QYSEA

USER MANUAL
FIFISH W6 PRO

V1.1

Contents

Chapter 1 Backgrounds
Safety and Regulations

The FIFISH W6 PRO is the professional-rated underwater ROV, training and practice is necessary before first dive. Contact your local authorized dealer, training school, or QYSEA Tech Support. Email: support@qysea.com

Do NOT touch the running propeller

Do NOT run the thrusters in the air for over 3 seconds to avoid overheating the motors

Do NOT throw the ROV when deploying it into the water

Do NOT look directly to the LED lights, and do NOT touch the LED lights when they are ON

Laser radiation class 3B. Avoid direct eye contact with the laser projection.

Beware of the environment while operating the ROV (tide, water level, water traffics, etc.)

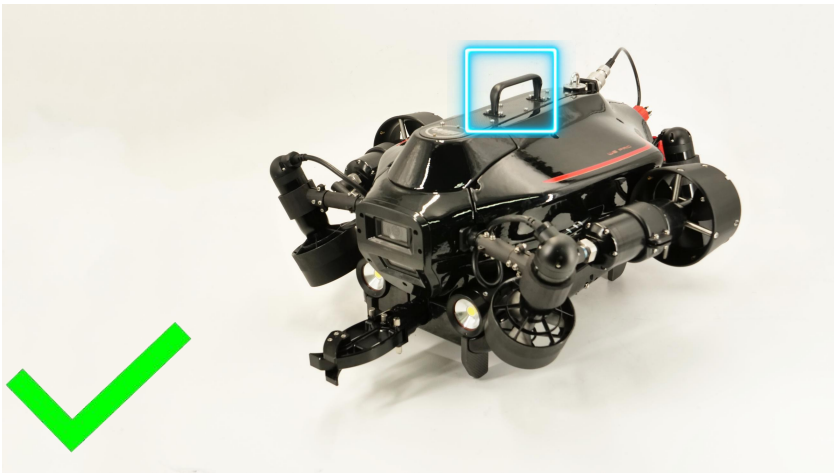
Avoid the reefs, rocks, seaweeds, fishline or other objects that may cause damage to or entanglement

Be part of marine protection and conservation for the local coral and marine life

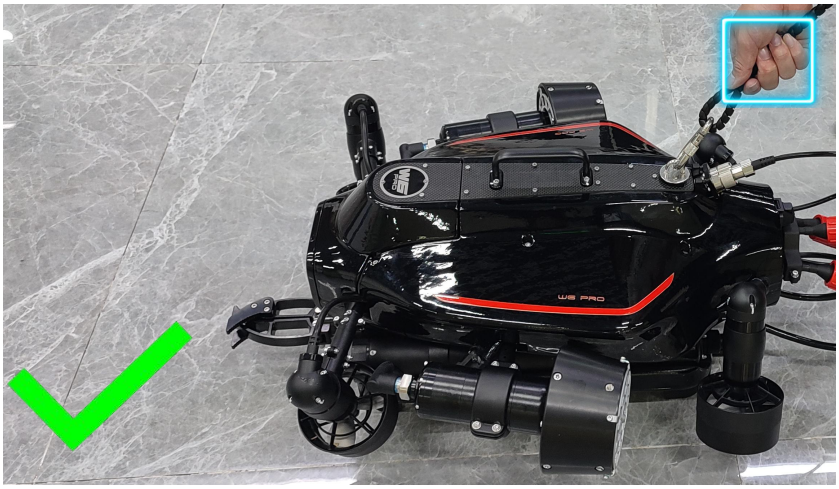
Check the, Maintenance Guide and perform maintenance after each dive

Chapter 1 Backgrounds

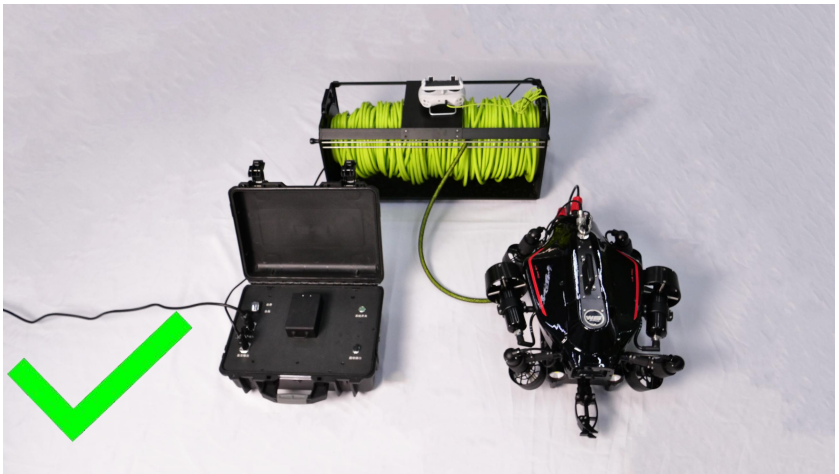
Safety Precautions



Hold the top handle when carrying the underwater ROV

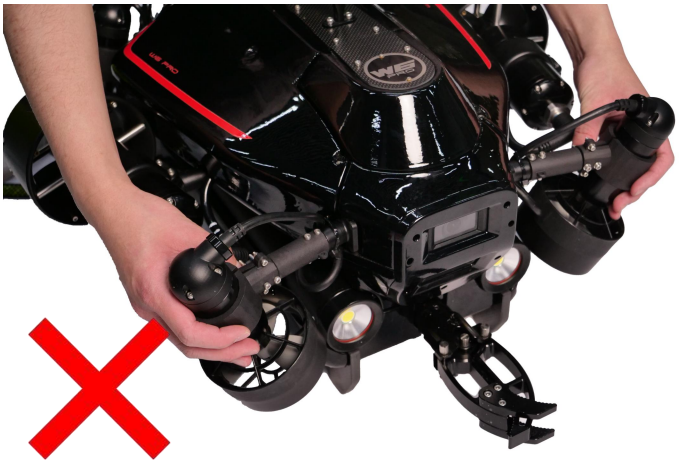


Hold the top handle and the tether secured behind the safety buckle when deploying or retrieving the ROV

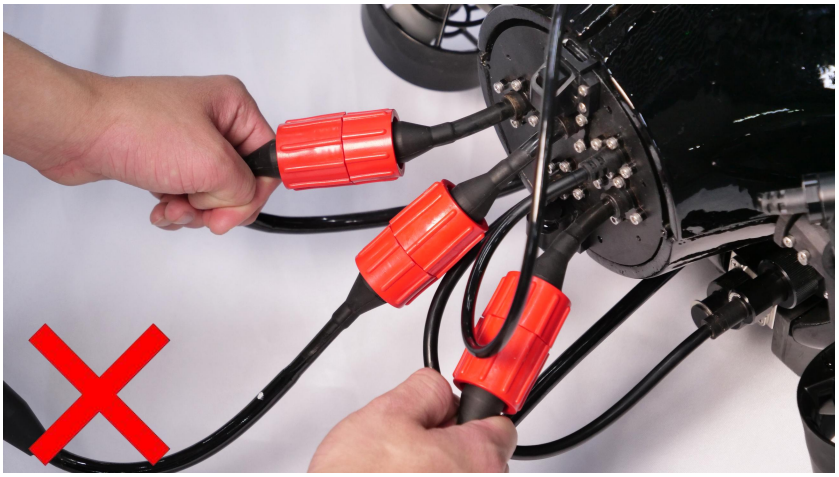


Get the ROV system connected first before powering on it

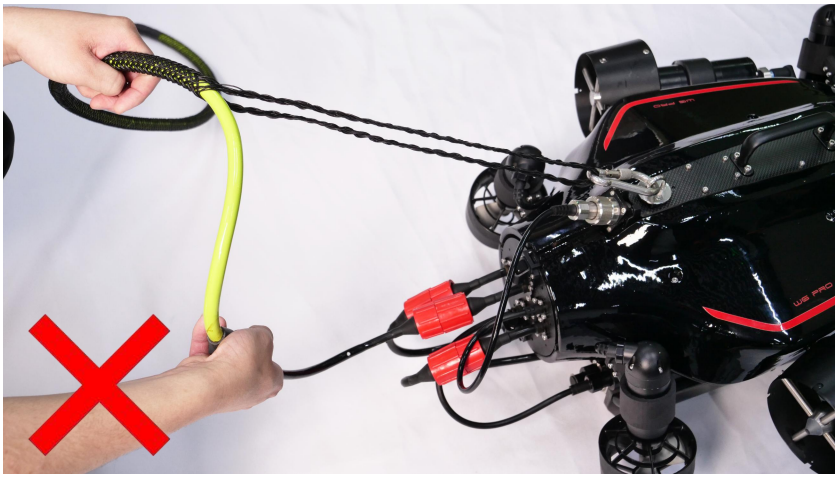
Chapter 1 Backgrounds
Safety Precautions



Do **NOT** hold the motor frame when carrying the ROV



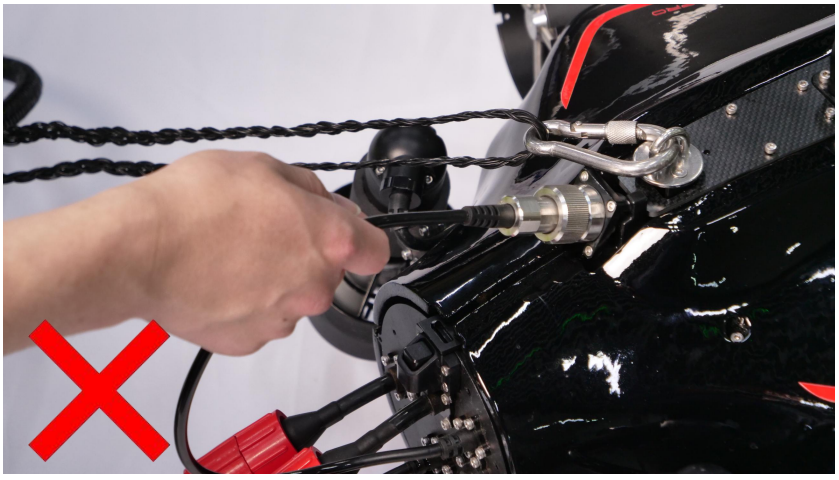
Do **NOT** pull the cables on the ROV when retrieving or carrying the ROV



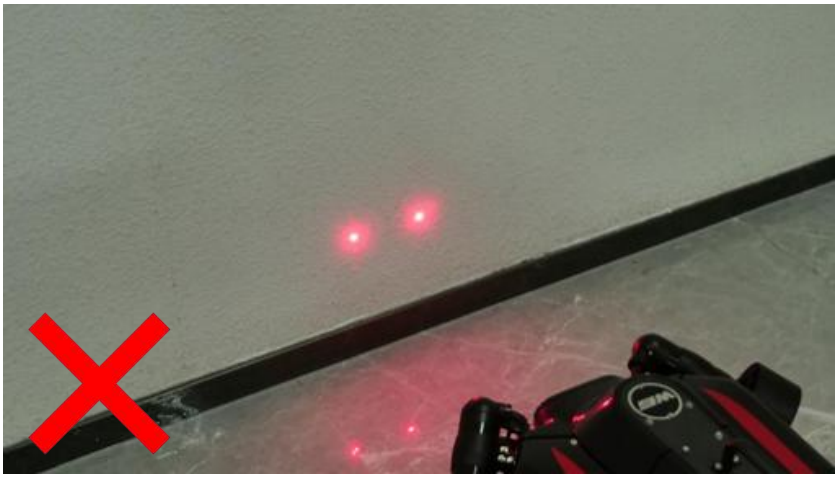
Do **NOT** pull the short cable near the ROV when deploying the ROV

Chapter 1 Backgrounds
Safety Precautions

Do **NOT** hold the connection section between the power supply cable and the connector of the ROV's power tank when deploying the ROV



Do **NOT** pull the PLC cable on the ROV when carrying or deploying the ROV



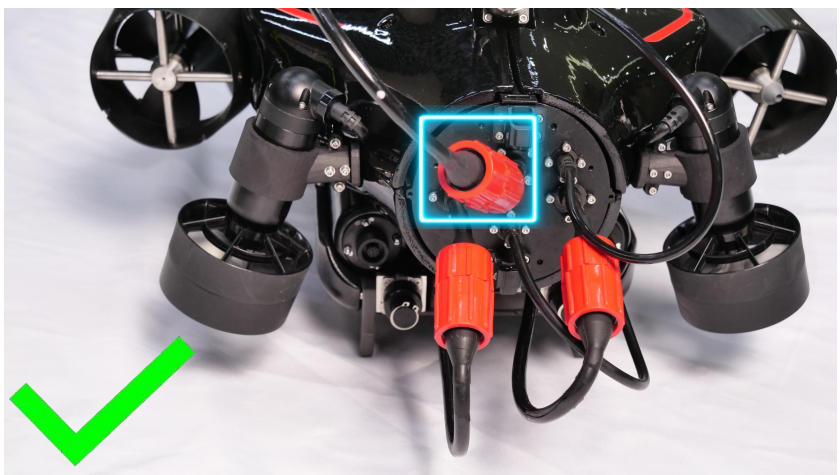
Do **NOT** turn ON the laser **in the air** over 10 second, especially do **NOT** point the laser dots to flammable materials

Chapter 1 Backgrounds

Safety Precautions

Do NOT turn ON the LED light in the air for over 10 seconds to avoid overheating

It is forbidden to connect the power supply cable from the tether spool to the male connector on the bottom back of the ROV



Connect the power supply cable on the tether spool to the male connector on the ROV's power tank only

Do **NOT** unlock the motor in the air over 3 seconds to avoid overheating

Check the O-ring inside protective caps regularly

Check the O-ring inside protective caps regularly

Chapter 1 Backgrounds
Disclaimer

We provide customers with after-sale services, excluding the following circumstances-

- Crashes damage caused by non-manufacturing factors, including but not limited to, pilot errors.
- Damage caused by unauthorized modification, disassembly, or shell opening not in accordance with official instructions or manuals.
- Damage caused by improper installation, incorrect use, or operation not in accordance with official instructions or manuals.
- Damage caused by a non-authorized service provider.
- Damage caused by unauthorized modification of circuits and mismatch or misuse of the battery and charger.
- Damage caused by dives which do not follow instruction and manual recommendations.
- Damage caused by operation in bad water conditions (i.e. strong currents, huge waves, etc.)
- Damage caused by operating the product in an environment with electromagnetic interference (i.e. in mining areas or close to radio transmission towers, caves, muddy condition, radiations, tunnels, etc.).
- Damage caused by operating the product in an environment suffering from interference from other wireless devices (i.e. transmitter, video-downlink, Wi-Fi signals, etc.).
- Damage caused by a forced dive when components have aged or been damaged.
- Damage caused by reliability or compatibility issues when using unauthorized third-party parts.
- Damage caused by operating the unit with a low-charged or defective battery.
- Uninterrupted or error-free operation of a product.
- Loss of, or damage to, your data by a product.
- Any software programs, whether provided with the product or installed subsequently.
- Failure of, or damage caused by, any third-party products, including those that QYSEA may provide or integrate into the QYSEA product at your request.
- Damage resulting from any non-QYSEA technical or other support, such as assistance with "how-to" questions or inaccurate product set-up, installation, and firmware upgrade.
- Damage caused by operating the ROV in the sensitive zone (military, natural resource protection zoning, marine conservation and ocean conservation, etc.)
- Damage caused by unpredictable factors (current, cave collapse, swallow by animal, etc.)
- Products or parts with an altered identification label or from which the identification label has been removed.
- The presence of water droplets or water stains on the ROV may be due to the running tests in water performed at our factory. This will not affect the features and function of FIFISH underwater ROV.
- **Please check the QYSEA After-sales Policy published by official website for more detail. (https://www.qysea.com/support/after-sales/)**

For more information, please check our website for tuition videos, or read FAQ in FIFISH APP/help/FAQ. For latest version of use guide/manuals and other instructions, check on our website.
Contact our technical support, email us support@qysea.com

Note:

This content is subject to change without prior notice.

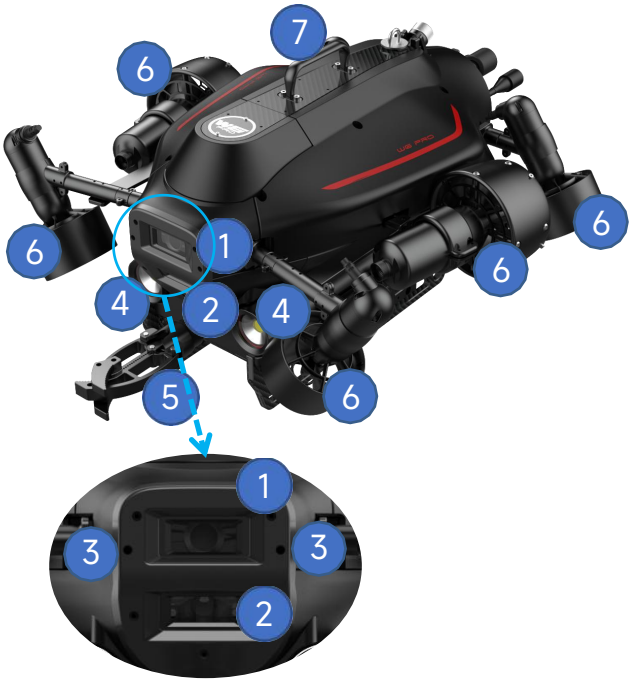
Chapter 2 Introduction
About FIFISH W6 PRO

The FIFISH W6 PRO is an ROV (Remote Operated Vehicle) for commercial and industrial underwater operations. Here's highlight of FIFISH W6 PRO.

