



External Cameras Application.

Boxfish ROV



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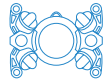
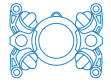


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1 Introduction

The Boxfish external cameras application allows you to record and view video and images captured by a set of two cameras mounted to the outside of your ROV. You can also use the app to customise various settings.

The application can be used for all types of external camera configurations, including stereo cameras, photogrammetry cameras and surface cameras.

1.1 Specifications

All external cameras are depth-rated to 1000m, making them compatible with all models of Boxfish ROV.

2 How to access the application

2.1 Components required

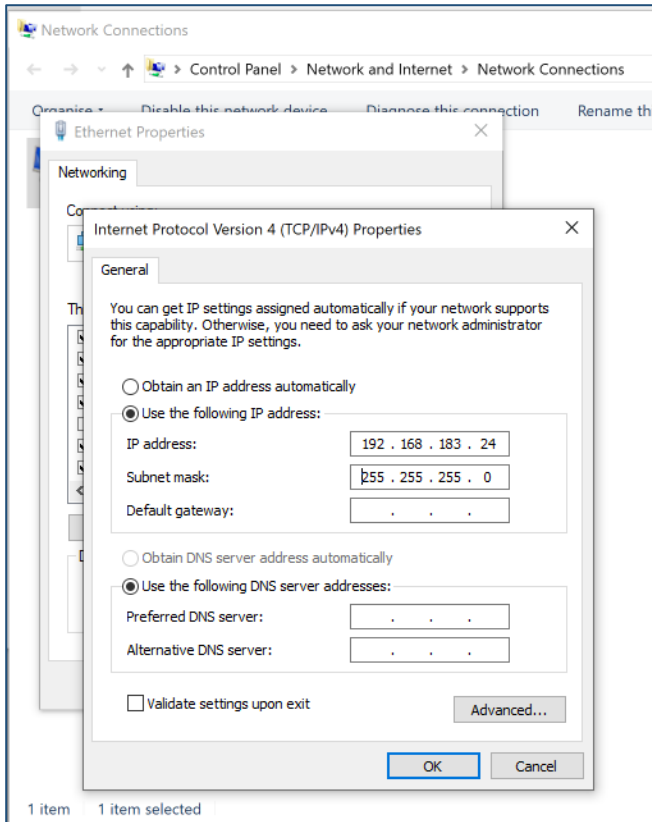
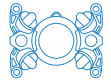
- Ethernet cable
- Laptop/computer
- Boxfish Control Station which is already connected to the ROV via the tether reel. The ROV and the Control Station should be powered on.

2.2 How to access the application

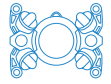
1. Connect your computer to the Control Station with the ethernet cable. Use the ethernet port (at number 5 below) on the left hand side of the Control Station, as shown below:



2. On your laptop, configure your ethernet port to have a static IP address. In Windows, go to: Settings > Network & Internet > Ethernet > Change Adapter Settings > Ethernet > Change Settings for this Connection > Internet Protocol Version 4 (TCP/IPv4).
3. Use an IP address in the range 192.168.183.16 to 192.168.183.24. Set subnet mask to 255.255.255.0. Leave the other fields blank. Click OK.



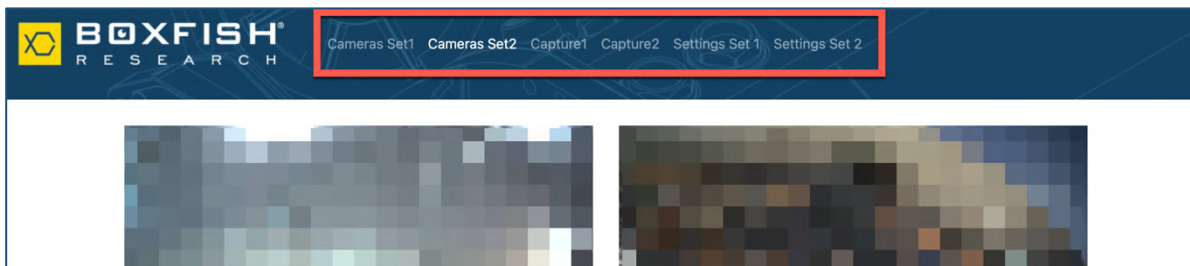
4. Open an internet browser. In the address bar type in <http://192.168.183.220/>. The external cameras application will open in your browser.



