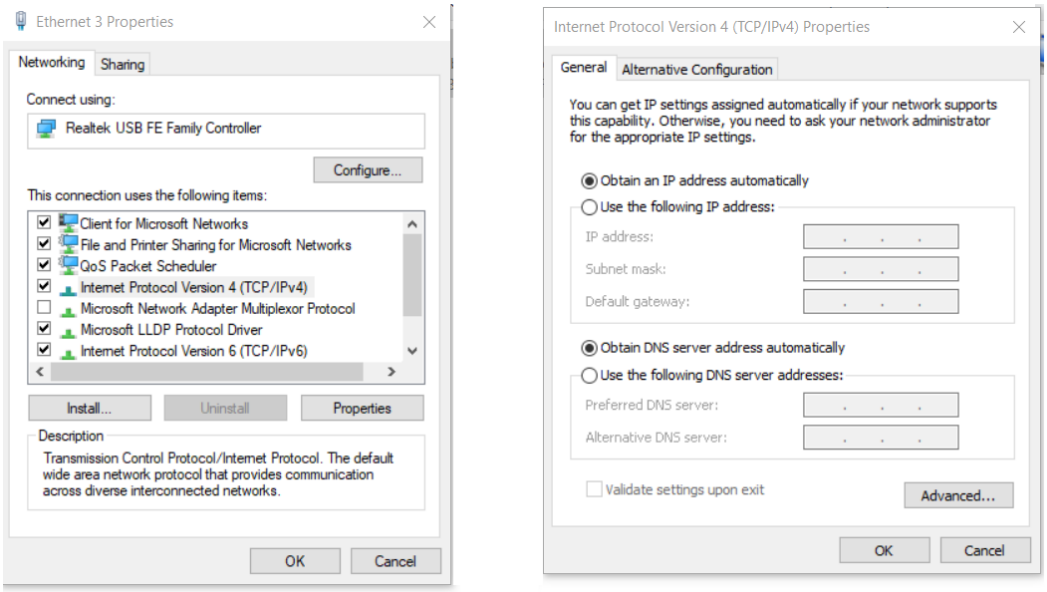


Figure 3-1

3.4.2. Downloading Images

Data from the ZEB Vision is stored on the internal data drive in the camera. Images are stored in the format - **nnn_F_xxxxxx.jpg** and **nnn_R_xxxxxx.jpg**, where:

- **nnn** is the image number
- **F** or **R** is the lens type (either front or rear lens)
- **xxxxxx** is the internal camera timestamp (PTS)

Open an instance of Windows™ File Explorer and enter the address ftp://169.254.0.206/.

Images are saved in project folders named incrementally based on the order of scans (i.e. Project_1, Project_2 etc). Copy and paste the image folders you require to an appropriate location on your host PC.

It is recommended to delete all project folders and images from the camera once they have been downloaded.

4. Appendix

4.1. APPENDIX A – Scan Head Firmware Update

When retrofitting a ZEB Vision to an existing ZEB Horizon, a new version of firmware is required to send the necessary commands and timing information to the camera for synchronisation.

Once this version is installed, the ZEB Horizon will always assume a Vision camera is being used. Therefore a ZEB Cam cannot be used unless the firmware is downgraded. A future update will allow for the detection of each camera.

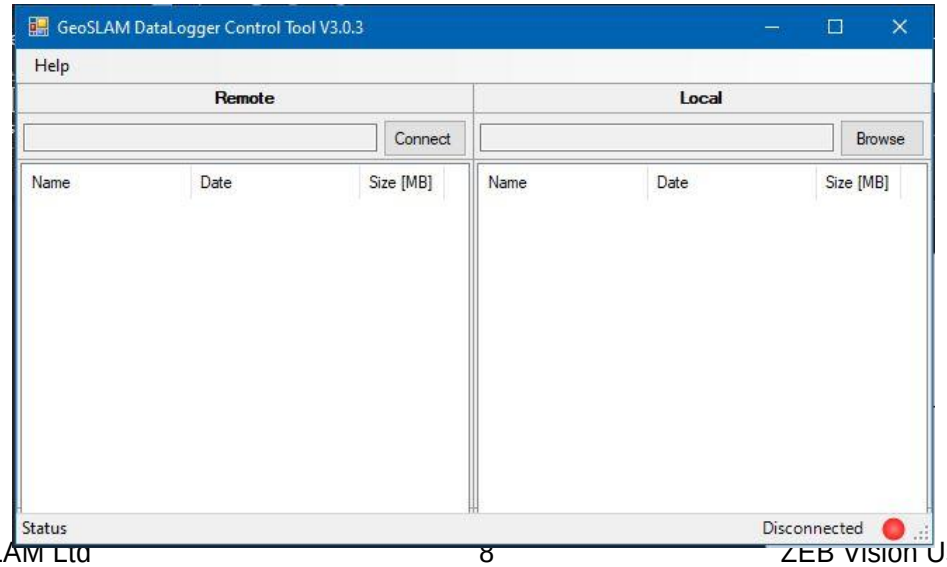
Please follow the steps relating to the appropriate iteration your ZEB Horizon datalogger. Information on how to distinguish which generation of datalogger you have, please consult GeoSLAM Academy.