- 6 vector thrusters™ optimize the 6 DoF (Degree of Freedom) omni-directional maneuverability, and 4 knots (2 m/s) speed at the same time
- 350 m (over 1100 ft) depth rating covers 95% of underwater operation fields
- The Aluminum Alloy Anodized propellers, to withstand the harsh conditions
- Dual camera system provides larger FOV, the viewing angle of a single camera can reach 166°
- 4K UHD camera produce high resolution image and videos
- High-capacity lithium battery enhanced with swappable design
- The standard 10 cm laser scaler is for underwater measurements

FIFISH W6 PRO's Q-BOX is the underwater connector hub, which divided into 6 ports (4 Type-A Q-Interface, 2 Type-B Q-Interface, 1 Type-A has been occupied by the communication cable and 1 Type-B has been occupied by the robotic arm). The 4 type-A Q-interfaces is designed for a variety of accessories, including the 2D image sonar, station lock module, U-QPS (underwater quick positioning system), 360° scanning sonar, compass ruler, OPSS (on-shore power supply), mud sampler, water sampler (500 mL), salinity sensor, pH sensor, dissolved oxygen sensor, etc. Such a wide variety selection of accessories are perfect for different scenarios.

Chapter 2 Introduction
FIFISH W6 PRO Definition



FIFISH W6 PRO

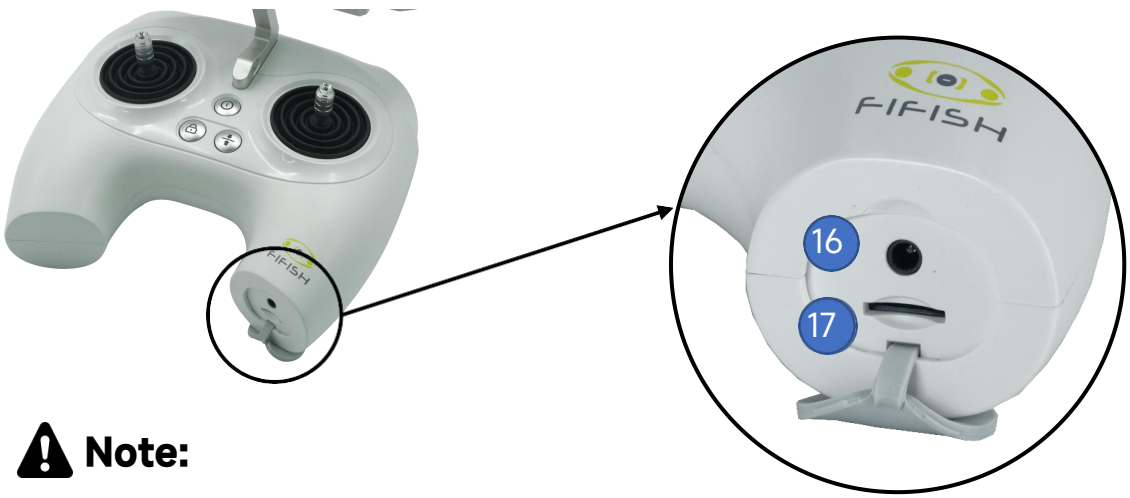
1. Main Camera (Cam-#1) in 4K
2. Secondary Camera (Cam-#2) in 4K
3. Laser ×2
4. 6,000 Lumens LED Light ×2
5. Robotic Arm
6. Q-motor Pro Thruster ×6
7. Handle
8. Safety Anchor Point [1]
9. ROV Tether Port
10. Female Connector × 2
11. Male Connector x 1
12. Type A Q-interface (A1)[2]
13. Type A Q-interface (A2)[2]
14. Type A Q-interface (A3)[2]
15. Type A Q-interface (A4)[2]
16. Carbon Fiber Leg

Note:

[1] Secure the Safety Buckle to the Safety Anchor Point on the ROV before deployment.
[2] Keep the Q-Interface™ dry and clean.

Chapter 2 Introduction

Remote Controller Definition



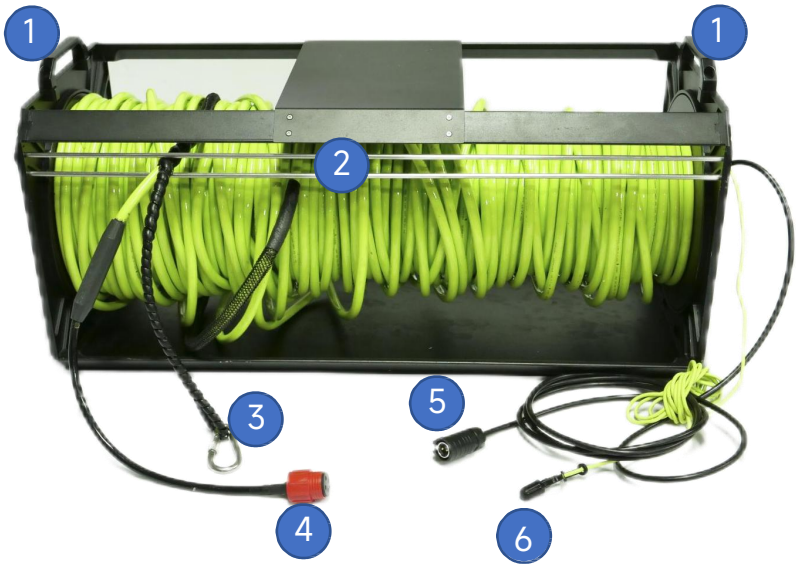
RC (Remote Controller)

1. ON/OFF
2. Depth Hold (ON/OFF)
3. LOCK/UNLOCK
4. Left Control Stick
5. Right Control Stick
6. Right Wheel
7. Left Wheel
8. Video (Record/Stop) [1]
9. Control Mode (Attitude / Sport / Combination)
10. Tether Port
11. Ethernet Port (mini USB)
12. LED Brightness (OFF, 1, 2)
13. Photo (Snap) [2]
14. Clamp Release Button
15. Clamp for Smart Device
16. Charging Port
17. microSD Slot

Note:

1. In photo mode, press and hold it about 1 second, will switch to video mode.
2. In video mode, press and hold it about 1 second, will switch to phone mode.

Chapter 2 Introduction
Tether Spool Definition



Tether Spool

1. Spool Handle
2. Tether Regulator
3. Safety Buckle
4. ROV Tether Connector
5. DC Output Plug
6. RC Plug
7. Guide Wheel
8. Handle for Retrieval

Note:

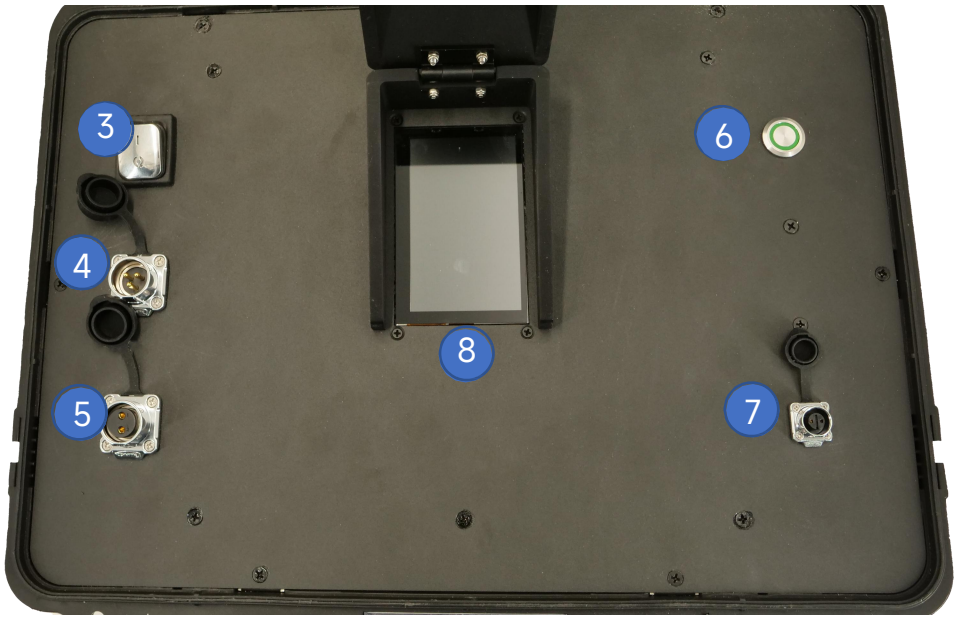
1. Please keep the ROV tether connector, DC out put plug and 3.5mm RC plug dry and clean.

Chapter 2 Introduction

Direct-powered Case Definition

Direct-powered Case

1. Foldable Handle
2. Latch
3. Main Power Switch Button
4. AC Input
5. DC Output
6. System Power Switch Button
7. Communication Interface
8. Display Screen



Note:

1. Please get the ROV system connected first before supplying the power to the direct-powered case.

Chapter 3 Pre-Dive Stage
FIFISH App Installation

3.1.1. FIFISH App Download and Installation

Option 1. Scan the above QR code to download FIFISH App.

Option 2. Search the FIFISH on App Store (iOS) or Google Play (Android).

Option 3. Go to QYSEA's website at https://www.qysea.com/support/app-download/

3.1.2. FIFISH Windows App

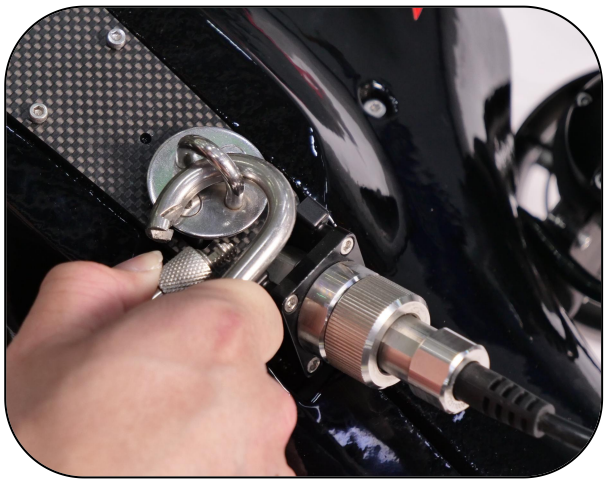
For professional users, some sensor require a laptop and Window to run their own App for data processing and analysis. FIFISH Window App run on the Panasonic Toughbook FZ-55 is ideal for such application.

FIFISH App allows you to see the camera, sonar information, and U-QPS in the same screen.

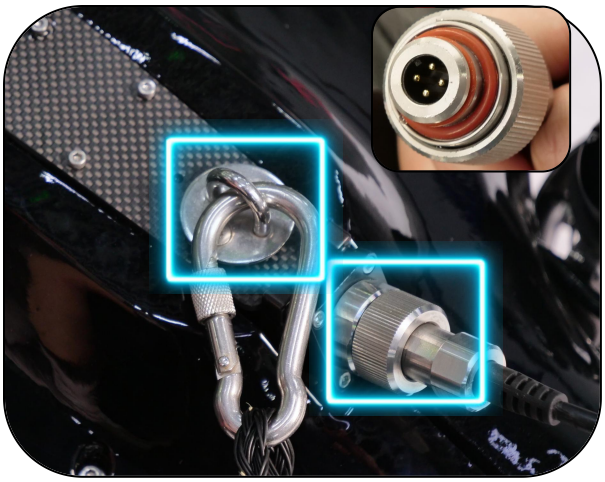
3.2. Hardware Connection

Overview of hardware connection

3.2.1. Secure the safety buckle to the anchor point while connecting the ROV plug to the PLC port



3.2.1.1 Anchor point

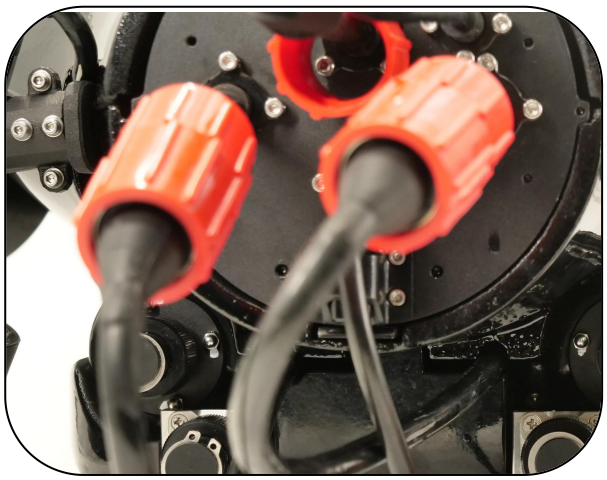


3.2.1.2 Safety lock on the anchor point

Note:

Please orient the black alignment key of the ROV plug to the Q-interface's small cut before connecting.

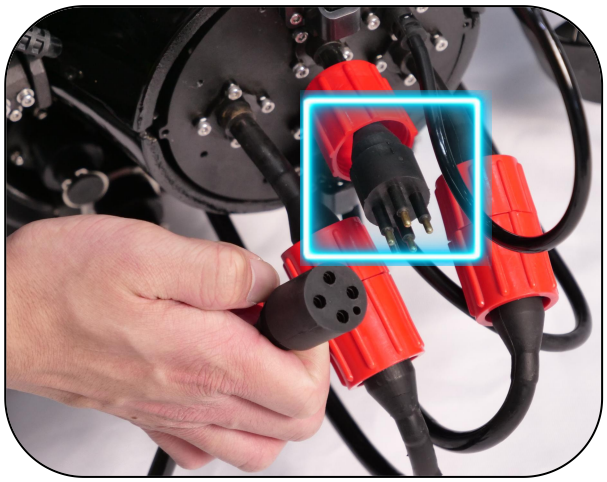
3.2.2. Finish the cable connection on the ROV

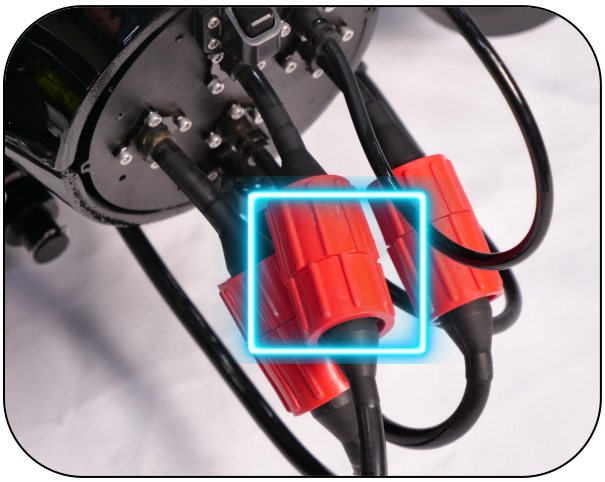


3.2.2.1 When connecting the cables of the power tank, please connect the left cable with the left connector while connecting the right cable to the right connector

3.2.2.2 Connect the communication cable on the ROV to the type-A Q-interface

3.2.3. Connect the power supply cable from the tether spool to the male connector on the ROV's power tank

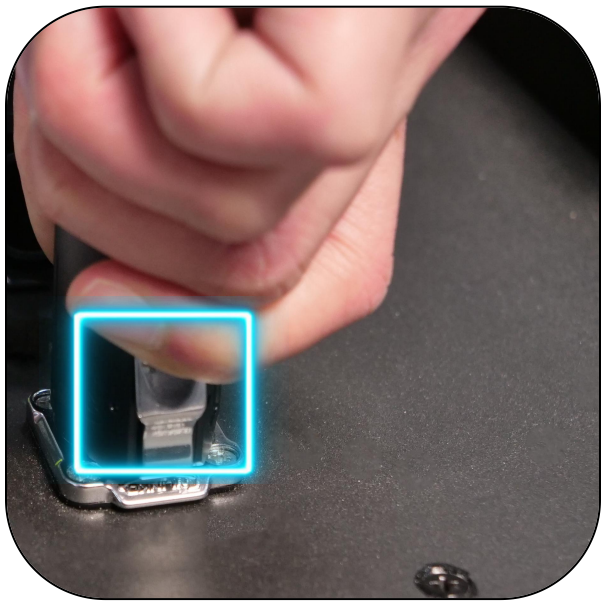




3.2.4. Secure the (3.5 mm head) RC plug on the tether spool into the remote controller

TIPS:
The cable (3.5 mm head) can be inserted into the remote controller after bypassing the bottom bracket and tying the safety knot to avoid the accident that the cable is pulled out.

3.2.5. Connect the male connector of the cable on the tether spool to the DC output port



3.2.5.1 The male connector has 2 pins inside

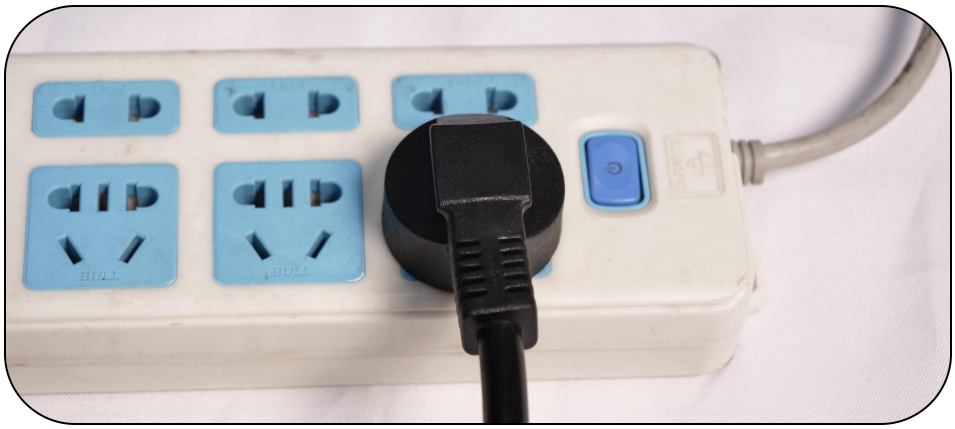
3.2.5.2 Please press the lock button when connecting

3.2.6. Connect the female connector of the main power cable to the AC input port

3.2.6.1 The female connector is designed for the 3-pin port

3.2.6.2 Please press the lock button when connecting

3.2.7. Connect the plug of the main power cable to the external power source when the ROV system is correctly connected



3.2.8. Press the main power switch button first before press the system switch button

3.2.8.1 Press the main power switch button first

3.2.8.2 Press the system switch button next

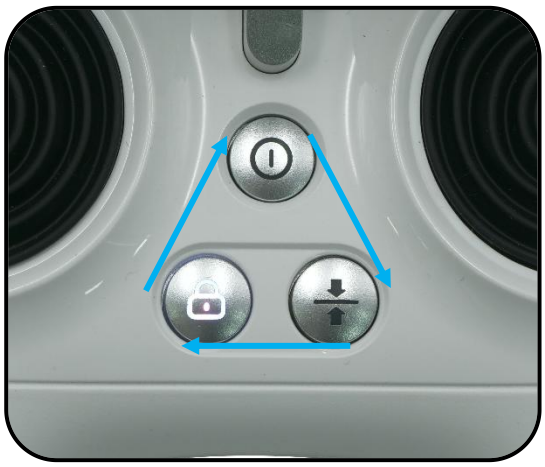
Note:
Please ensure all connections on the ROV system are tightened before powering it on and deploying the ROV in the water.