3 How to use the application

The main menu contains options for two sets of cameras. You'll use the menu items for **Set 1** or **Set 2** depending on how the cameras are attached to your ROV:

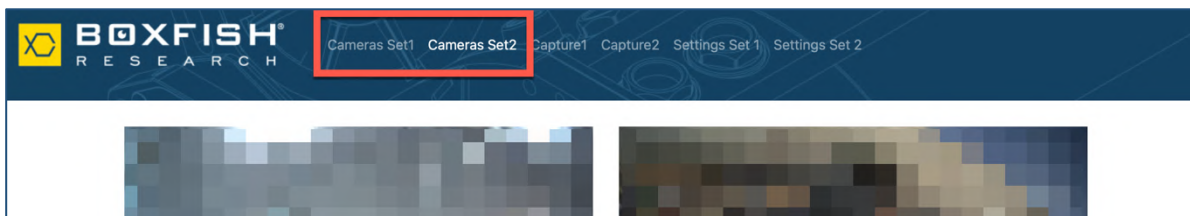
- **Set 1:** Use these menu items if you have forward-facing cameras mounted to the front of your ROV.
- **Set 2:** Use these menu items if you have downward-facing cameras mounted to the bottom of your ROV.



3.1 View live video feed from external cameras

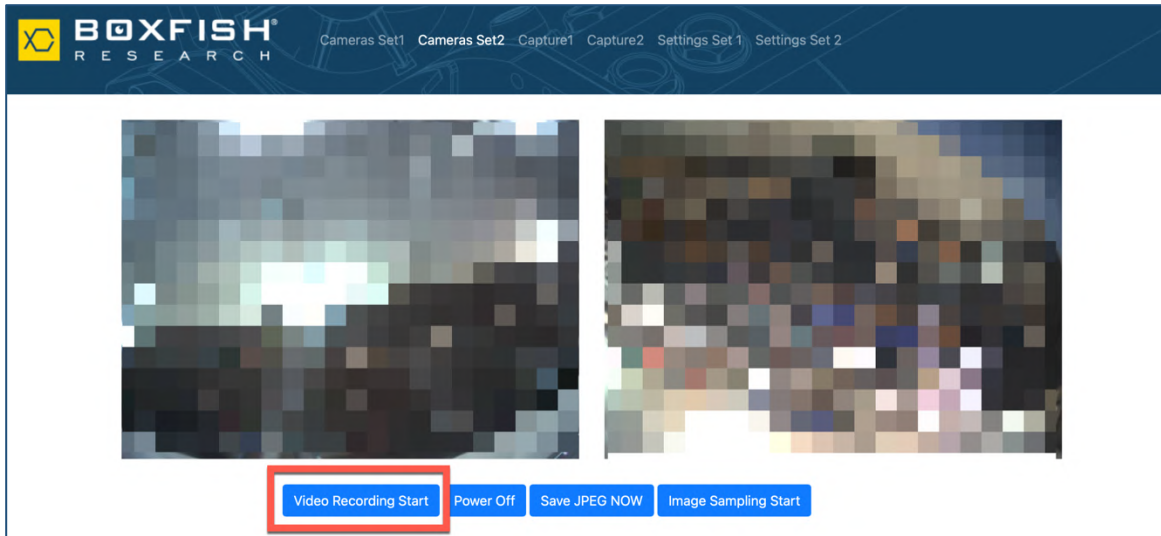
The cameras will start automatically when the ROV is powered up.

Click either **Cameras Set 1** (forward cams) or **Cameras Set 2** (down cams) to view a live feed from the applicable set of external cameras.



3.2 Start/stop recording video

To start recording video, click **Video Recording Start**. To stop recording, press the button again; it will have changed to **Video Recording Stop**.



3.3 Take a photo

Click the **Save JPEG NOW** button to instantly take a photo with both cameras.

This button is useful if you need to take a lot of photos in-between the timelapse interval (see next section). One click will take one image from both cameras.