4.1.1. ZEB Horizon Generation 1 Datalogger

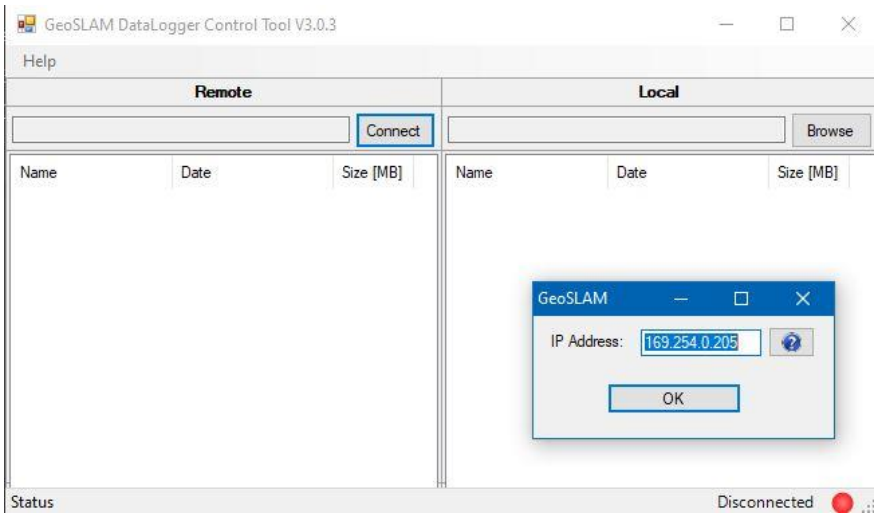
1. Ensure all data files have been removed from the datalogger
2. Download the firmware upgrade files to your machine
3. Insert the USB 3.0 drive into your machine
4. Transfer the firmware upgrade files onto the USB 3.0 drive, then remove the USB from your machine
5. Power on your ZEB Horizon datalogger and wait for the status LED light to pulse red
6. Insert the USB into the datalogger. The data LED will illuminate green to show the transfer of the firmware upgrade files
7. Once the data LED light has switched off, remove the USB and power off the datalogger
8. Connect the ZEB Horizon scanner to the datalogger using the main cable and power on the system as normal
9. After flashing blue, the datalogger status LED will flash red and the scanner LED will illuminate orange during the update. Once complete the system automatically powers off.
10. Wait 10 seconds before powering on the system again. The system should now complete the initialisation process and have the latest firmware installed
11. You may download system log file to check the firmware upgrade has been successful.

4.1.2. ZEB Horizon Generation 2 Datalogger

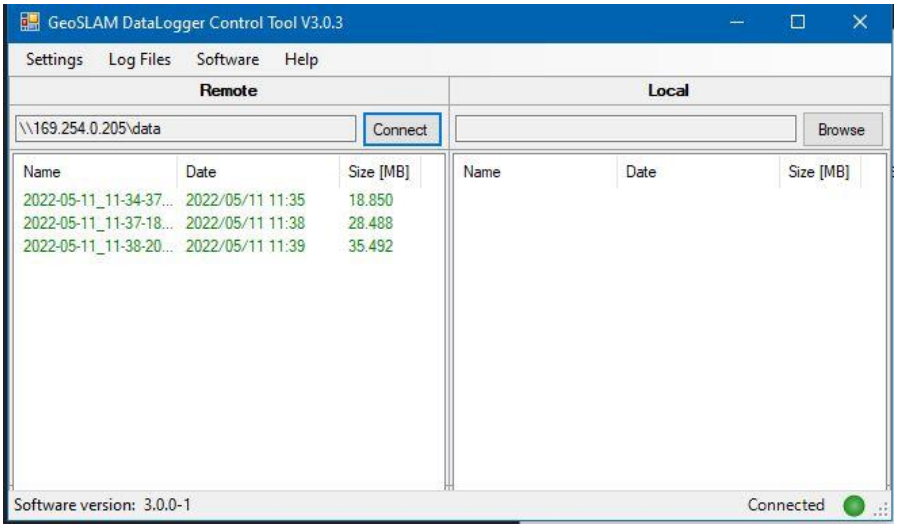
1. Connect the ZEB Horizon scanner to the datalogger using the main cable and power on the system as normal
2. Make a network connection between the PC and the datalogger as outlined in the ZEB Horizon User Guide
3. Download and open the Gen 2 Datalogger Control Tool from https://geoslam.com/getting-started-zeb-vision/. The following screen will appear.