3.2.9. Turn ON the RC. Press and hold the ON/OFF button (3 seconds)

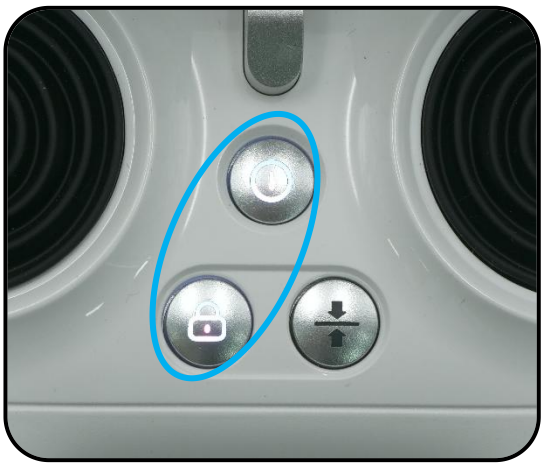
- Remote control will play a turn-on sound and its three buttons will feature a light sequence
- The ROV will turn on automatically and also play a turn-on sound

3.2.10. System connecting

- The “ON/OFF”, “Depth Hold" and "LOCK/UNLOCK” buttons will flash and rotate clockwise, which indicates "Ready to be connected“
- In about 30 seconds, the "ON/OFF” and "LOCK/UNLOCK” buttons will stay solid, which indicates the hardware connection is a success



3.2.10.1 connecting

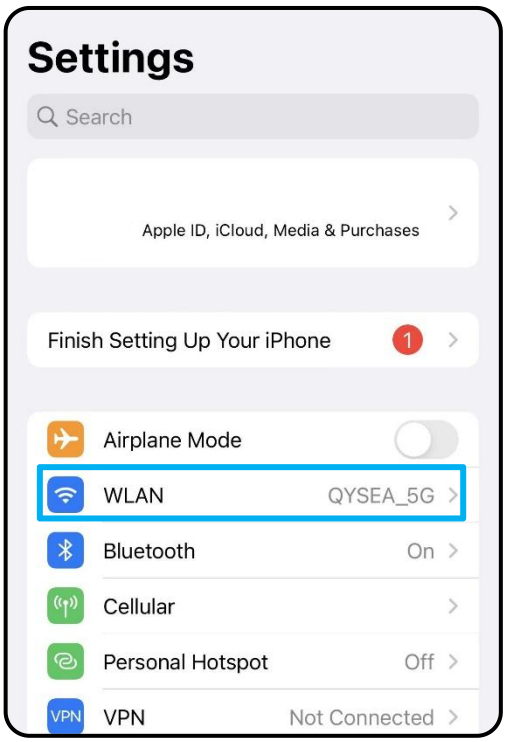


3.2.10.2 connected

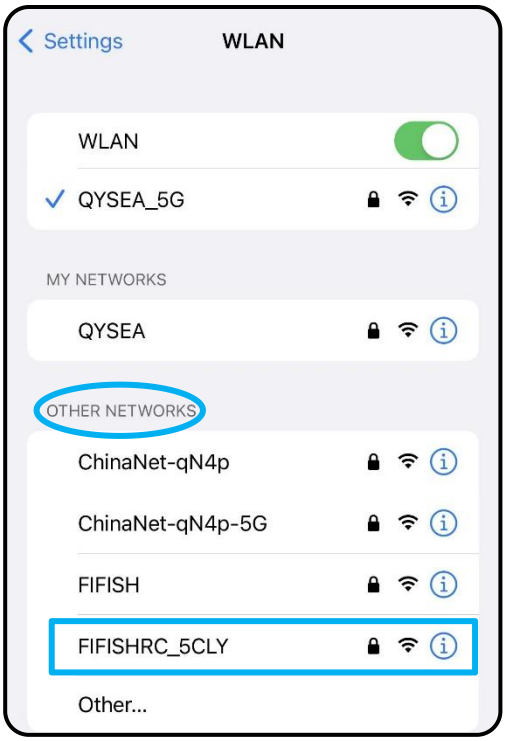
3.3. Software Connection

3.3.1. Smart device connect with the RC's Wi-Fi (5 GHz)

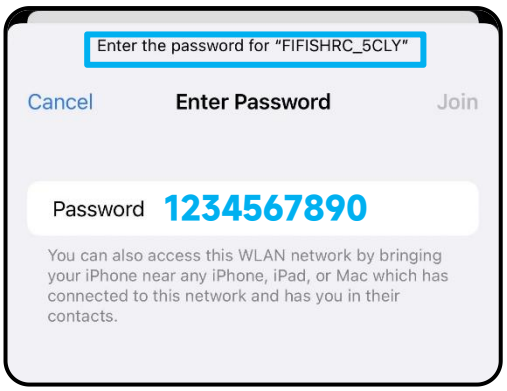
- Go to “Settings”, then “WLAN”
- Find the Wi-Fi network name “FIFISHRC_xxxx”
- Enter the password to connect, the default password is “1234567890”



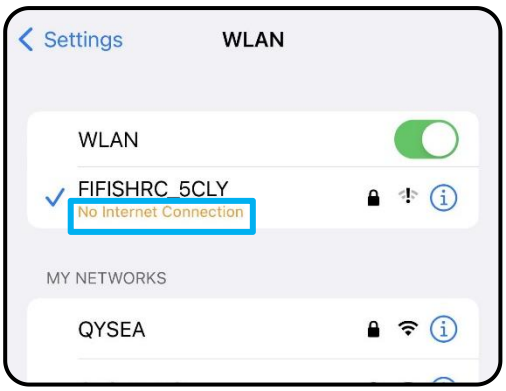
3.3.1.1 System settings



3.3.1.2 Select RC’s Wi-Fi



3.3.1.3 Enter password



3.3.1.4 Connected

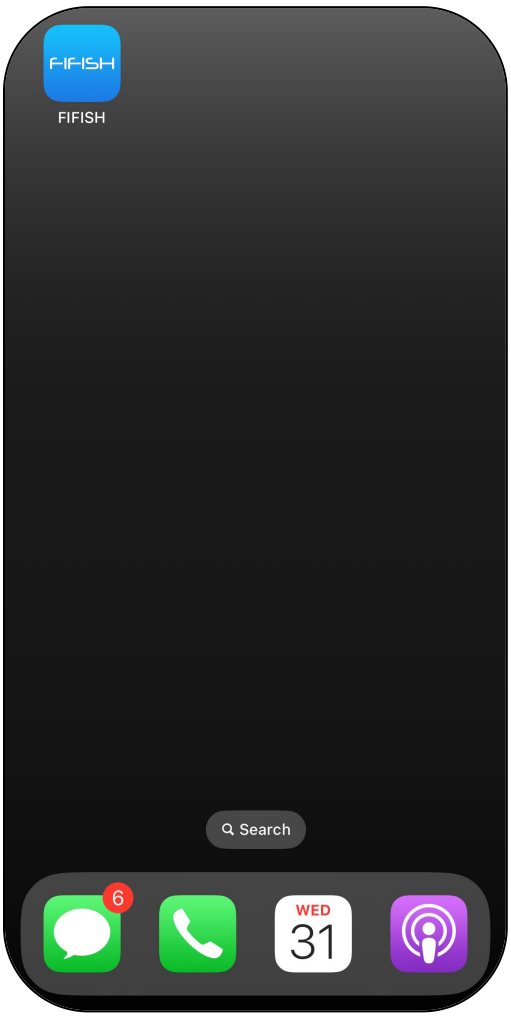
NOTE

*You might see the note ' No Internet Connection' , keep this connection and do **NOT** use your cell data.*

3.3. Software Connection

3.3.2. Open FIFISH App, then press "**Connected**"

- Allow access to photo albums, location, and notifications
- Even the network did not connect to internet, select the "**Keep Trying WLAN**" for iOS users, "**Stay Connected**" for Android users.



3.3.2.1 Open FIFISH App

3.3.2.2 Connected

NOTE

The operation interface will be introduced in Chapter 6 ***FIFISH App****, page 35-59*

Chapter 3 Pre-Dive Stage
Sensor Calibration & Deployment and Retrieval

3.4. Sensor Calibration *(Check the Chapter 6, Sensor Calibration Page 42)*

3.4.1. Go to **General Setting**
3.4.2. Select the **Sensor Icon**
3.4.3. Follow the hint on FIFISH App step by step to perform the ***Gyro-Acce calibration*** first before performing the ***Mag calibration***
3.4.4. It is recommended to enable the ***Plug Check*** function to prevent water ingress due to the unprotected Q interface
3.4.5. **Reboot ROV** in FIFISH App, and Power ON/OFF RC if necessary

3.5. ROV Deployment

- **ONLY** pull on the safety buckle tether and top handle to deploy the underwater ROV into the water.
- Please make sure that the thrusters are **OFF** when the ROV is launched.
- Unlock the thrusters to make the ROV work underwater.

3.6. Retrieval

3.6.1. **LOCK** the thrusters
3.6.2. **STOP RECORDING** the video before closing the FIFISH App
3.6.3. **ONLY PULL** the safety buckle tether and top handle to retrieve the ROV

NOTE
The depth shall greater than 2 meter (about 6 feet) for better operation experiences.

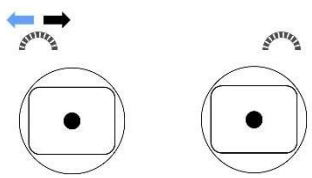
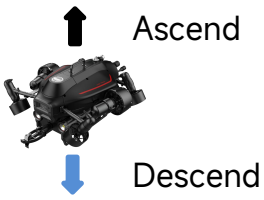
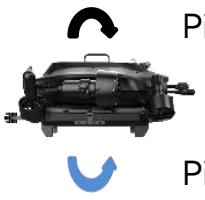
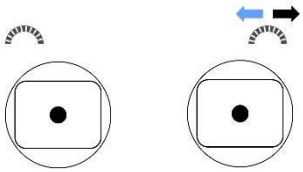
Chapter 4 Controlling
Definition

Definition of Controlling

The FIFISH W6 PRO uses the patented ***Smart Thruster Array***™ to ensure the ultimate maneuverability and delivers the 6 DOF (degree of freedom).

- W6 can move in descend & ascend, left and right, forward and backward.
- W6 can rotate in 360 yaw (z-axis), 360 pitch (y-axis), 360 roll (x-axis).

We have simplified the Left Control Stick, Right Control Stick, Left Wheel and Right Wheel into the following symbol. The arrows on RC indicate the command and the arrows on ROV indicate the actual movements.

Simplified RC Command	Control Preferences	
	ROV Modes (USA/JPN/CHN)	UAV Modes (USA/JPN/CHN)
		
		

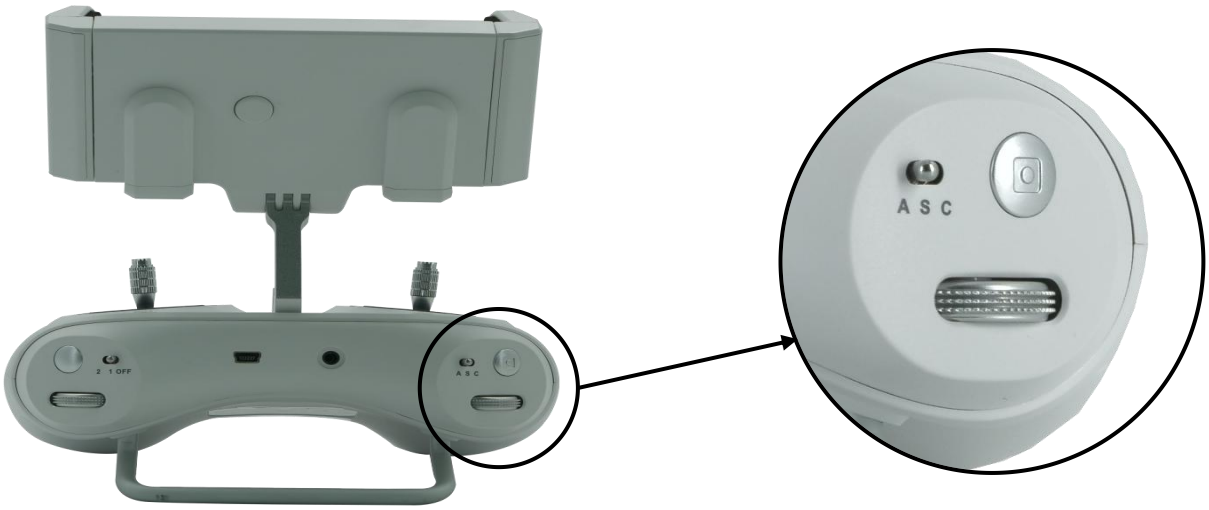
NOTE:

From the FPV (first person view) the **blue** is rolling counterclockwise and **black** is rolling clockwise, and the rolling can activate in Sport or Combination Mode.

Chapter 4 Controlling
Controlling Modes

Controlling Modes

FIFISH W6 PRO supports 3 modes for control: A, S, and C.
A is Attitude mode, S is Sport mode, C is the Combination mode.



Attitude Mode

Attitude mode is designed for beginners. The ROV will not roll in Attitude mode. The ROV will stay in same depth moving when depth holding is ON. Even with pitch angle, the depth will be the same.

Sport Mode

Sport mode is designed for skillful pilots. Sport mode will enable the rolling freedom, so you will access all 6 degrees of freedom of W6. Controlling and moving based on the FPV (Frist Person View), do not operate in the third person view. The ROV will only stay in the same depth with no command input, when depth holding ON.

Combination Mode

Combination mode activate the head tracking controlling via FIFISH VR Goggle, which allows the pilot to use the FIFISH VR Goggle to pitch, roll and yaw the ROV. Combination mode delivers the intuitive control and immersive experiences. Combination mode supports head tracking and remote controller working together.

Suitable Accessories

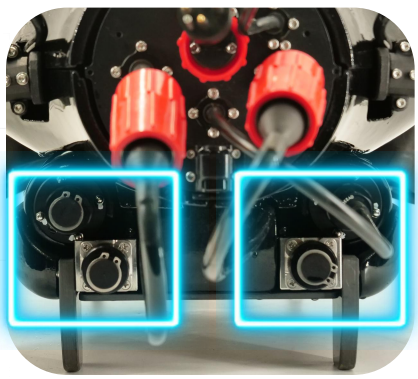
The right wheel will ONLY be working in Attitude mode or Combination mode for motor driven accessories. *For example, robotic arm, water sampler, robotic fish clamp, and compass ruler, and sludge sampler etc.*

Chapter 5 Post-Dive Stage
Data Copy

5.1. Data Copy (Method 1)

5.1.1. Download and install the software “Filezilla” to the PC/laptop
Link: https://filezilla-project.org/

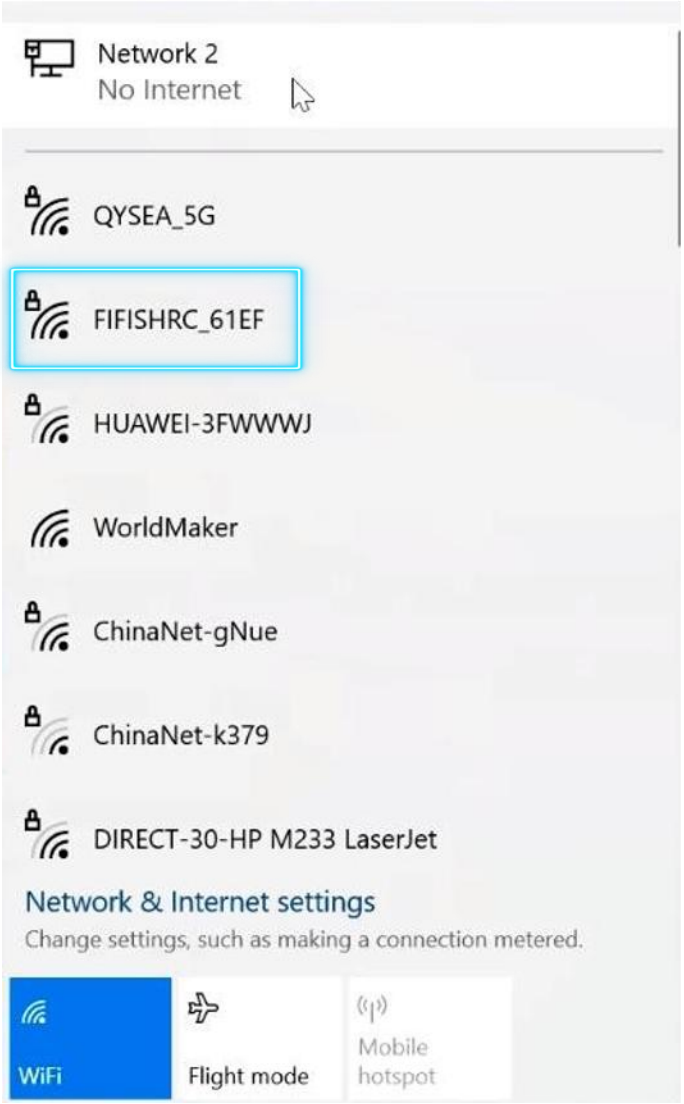
5.1.2. Get the ROV system connected and connect it to the external power source
5.1.3. Connect the one of the Q-interfaces (A1/A2/A3/A4) to the Ethernet port of PC/laptop by data copy cable (9pin to Ethernet cable).