Images will be stored in a directory and is accessible from the applicable menu (**Capture 1** or **Capture 2**).

Note: This feature is also available while you are recording video.

3.4 Start/stop capturing timelapse images

Use the **Image Sampling Start** button to start capturing images from both cameras at set intervals.

The application default setting is one image from both camera every 10 seconds; you can change this in the settings (see next section).

To stop capturing images, click on the button again, which will have changed to **Image Sampling Stop**.

3.5 View captured video and/or images

Video files, and files from images captured from **Save JPEG NOW** or **Image Sampling**, are available in directories accessible from **Capture 1** or **Capture 2** in the top menu.



Index of /capture2/

../		
DOWN-1609963021-1-0.jpg	06-Jan-2021 19:57	514656
DOWN-1609963021-1-1.jpg	06-Jan-2021 19:57	524861
DOWN-1609963021-2-0.jpg	06-Jan-2021 19:57	554848
DOWN-1609963021-2-1.jpg	06-Jan-2021 19:57	585408
DOWN-1609963024-3-0.jpg	06-Jan-2021 19:57	534115
DOWN-1609963024-3-1.jpg	06-Jan-2021 19:57	570143
DOWN-1609963025-4-0.jpg	06-Jan-2021 19:57	534562
DOWN-1609963025-4-1.jpg	06-Jan-2021 19:57	560458
DOWN-1609963028-5-0.jpg	06-Jan-2021 19:57	521903
DOWN-1609963028-5-1.jpg	06-Jan-2021 19:57	533877
DOWN-1609963029-6-0.jpg	06-Jan-2021 19:57	522265
DOWN-1609963029-6-1.jpg	06-Jan-2021 19:57	538109

3.5.1 Save images to your computer

Type the address [\\192.168.183.220\](http://192.168.183.220) into your Windows address bar to view the directory as a folder – from here you can easily copy images to your computer or delete any you don't want to keep.



4 Settings

Use the **Settings Set 1** (front-facing cameras) or **Settings Set 2** (down-facing cameras) menu item to select camera settings.

To save the settings for this session, click **Submit**. Settings will be saved until you close your browser window.

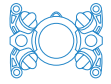
Save Permanently will save these settings until you power off your ROV and Control Station.

Example of settings screen

4.1 List of settings

The below settings are common to each set of cameras. Default settings are shown and we have noted which values we do not recommend changing from the defaults.

Setting name	Available Values	Description of the setting
Record Type	Split (default)	Creates two separate files
	Merged	Creates one merged file
Light Strobe	6000 (default)	Used for reducing motion blur while capturing images from the moving ROV. Don't change
Calibration	Enabled (default)	Removes distortion from lenses
	Disabled	Does not remove distortion



Exposure Mode	Auto (default)	Suitable for all conditions but should be set to auto at shallow depths or changing light conditions
	Fixed/Set	This can be used in deeper water when ROV lights are main source of light
Exposure	4000 (default)	Exposure time in microseconds. If you have set Exposure Mode to Fixed/Set, you can change this to adjust the image brightness. If Shutter is set to Global Reset, the value of the exposure should be shorter than the value of the strobe time which is fixed at 5500 microseconds. Values between 4000 and 5500 are reasonable.
Shutter	Rolling (default)	Suitable for shallow depths where ambient light or external light is the main source of light
	Global Reset	This can be used in deeper water when ROV lights are main source of light
Sampling Time (ms)	10000 (default)	Time in milliseconds between image captures
Sample images	1 (default)	Number of images to take each from each camera at Sample Time (eg every 10000ms). If this value is set to more than one, the images will be taken in quick succession every 10000ms.
White balance	Auto (default)	White balance values (100-400) for Red Channel and Blue Channel will be automatically selected
	Manual	When White Balance is set to Manual, you can select values from 100-400 for Red Channel and Blue Channel



4.2 Image settings

Image settings for each camera set are shown below.

	Height	Width	Offsets			
			xoffset1	Xoffset2	yoffset1	yoffset2
Cam Set 1 (front)	1472*	1984*	0	0	0	0
Cam Set 2 (down)	2880*	3840*	80	80	60	60





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