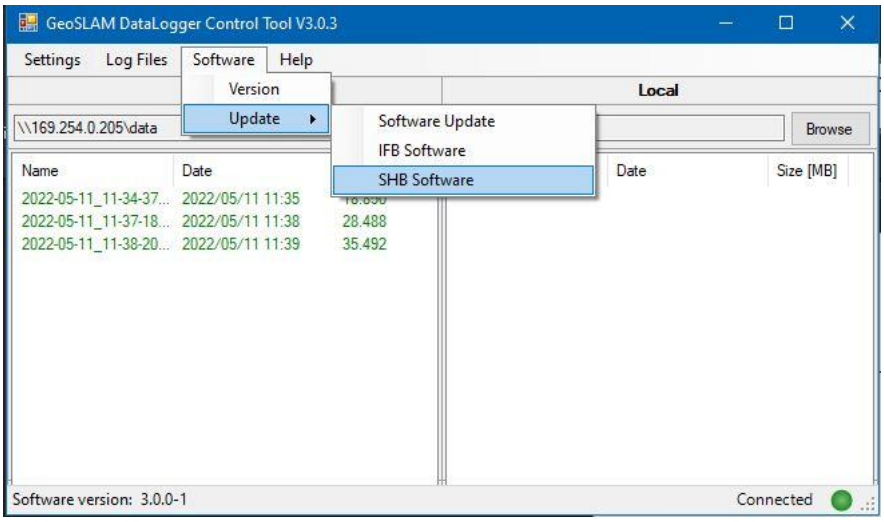
4. Click “Connect”, and then click on the “?” icon. The Datalogger’s IP address will be detected.



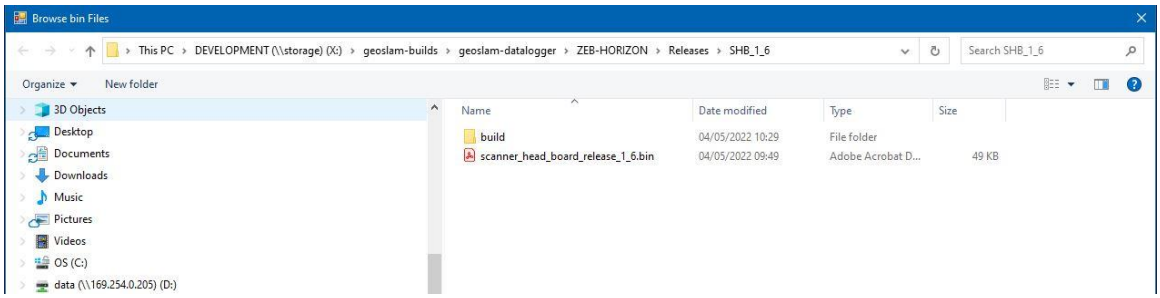
5. Click “OK”. The Datalogger is now connected.



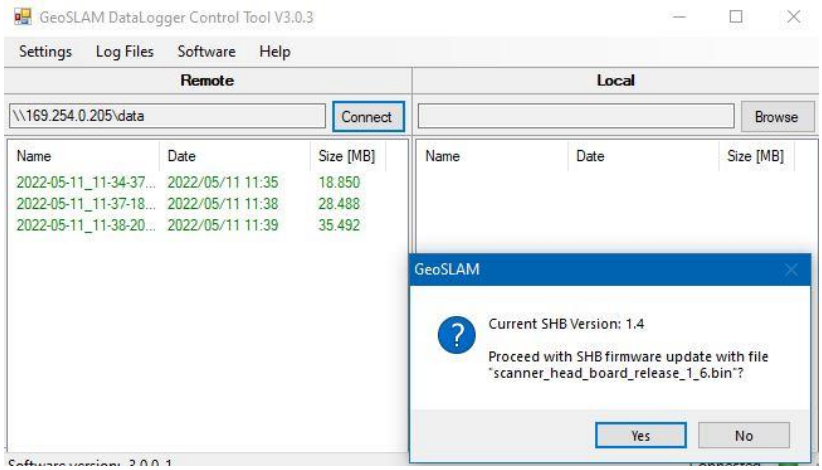
6. Click on “Software, Update, SHB”



7. Choose the relevant update file.



8. Click “Yes” to continue.



9. Click OK to begin the update process. After the update has finished, restart the Datalogger, and the process is complete.