Chapter 5 Post-Dive Stage
Data Copy

5.1. Data Copy (Method 1)

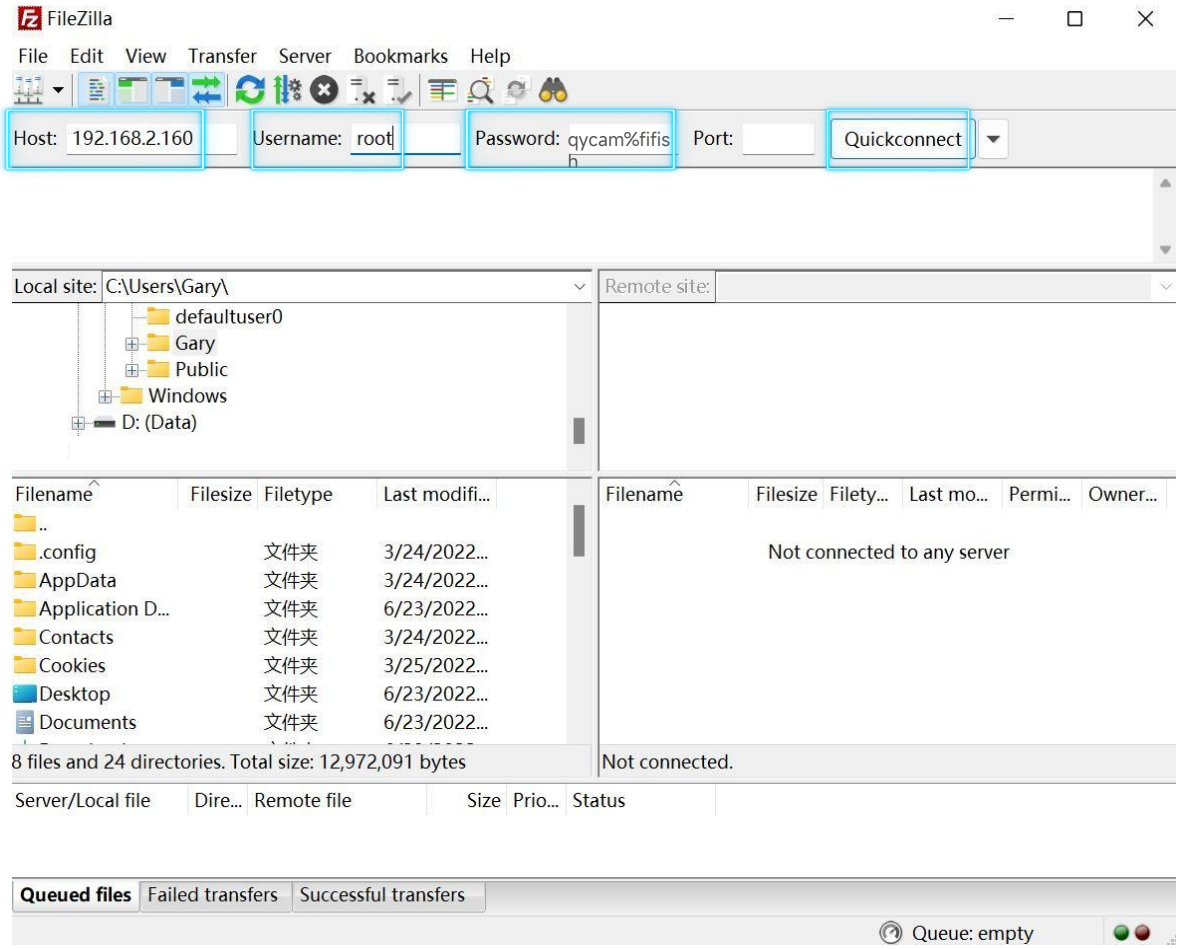
5.1.4. Press the main power switch button and system switch button first, and turn ON the ROV by the RC next
5.1.5. Check the remote control network is connected to the PC/laptop.

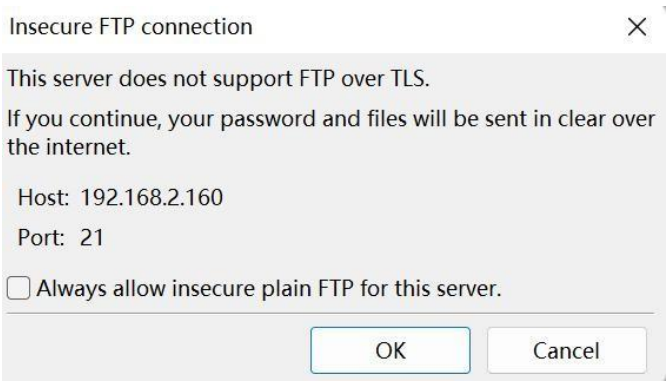


Chapter 5 Post-Dive Stage
Data Copy

5.1. Data Copy (Method 1)

5.1.6. Open the Filezilla, and input the camera IP adress '**192.168.2.160**' (First Camera) or '**192.168.2.161**' (Secondary Camera) in the Host, and input '**root**' to the Username and '**qycam%fifish**' to the Password
5.1.7. Clikc 'Quickconnect'; Click 'OK' when the prompt appears

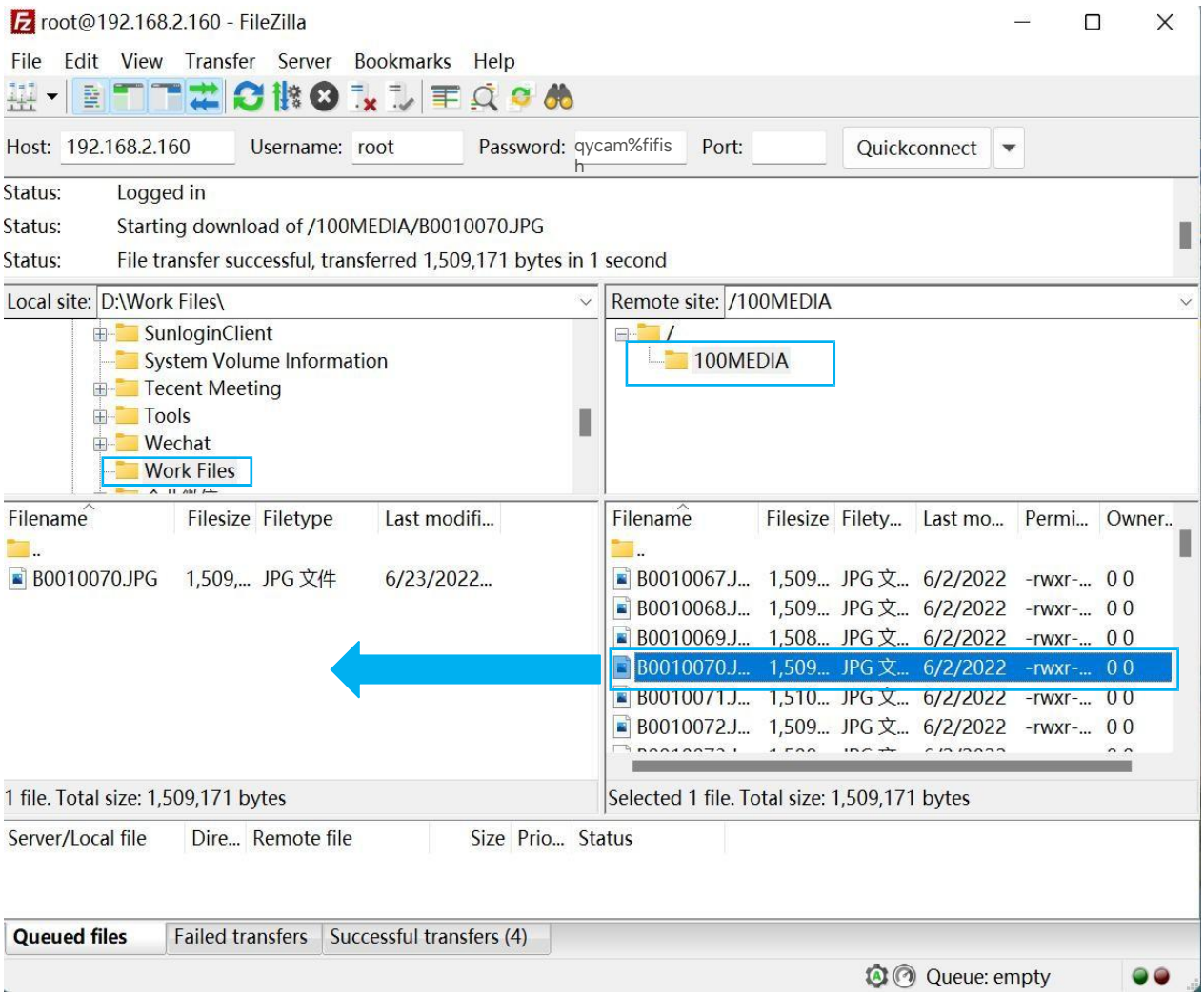




Chapter 5 Post-Dive Stage
Data Copy

5.1. Data Copy (Method 1)

5.1.10. Open the file '100MEDIA'
5.1.11. Select the file path to copy
5.1.12. Drag/Double-click the selected flies to duplicate



Chapter 5 Post-Dive Stage
Data Copy

5.1. Video/Photo Download (Method 2)

5.1.1. Connect the ROV system and power it on
5.1.2. Insert a microSD card in the RC[1]
5.1.3. Software connection

NOTE ***for microSD card***

1. *The recommendation for is* ***SanDisk*** *Ultra/Extreme/Extreme Pro*
2. *Format in* ***FAT32*** *or* ***exFAT***
3. *Storage* ***64 / 128 GB (NO greater than 128GB)***

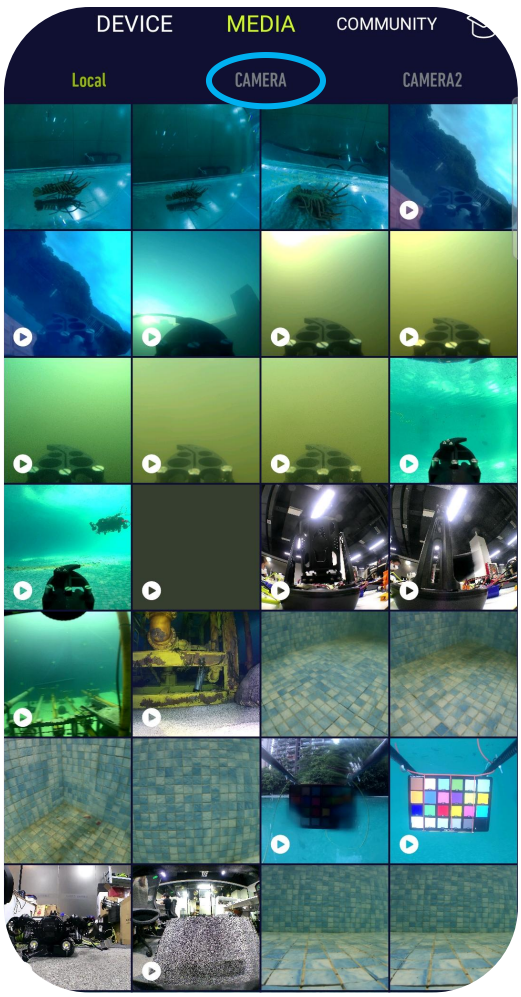
Chapter 5 Post-Dive Stage
Data Copy

5.1. Video/Photo Download(Method 2)

5.1.4. Turn ON the Depth Hold (the ROV will not beep after 10 min static)

5.1.5. Click **MEDIA**, then click the relevant **Camera ID**

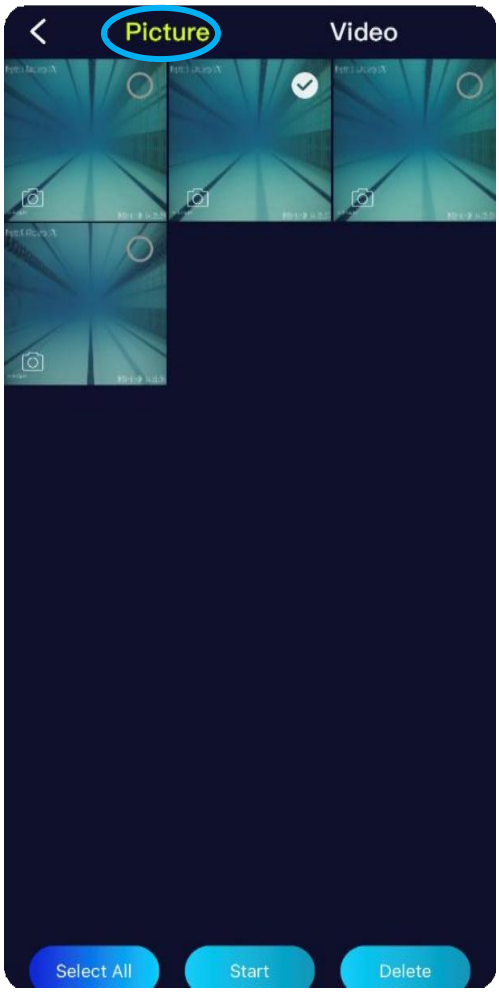
5.1.6. Select the Camera ID, Camera is the main camera, Camera 2 is the secondary camera



Chapter 5 Post-Dive Stage
Data Copy

5.1. Video/Photo Download

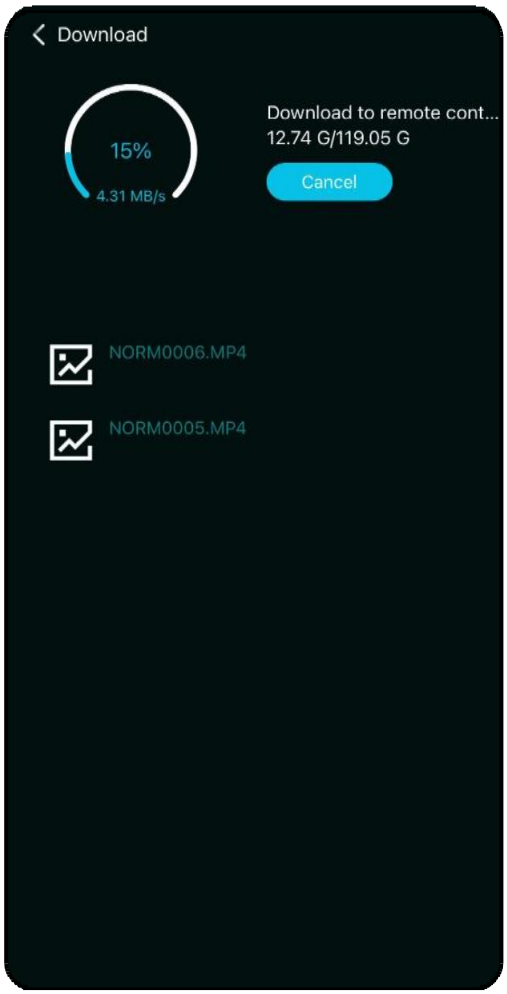
5.1.7. The default is **Picture**, select **Video** if you only want to copy out the videos
5.1.8. Press and hold on desired clip over 1 second, then you can select the clip(s) you would like to copy
5.1.9. After selecting all the desired pictures or videos, press the start button



Chapter 5 Post-Dive Stage
Data Copy

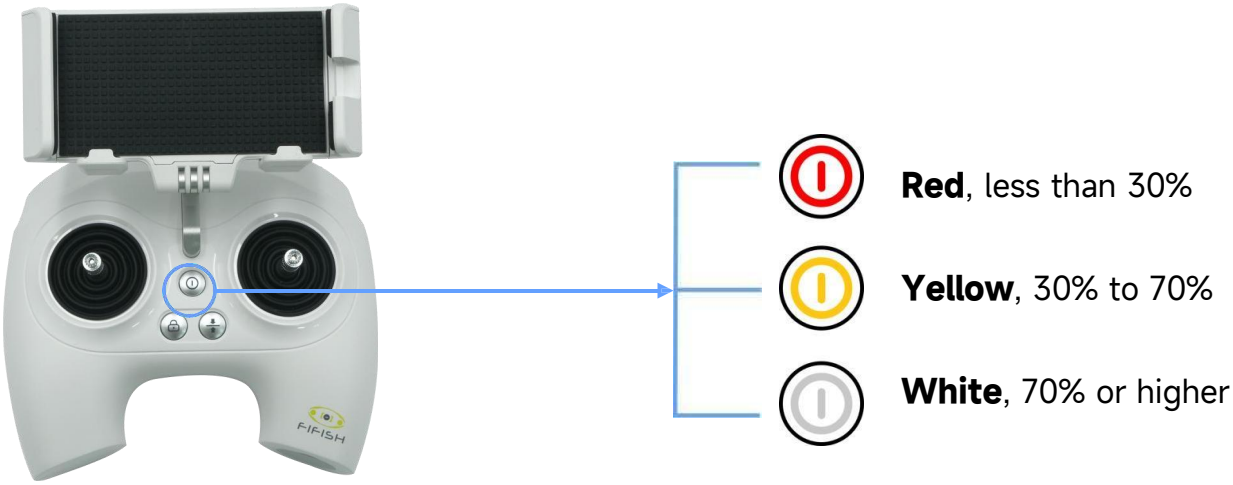
5.1. Video/Photo Download

5.1.10. Select the pictures or videos to copy, "**Download to remote control**" is the microSD card in RC
5.1.11. Do **NOT** minimize the FIFISH App while downloading



5.3. RC Charging

Flashing ON/OFF button means RC is charging
White steady ON/OFF button means RC is fully charged.



NOTE:

If any other color indicators appear during use or charging, please promptly contact the after-sales team and stop using or charging the remote controller.

Chapter 5 Post-Dive Stage
Maintenance

1. The underwater ROV should be visually inspected after each dive to ensure that no damage is incurred.

2. After completing a mission in the sea, it is recommended to immerse the ROV in fresh water for at least 1 hour.

3. Keep every connector (port and plug) on the ROV or the accessories dry and clean at all time. Put the protective cap back on the interfaces of the ROV when not using.

4. Check the **propellers** after every dive. Make sure NO entanglement, such as, seaweed or fishing lines.

5. Inspect the tether for cuts and/or nicks or kinks in the outer shell.

6. It is recommended to calibrate the RC every three months.

7. Check and ensure all ports and slots on the RC are dry and clean.

8. Store the ROV and RC in a dry and cool environment (Temperature range: 5°C to 25°C or 41°F to 77°F).

9. If you encounter a malfunction issue after missions, please record a video and contact your local services center for help. For more information about FIFISH Authorized Services Centers, please check the link below: https://www.qysea.com/support/repair-center/

Chapter 6 FIFISH App
User Interface

FPV Interface in FIFISH App

1. System Status
2. Secondary Camera (Cam-#2) View
3. Navigation Information
4. General Settings
5. Image/Video Setting Shortcut
6. Camera Button
7. Toolbox
8. Watermark

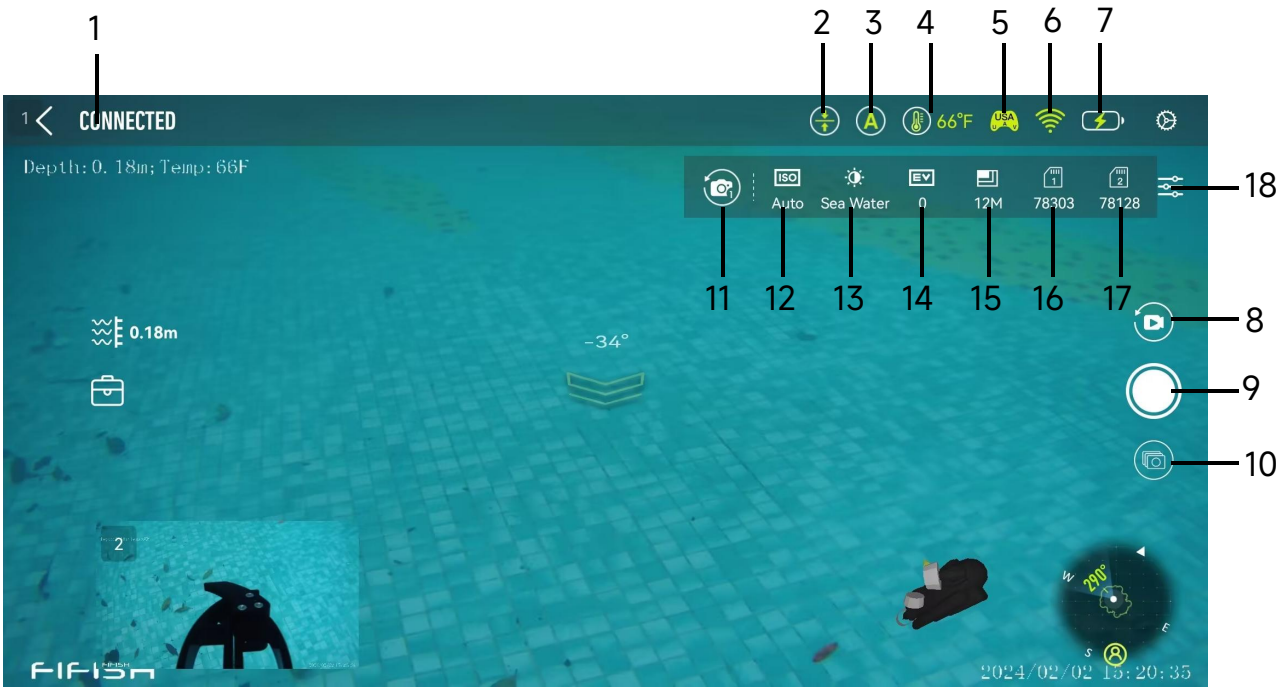
NOTE

This FIFISH App interface is Android 4.8.9. In order to provide better user experiences, QYSEA software team will keep trimming the FIFISH App. If you encounter any issues, please don't hesitate to reach out to our technical support team.

Email: support@qysea.com

Chapter 6 FIFISH App

User Interface



System Status

1. System Status
2. Depth Hold
3. Control Mode
4. Water Temperature in C/F
5. Controlling Preference
6. RC's Wi-Fi Signal
7. Voltage/Current Power Status

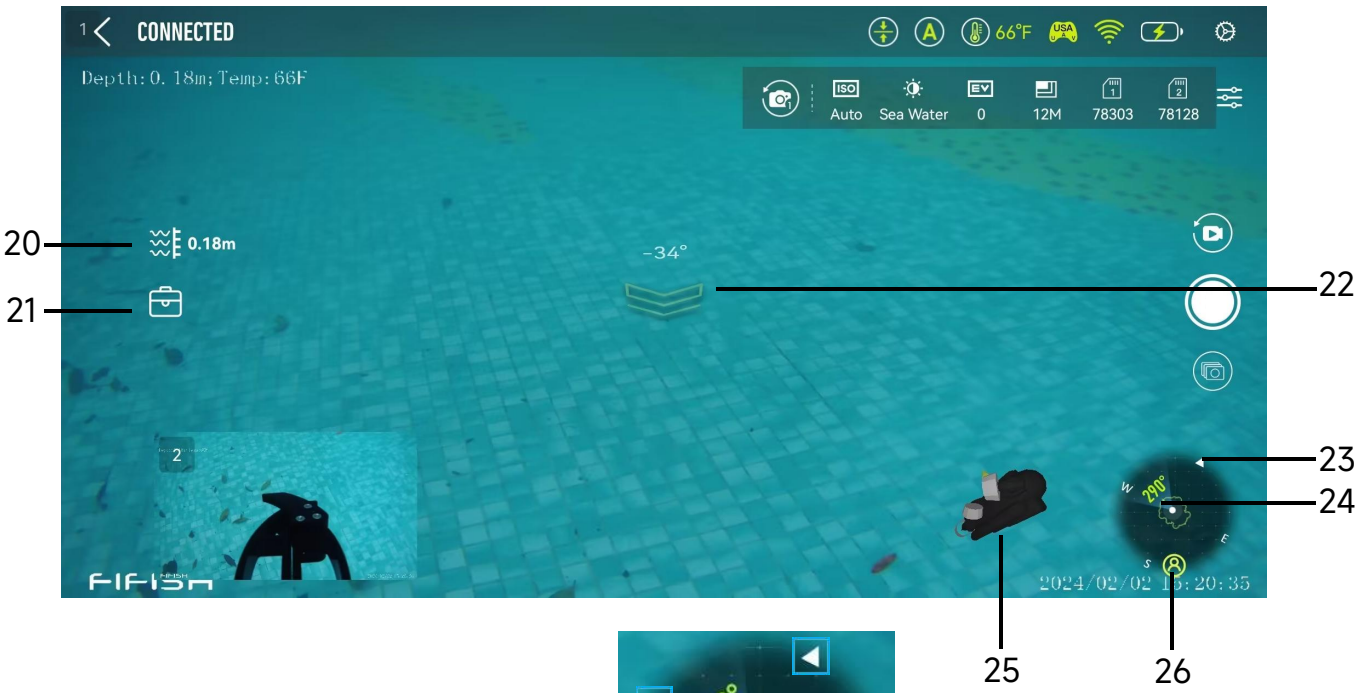
Camera Buttons

8. Video / Photo Mode Switch
9. Record / Stop / Snap
10. Slow Motion or Normal

Camera Setting & Shortcut

11. Setting Main/Secondary Camera
12. ISO
13. White Balance
14. Exposure Value
15. Resolution/Frames Rate
16. Cam-#1 Remaining Time / Pics
17. Cam-#2 Remaining Time / Pics
18. Camera Setting

Chapter 6 FIFISH App
User Interface



Navigation Information

20. Current Depth (m/ft)
21. Toolbox
22. Pitch Angle
23. Compass
24. ROV Heading [1]
25. Posture in 3D Model
26. Pilot's Facing Direction

NOTE:

[1] Pitch Angle in Degrees

Heading down is in a minus digit degree with downward arrow

Heading up is in a positive digit degrees with upward arrow

Pilot's Facing Direction & ROV's Heading:

1.As shown in green, the pilot icon is located between South and East.

2.As shown in blue, the heading degree of the ROV is 290°, which lies between the Northwest and the Southwest.

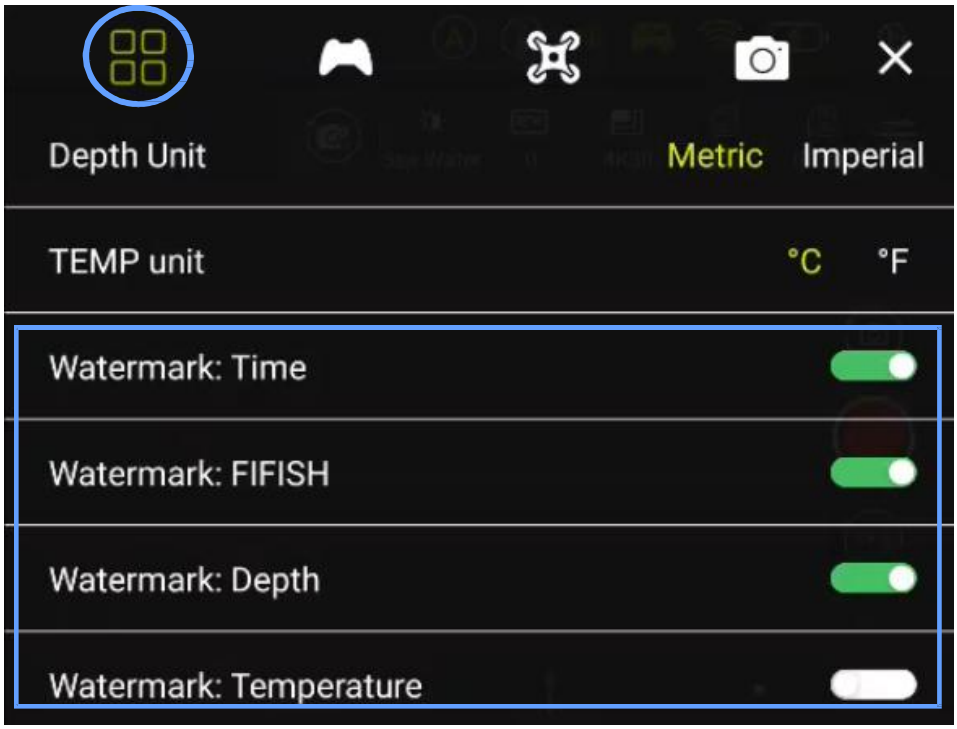
NOTE:

1.It can not be recognized the relative position directly by the controller's orientation and the heading degree of the ROV.

2.The most intuitive way to judge the position of the ROV relative to the operator is to float the ROV to the surface or visually observe the position of the ROV along the tether direction.

Chapter 6 FIFISH App
System Setting

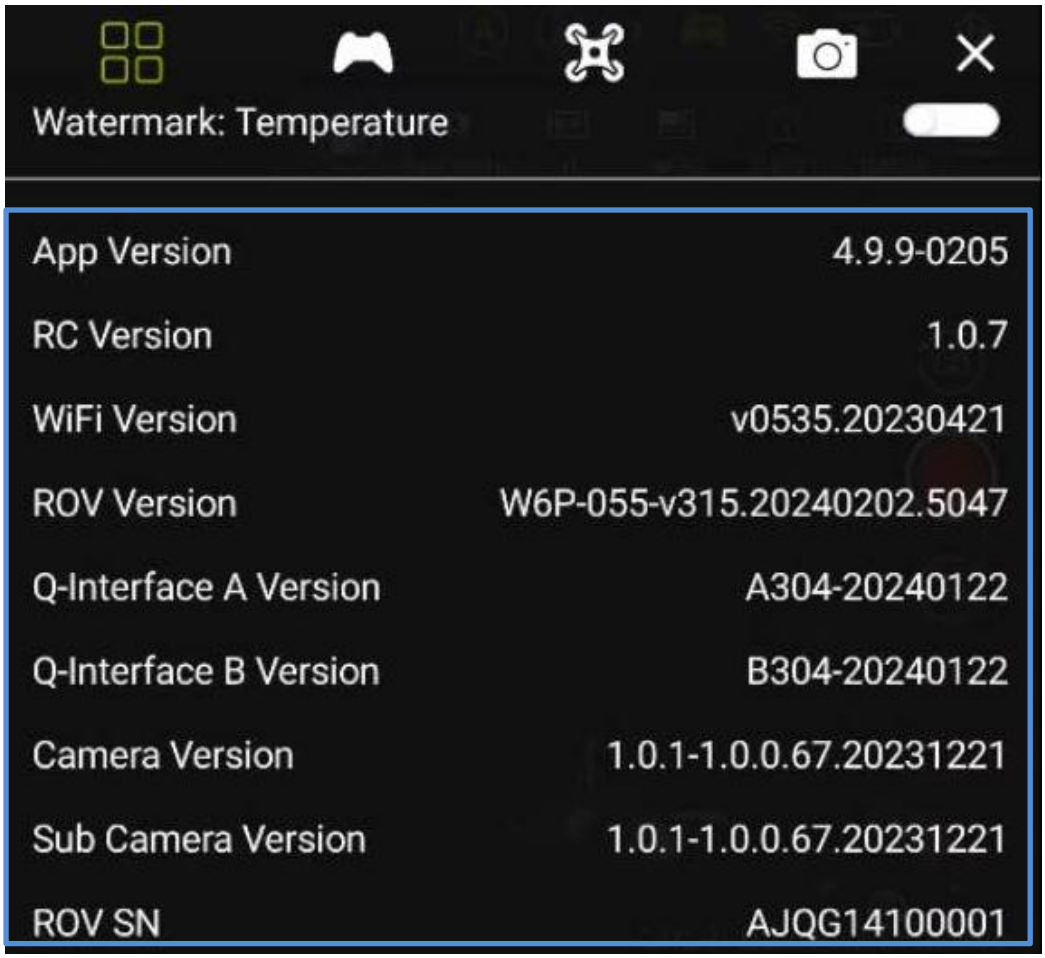
General Settings, Select **System Setting Icon** in 1st column



- If you have 2 devices connect to the RC, the roles include the **Pilot** and **Spectator**
- ONLY the "**Pilot**" can manipulate the settings, such as watermarks, control preferences, camera settings, etc.
- The "**Watermark**" ON will record to video or write on photo, "Watermark" OFF, then no trace on video or photo
- Watermark in Time, FIFISH Logo, ROV Depth, Water Temperature

Chapter 6 FIFISH App
System Setting

Scroll down the system setting page, the system version information will show up



- The App Version is the FIFISH App version in your cell or tablet
- The RC Version is the RC's motherboard version
- WiFi Version is the RC's Wi-Fi module version
- ROV Version is the ROV's current software version
- Camera Version is the camera module software version
- ROV SN is the identical Serial Number for this ROV

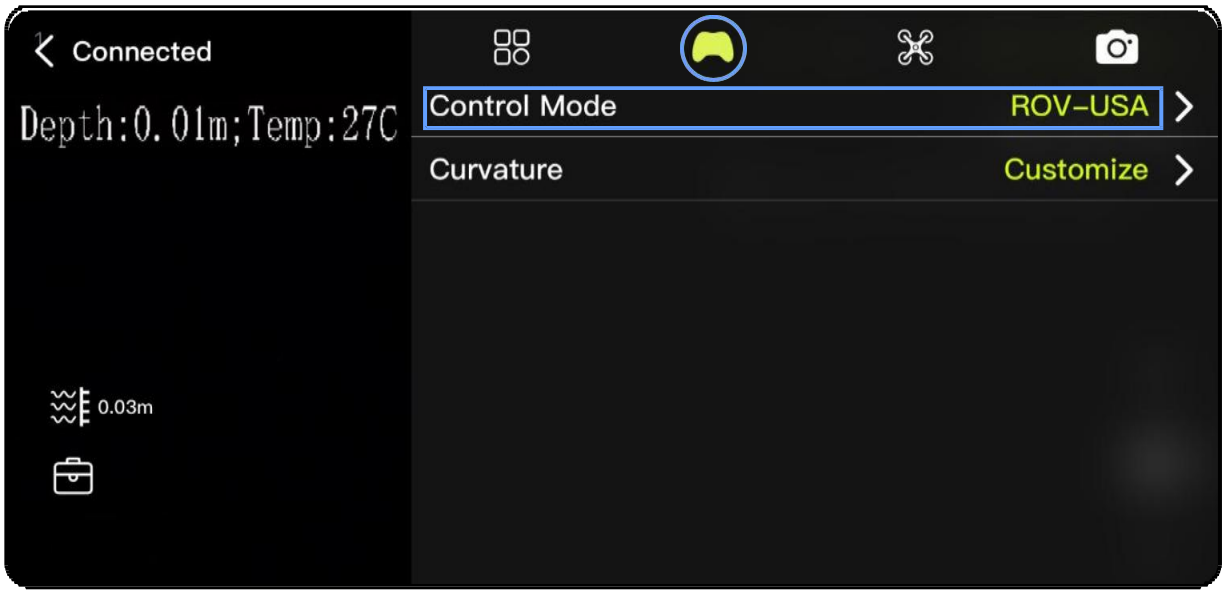
NOTE:

Please take a screenshot of these versions for remote technical support when you are facing any issues.

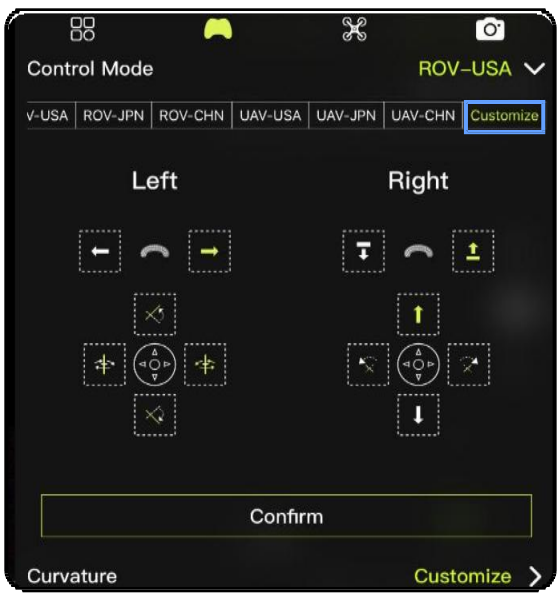
Chapter 6 FIFISH App
Control Setting

Controlling Preferences

General Settings, Select the **Controlling Preferences Icon** in 2nd column



- Click "**Control Mode**", the default is ROV-USA Control Mode, you can set the control mode based on personal preferences
- Click "**Confirm**", after setting

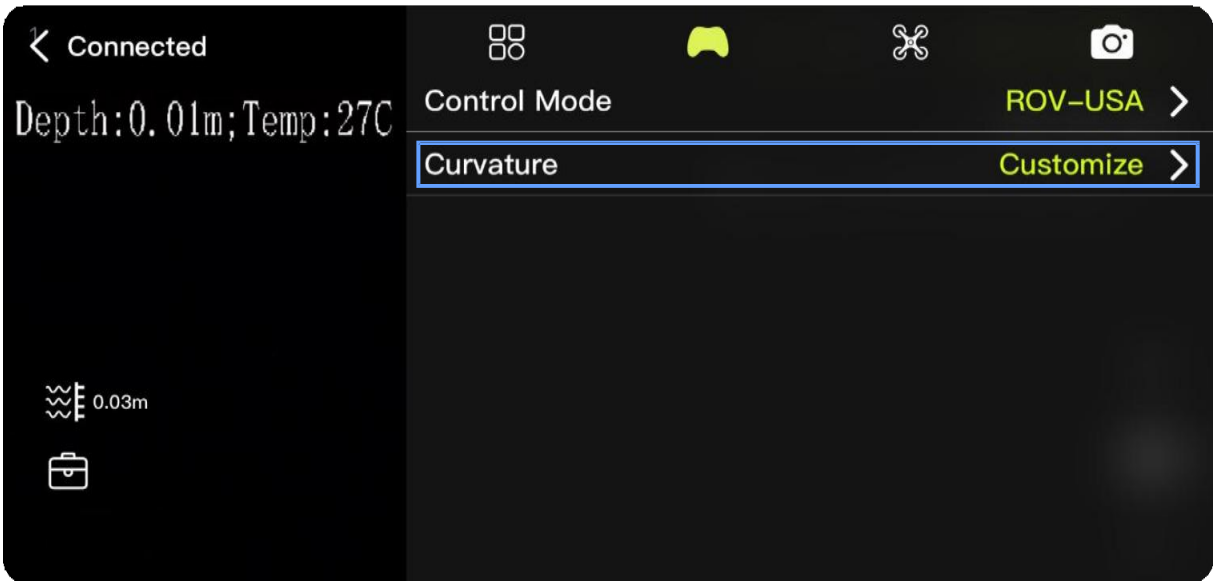


***As for advance level pilot seek for customized setting demo. Please check FIFISH authorized local Dealer or Service Center for more details and training programs.*

Chapter 6 FIFISH App
Control Setting

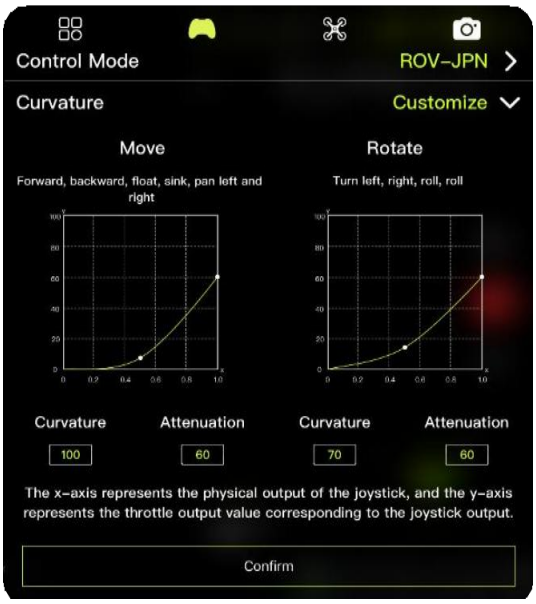
Control Curvature

For the advance level pilot, the curvature setting can provide more **ACCURATE** and **Smooth** operating experiences.



Set the Move & Rotate

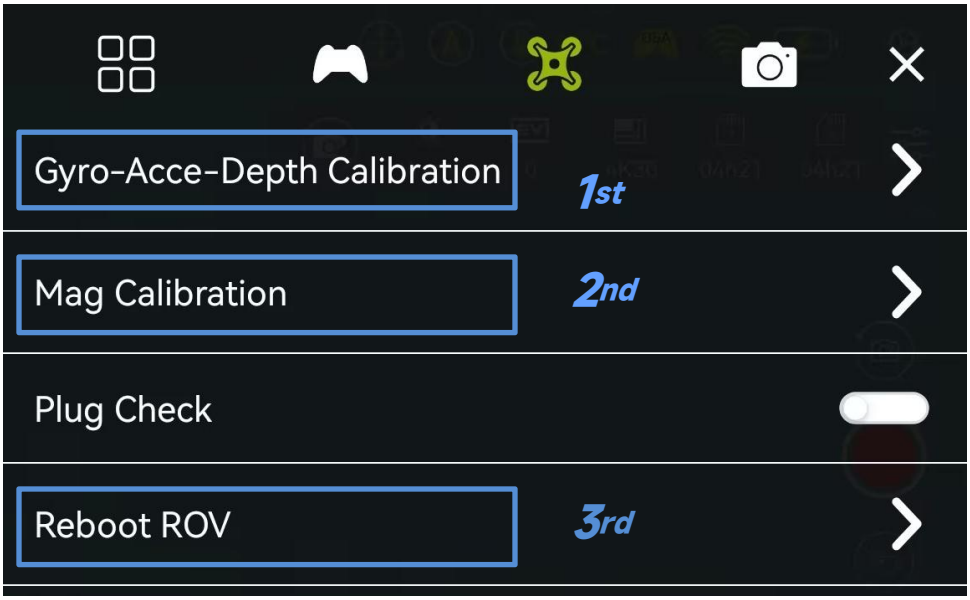
- Adjusting the curvature (set the center sector output sensitivity)
- Adjusting the attenuation (set the maximum output)



***As for advance level pilot seek for explore curvature setting tips. Please check FIFISH authorized local Dealer or Service Center for more details and training programs.*

Sensor Calibration

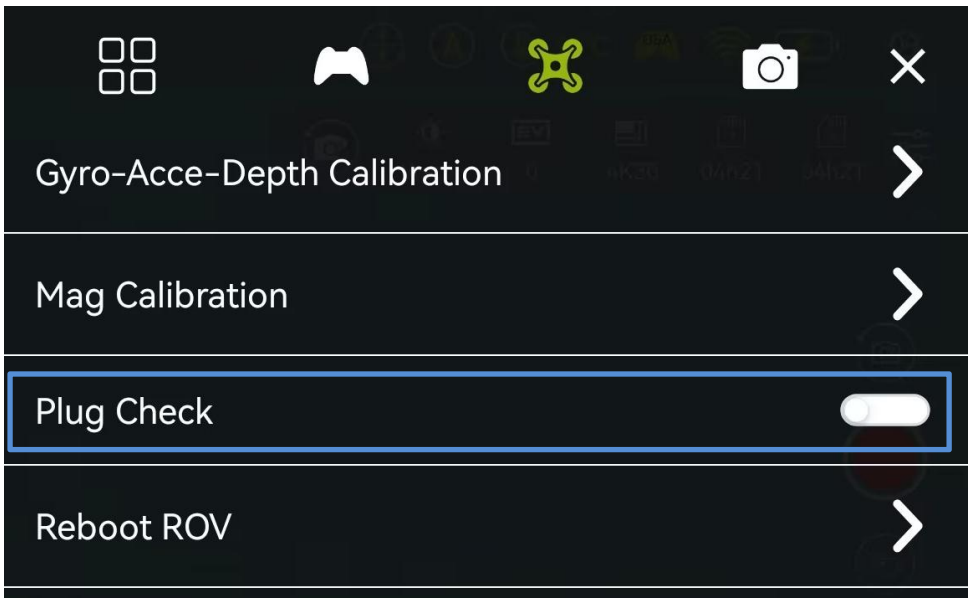
Select the **Sensor Icon**  in 3rd column



- Follow the hint on FIFISH App step by step to perform the **Gyro-Acce calibration** first, then perform **Mag calibration**
- **Reboot ROV** in FIFISH App, and Power ON/OFF RC if necessary

Plug Check

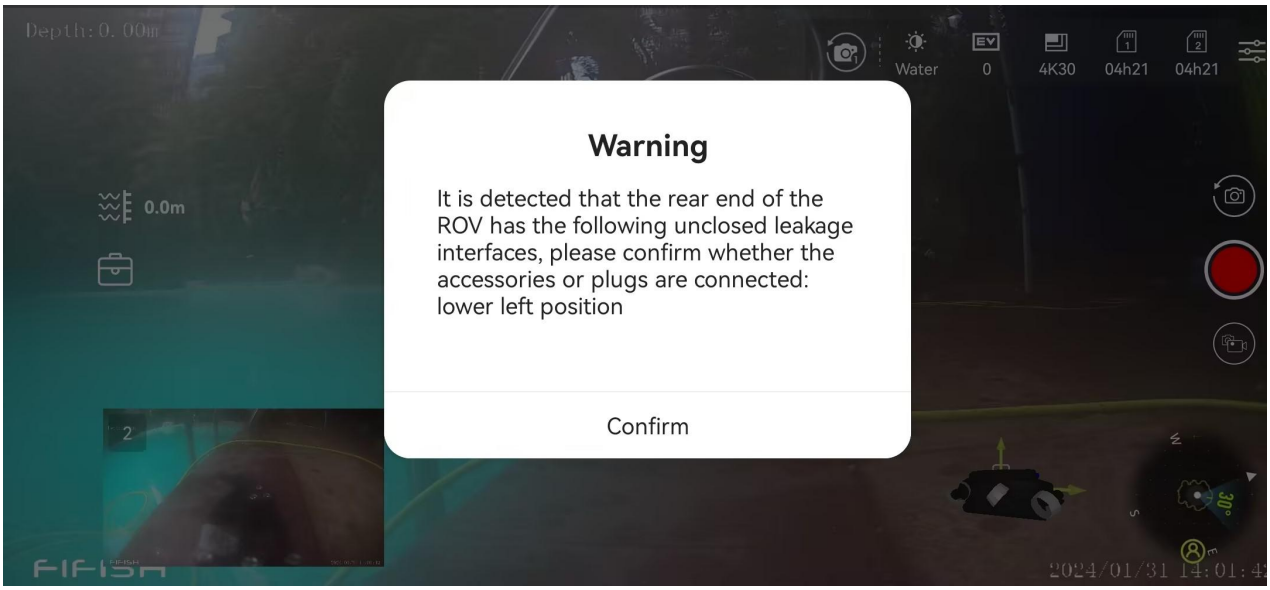
After the function is activated, the system will automatically detect the unprotected type-A Q-interfaces (A1/A2/A3/A4 Interfaces only). The type-A Q-interfaces are designed to be protected by waterproof covers or connected with the connectors of accessories.



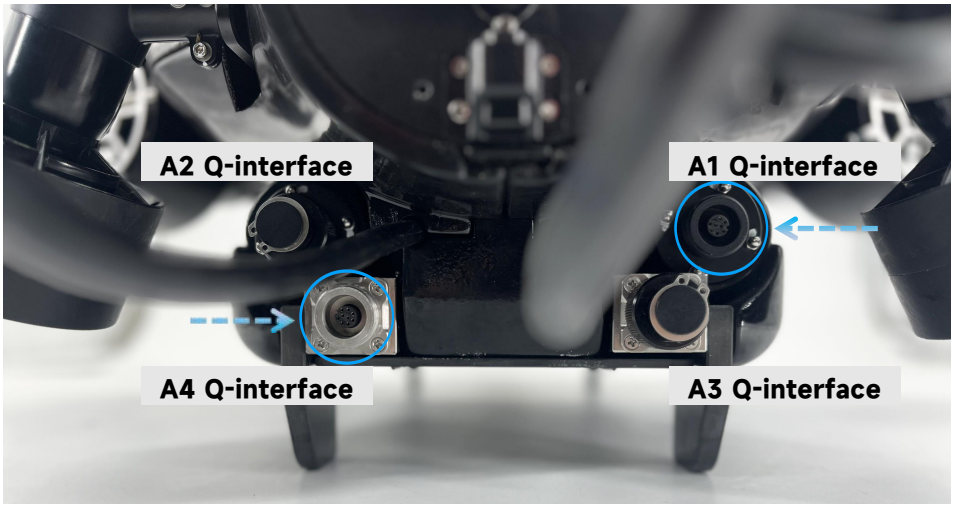
Chapter 6 FIFISH App
Plug Check

Plug Check

After the function is activated, the system will automatically detect whether the type-A Q-interfaces are protectived by a cover or secured by the connectors of accessories[1].



With the function activated, if a type-A Q-interface is detected to be unprotected by a protective cover or accessory connector, the FIFISH APP interface will display a prompt and the LED light will flash[2] until the interfaces are connected by the protective cover or to the connector of an accessory.

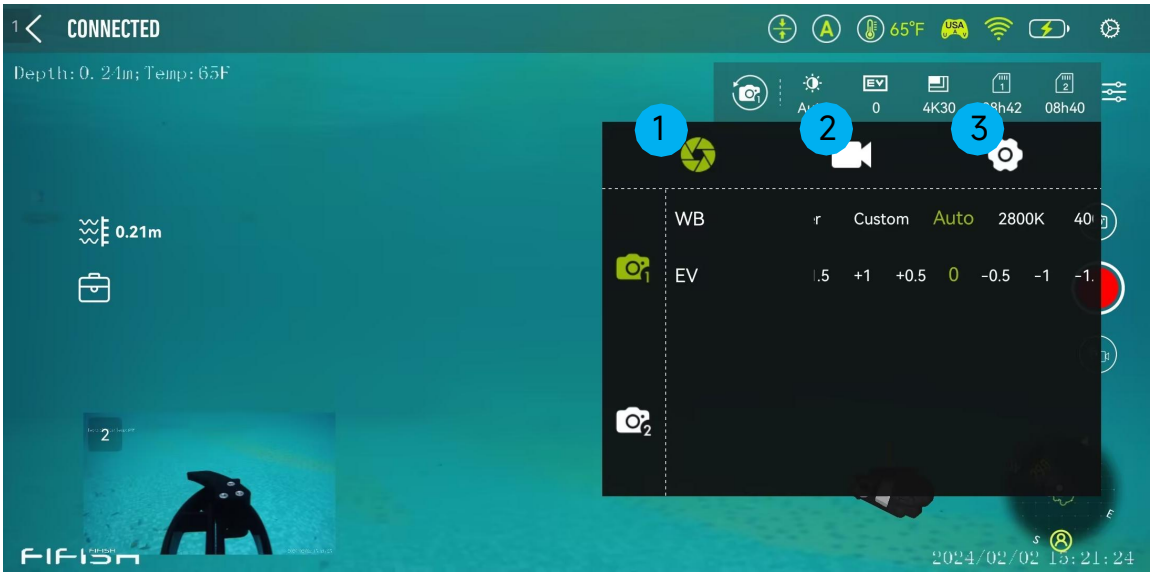


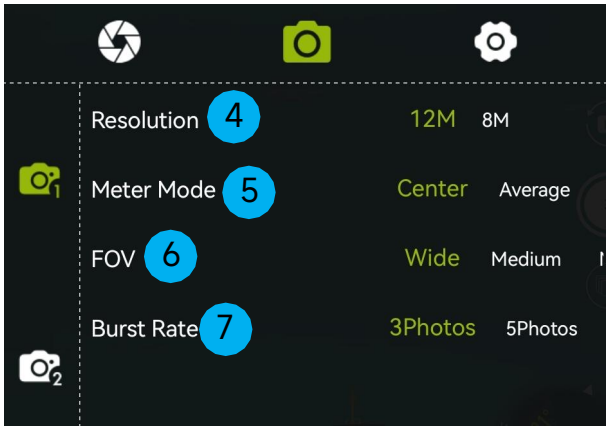
NOTE:

1. This function will only be effective once the ROV is successfully powered on.
2. The LED light will flash for only 60 seconds.

Chapter 6 FIFISH App

Camera Setting





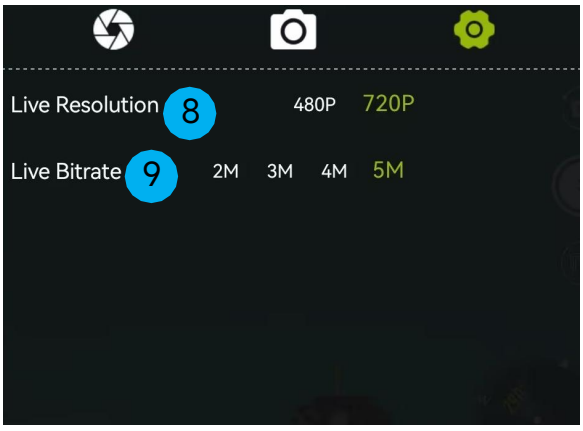


Image Settings

1. Exposure and WB
2. Video Setting
3. Camera General Setting
4. Resolution
5. Meter Mode
6. FOV Settings
7. Burst Rate

Camera General Setting

8. Live Resolution on FPV
9. Live Bitrate on FPV

NOTE:

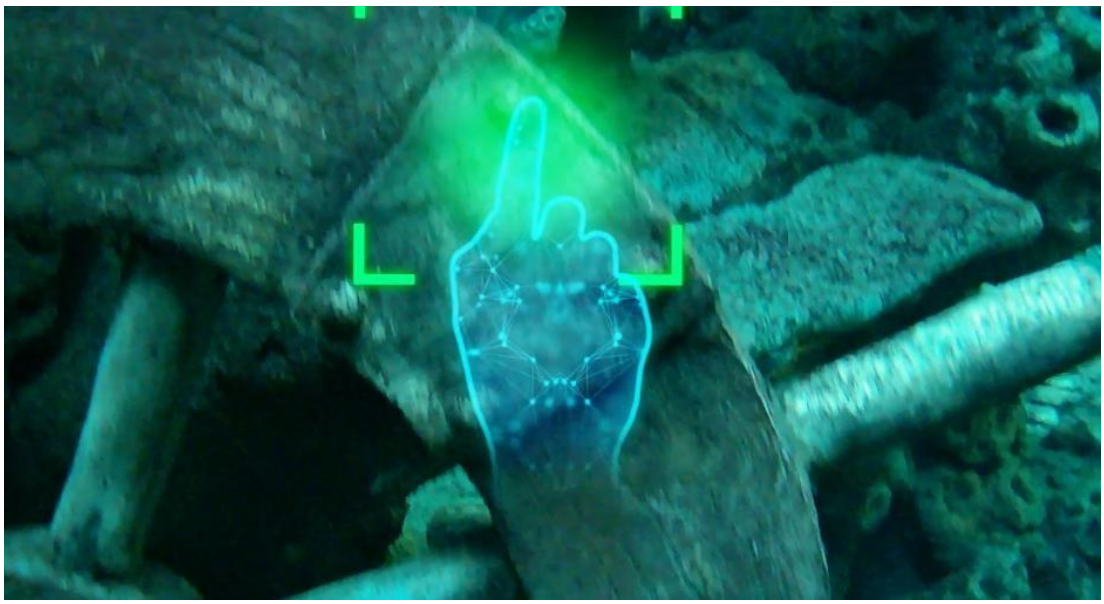
1. The main camera and secondary camera can have separate parameters configured.
2. Shortcut camera setting will have the same results.

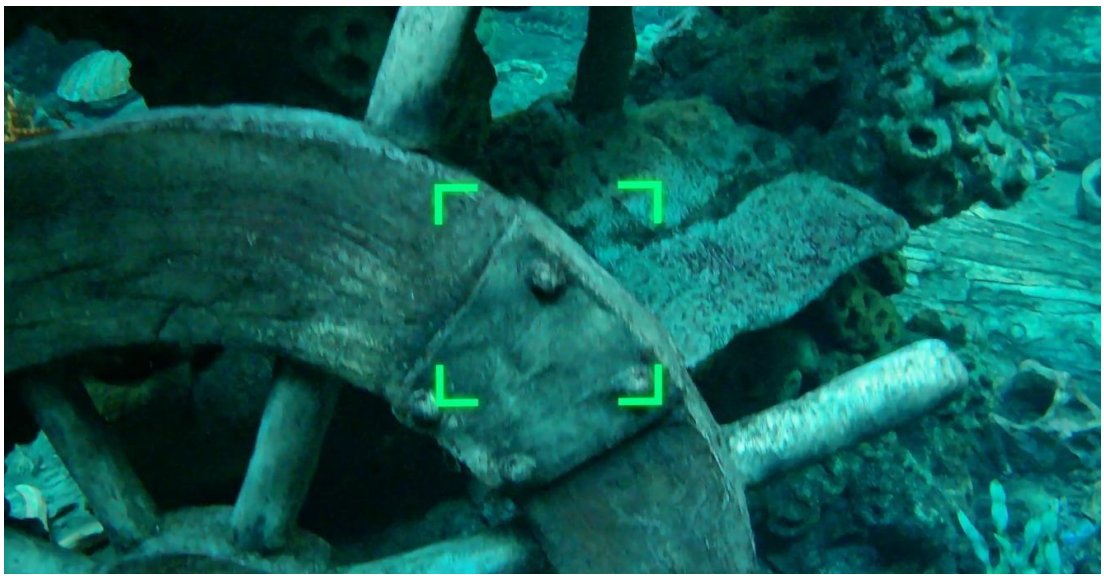
Vision Lock

Lock the positions of objects at focus

Click the icon  to active the vision lock function

1. Click the position on the screen, and the ROV will move and adjust the clicked area to the centre of the field of vision.





NOTE:

It is not recommended to use this Vision Lock function in an unfamiliar environment.

Chapter 6 FIFISH App
Toolbox, Vision Lock

Vision Lock

Lock the positions of objects at focus

Click the icon  to active the vision lock function

2. Touch the screen for seconds with your finger and drag it to the (up/down/left/right) direction, the underwater ROV will float, dive, and translate left or right accordingly.

NOTE:

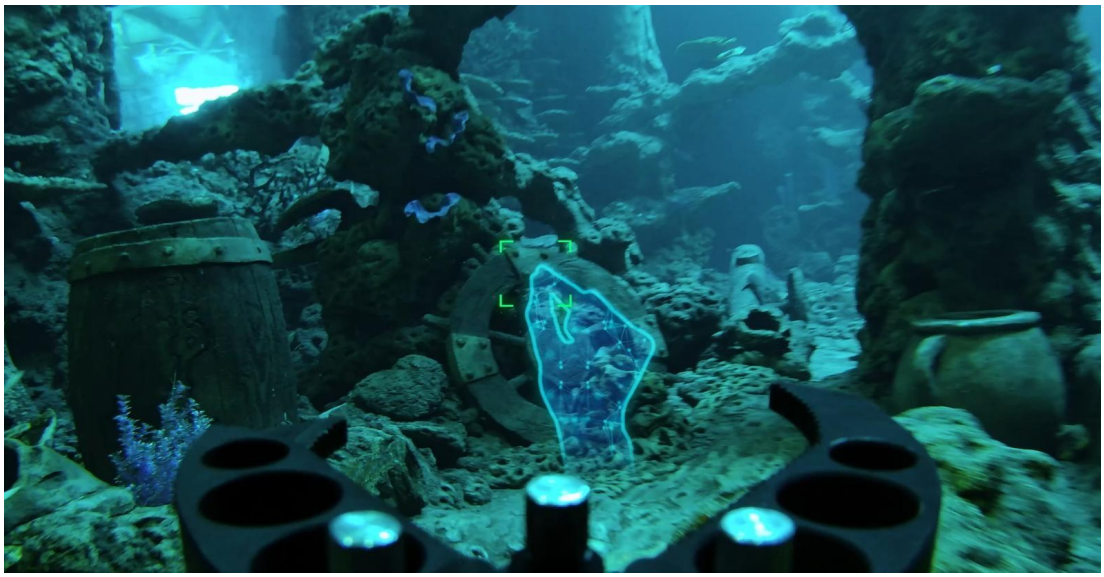
It is not recommended to use this Vision Lock function in an unfamiliar environment.

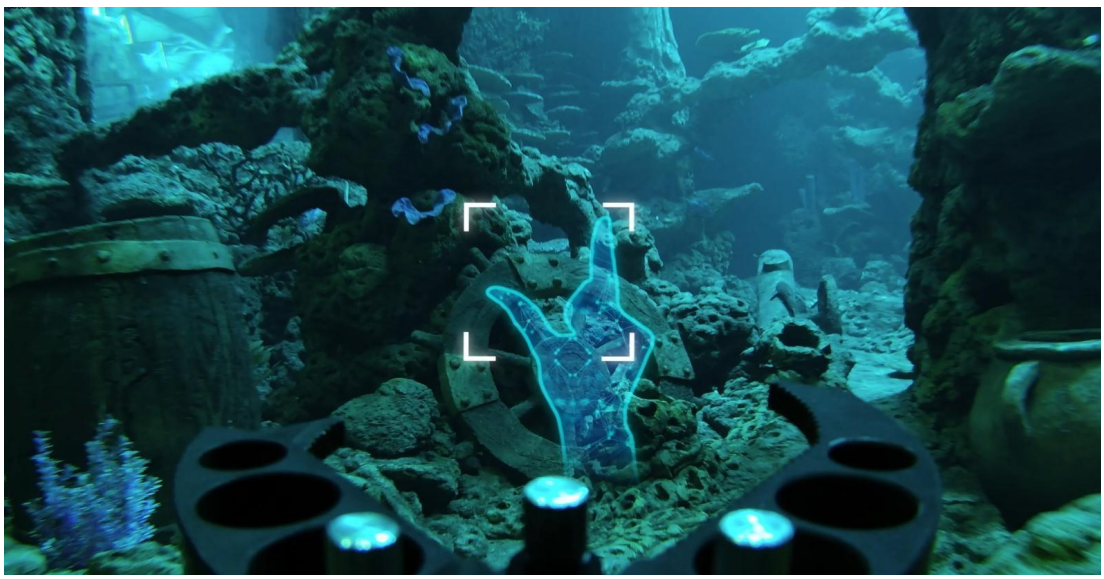
Vision Lock

Lock the positions of objects at focus

Click the icon  to active the vision lock function

3. Two fingers press the screen for seconds, and when you use your fingers to make a zoom-in/zoom-out gesture, the ROV will move forwards or backwards accordingly.





NOTE:

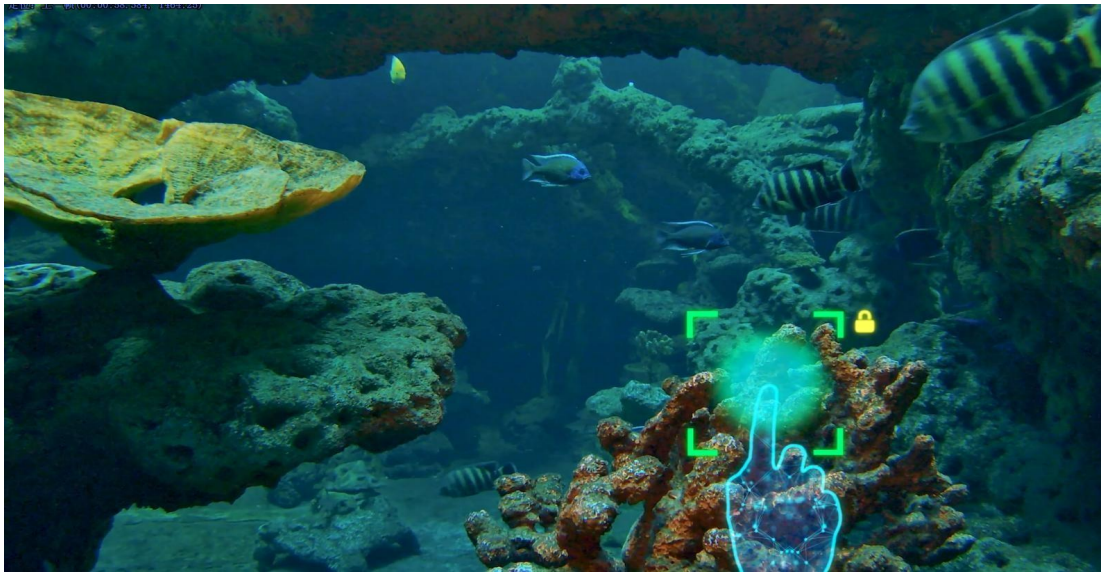
It is not recommended to use this Vision Lock function in an unfamiliar environment.

Vision Lock

Lock the positions of objects at focus

Click the icon  to active the vision lock function

4. Touch the target area for seconds to lock the area/static object in a fixed position on the screen, so that the field of vision can be fixed at the current position without refocusing on other moving objects.



NOTE:

It is not recommended to use this Vision Lock function in an unfamiliar environment.

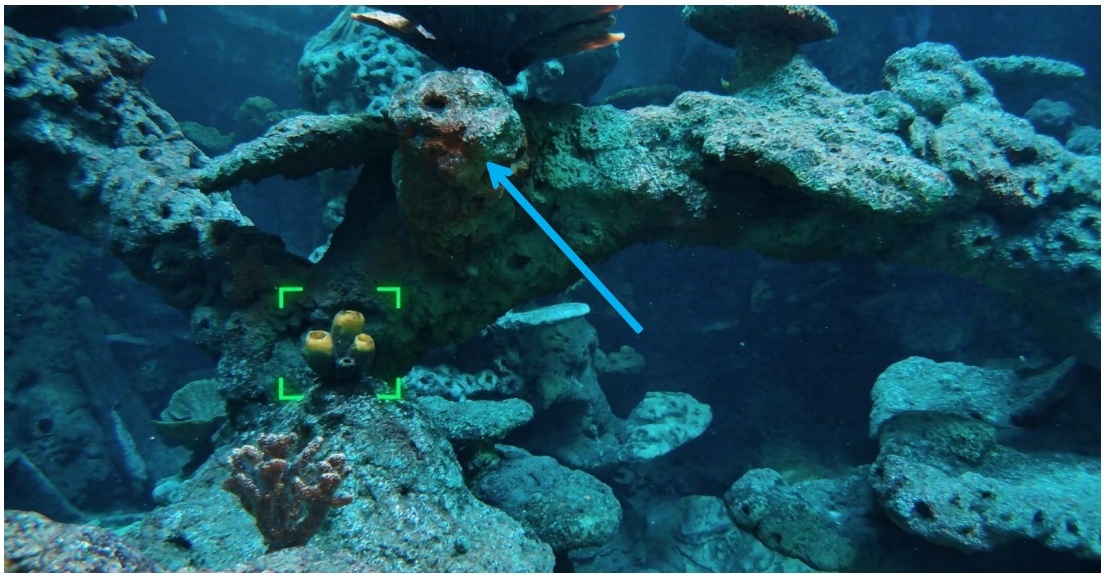
Vision Lock

Lock the positions of objects at focus

Click the icon  to active the vision lock function

5. Click the icon  to use the dynamic lock function

When controlling the ROV moves (forward/backwards, left/right lateral, ascend/descend), the algorithm will recognize the object again and refocus it.



NOTE:

It is not recommended to use this Vision Lock function in an unfamiliar environment.

Chapter 6 FIFISH App
Toolbox, Vision Lock

Vision Lock

Lock the positions of objects at focus

Click the icon  to active the vision lock function

How to capture a wide view or a full surrounding scene?

Move the certain stick to make the ROV turn left/right or use the small dial on the back of the remote controller to make the ROV pitch up/down.

Take the ROV-USA mode as an example, push the Left stick on RC in a single direction. (Note: Keep the focused object on the screen)

The reason fail to perform:

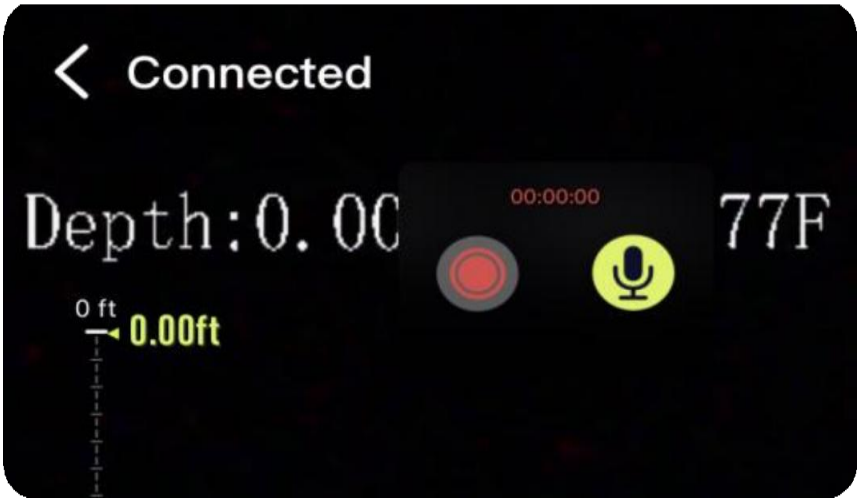
1. The target is moved out of the view of the ROV

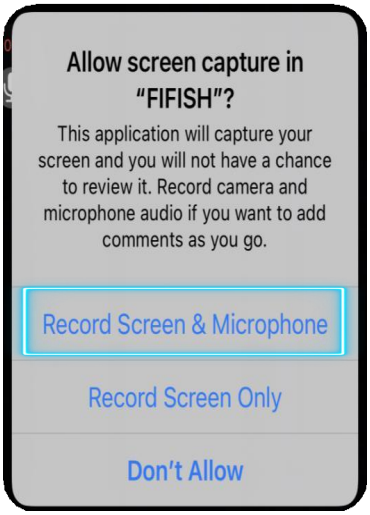
2. Move the control stick of the remote controller to make the ROV move forward/ backward/turn left/turn right/float/dive to allow the ROV to unlock the object.

Mission Log(M-Log)

Record the screen and voice

1. Click the icon  to use the M-Log function
2. The M-Log screen recording button and voice recording button will be displayed
3. Click “Record Screen & Microphone” to allow screen capture
4. Press the video recoding button to start
5. Optional recording quality: High/Medium/Low





NOTE:

1. Recordings will be stored in the smart devices directly. Please check the storage status of smart devices.

2. NOT place FIFISH APP to the background during recording, otherwise the recording will be stopped, and the recorded files will be saved in the smart device album and local media library in APP.

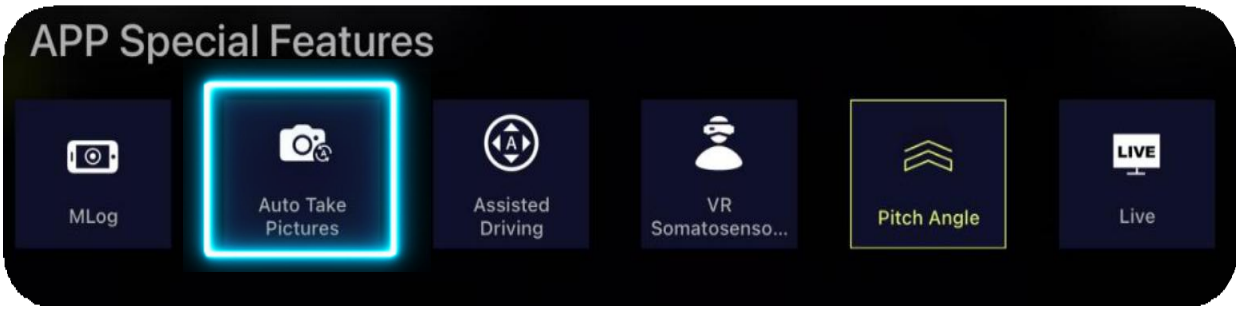
3. The microphone is turned off by default.

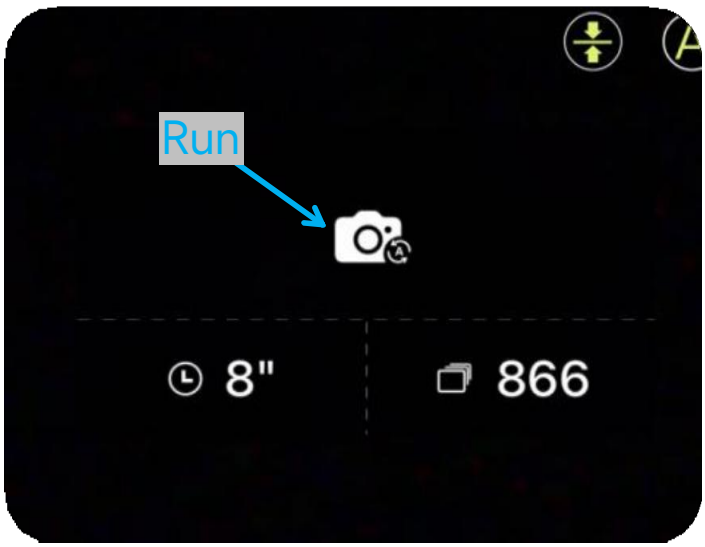
Chapter 6 FIFISH App
Toolbox, Auto Take Pictures

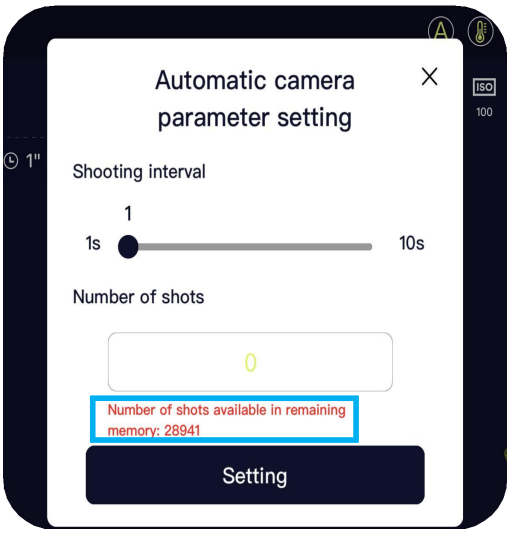
Auto Take Pictures

Take a preset number of photos with preset time interval

1. Click the auto take pictures icon
2. Click the time interval icon or photo number to open the setting interface
3. The number of photos that can be stored in the memory card is displayed below.
4. After the setting, click the Auto Photo icon  to run the function.



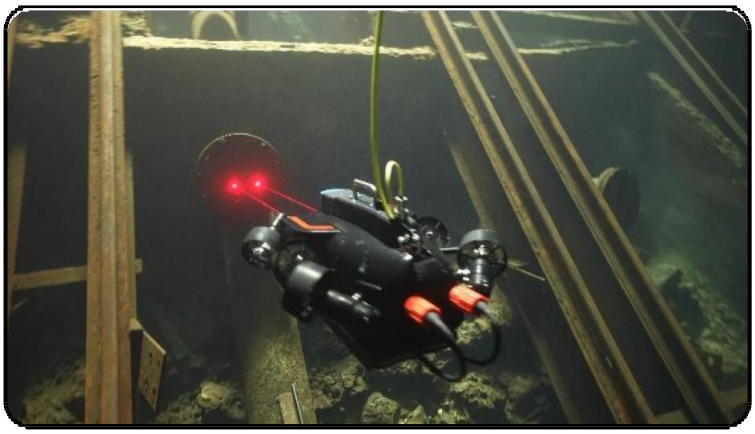




Laser Scaler

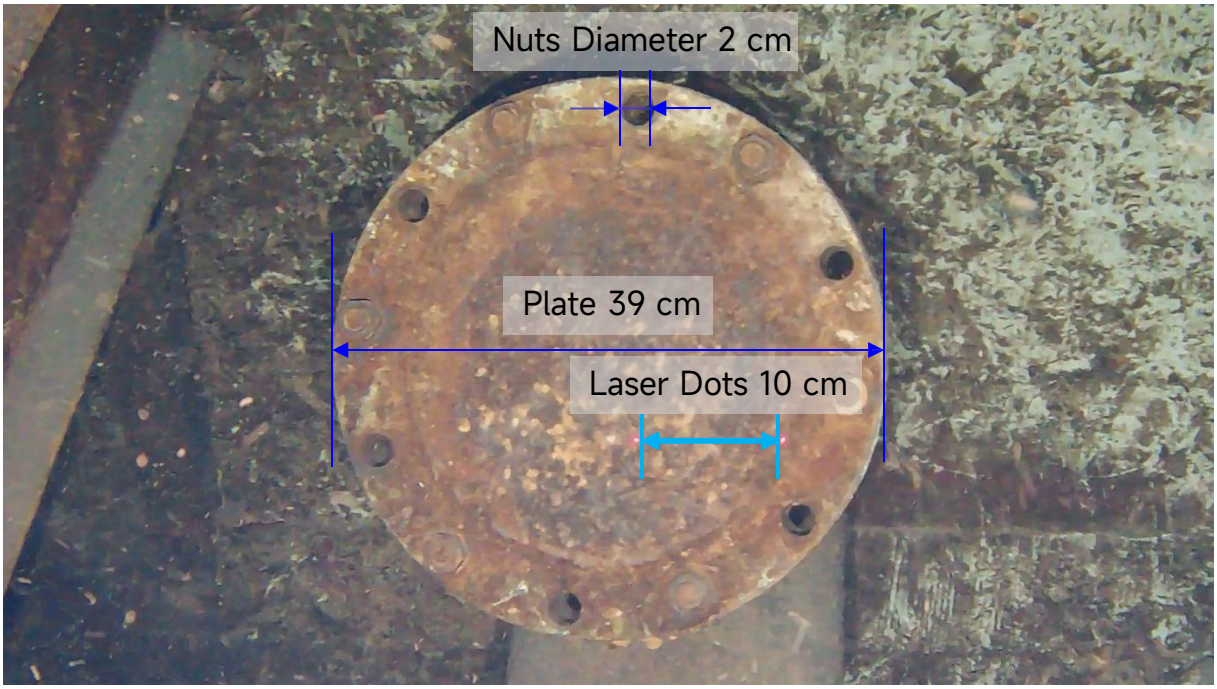
The Laser Dots could be the reference dots; Can be opened in the toolbox

- ROV shall be perpendicular with the measured surface
- The distance between 2 laser dots are 10 cm
- The object dimension can be calculated by a ruler or image processing software



Object dimension processing example:

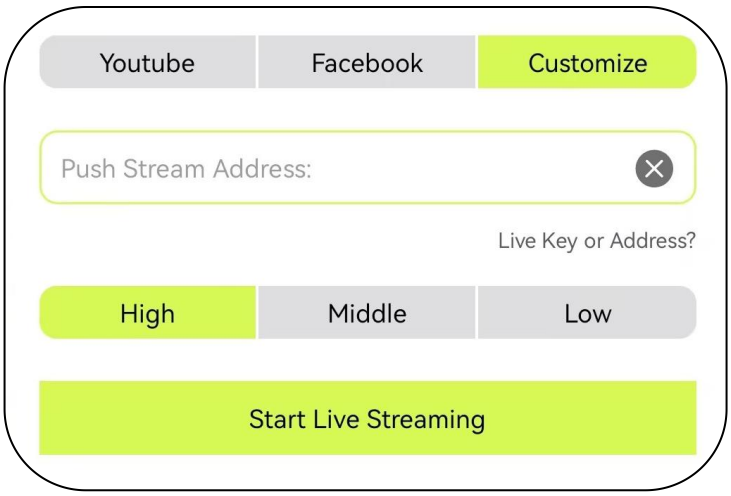
Object	Image Length	Actual Length
Scale	22.0 mm	10 cm
Plate	86.0 mm	39 cm
Nut Di	4.5 mm	2 cm



Chapter 6 FIFISH App
Toolbox, LIVE Streaming

LIVE Streaming

Broadcast directly on **YouTube, Facebook** or other social media network.[1]



1. Generate a **Stream Key** and **Stream URL** on YouTube or Facebook
2. Click to open the Toolbox , and Click the **LIVE** icon
3. Past the **Stream URL** and **Stream Key** in column
4. Select the LIVE quality (High, Medium, and Low) [2, 3]
5. Click "**Start Live Streaming**"

NOTE:

1. To avoid incurring high data charges, you are advised to ensure the mobile data is sufficient. Please contact the local service provider for related charges.
2. The live broadcast resolution can support a maximum of 720P and is subject to the quality of local mobile signals.

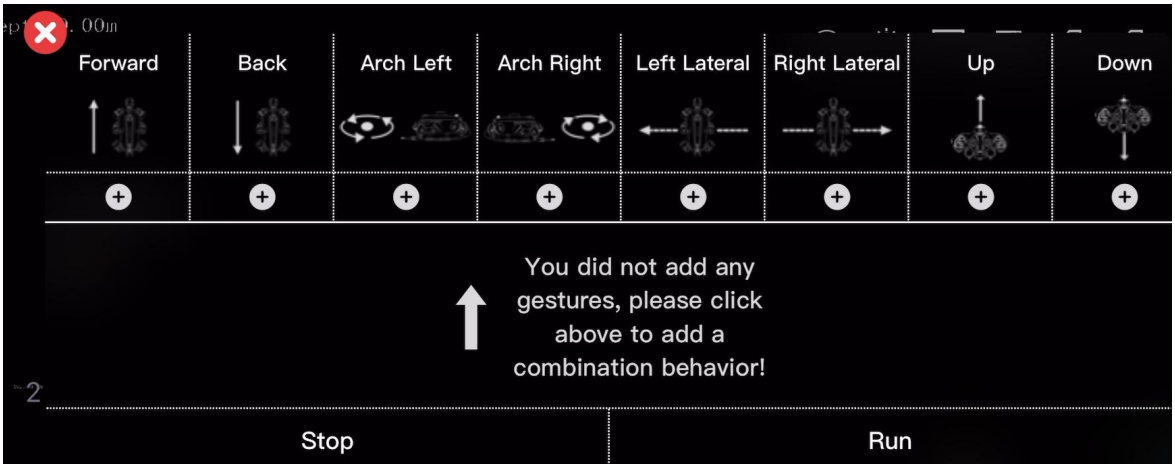
Chapter 6 FIFISH App
Toolbox, Assist Driving

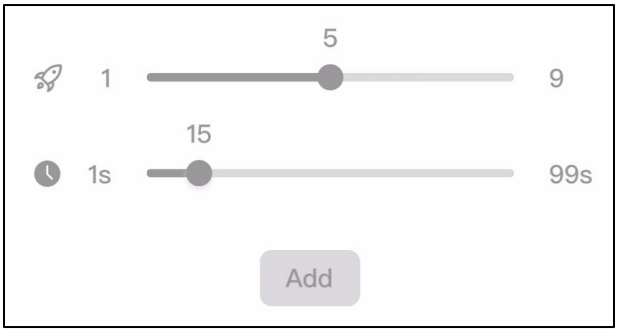
Assist Driving

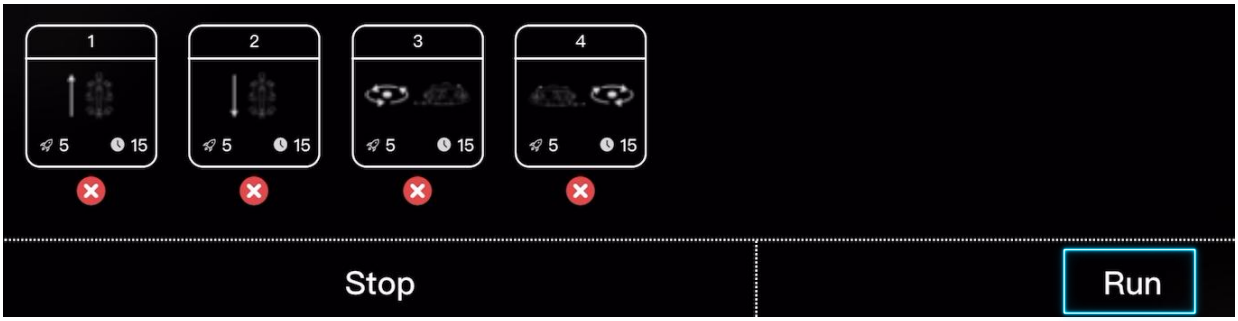
The *Assist Driving* function allows for programming auto moving commands.

1. Open the Toolbox and click the assist driving icon 

2. Select the motion direction before the setting
3. Set the navigation speed
4. Set the duration
5. Program the next auto moving command
6. Click the "Run" button to allow the ROV to move by itself



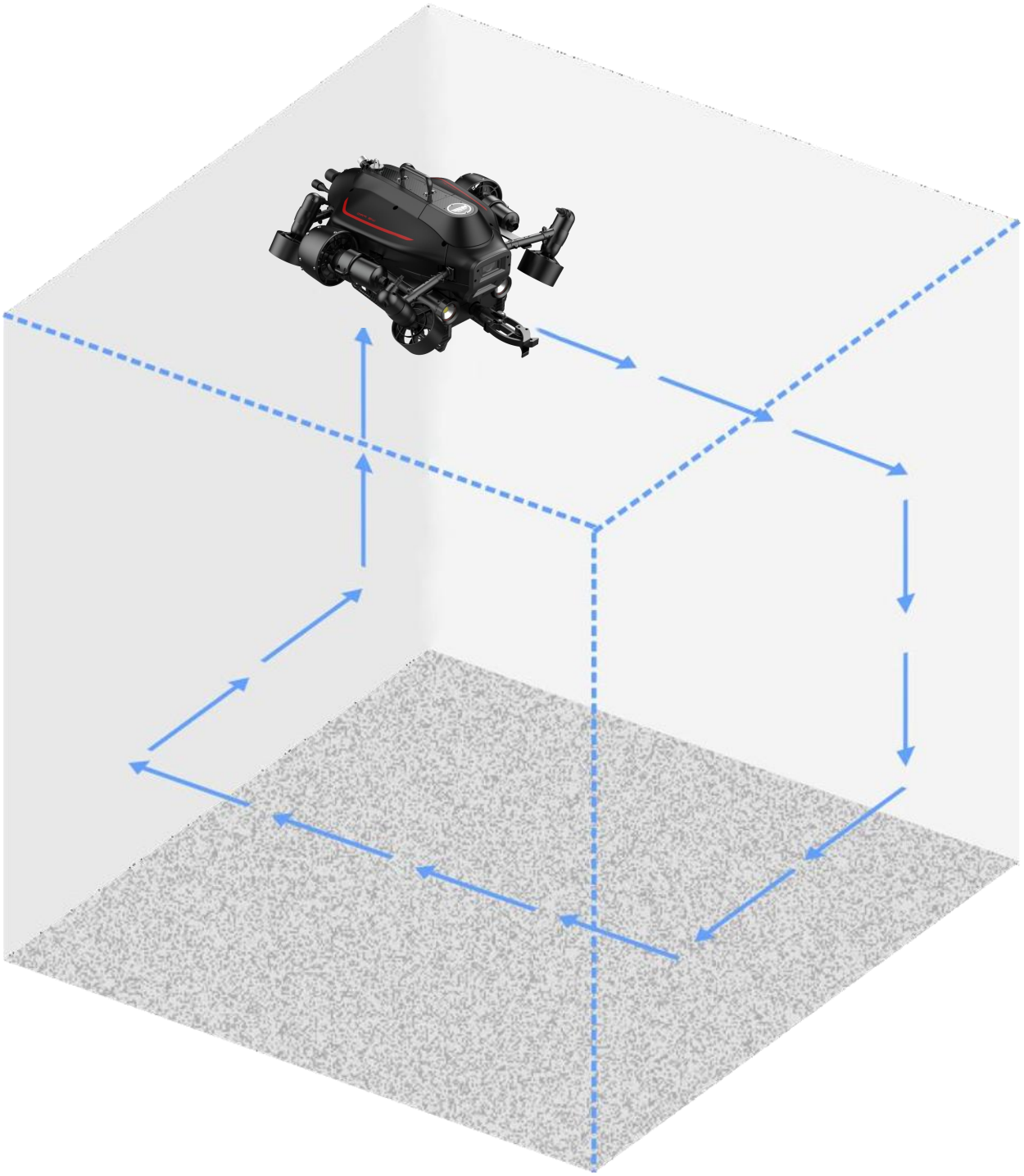




Chapter 6 FIFISH App
Toolbox, Assist Driving

Assist Driving

The Assist Driving Overview



Chapter 6 FIFISH App
Toolbox, ROV Log

ROV Log

The navigation information can be recorded and output as a document

1. Return the homepage and click the “Help” button in the lower right corner
2. Select ROV Log
3. Turn ON the Log Collection
4. Click ’Connected’ and control the ROV to collect data
5. Export log

1. Log scene:
‘All’ - Output all data collected twice per second
‘photo’ - Output the related data to photos which took present
2. Export format:
‘JSON’ - A standard text-based format for representing structured data based on JavaScript object syntax. which can be converted to excel format.
‘GPX’ - An XML file format for storing coordinate data. (required to equip U-QPS to collect)
3. Export content:
‘depth’ - The corresponding dive depth
‘euler’ - Posture data including pitch angle, roll angle and yaw angle
‘water quality’ - Water quality data including dissolved oxygen, turbidity, salinity and pH (required to equip related sensor to collect)
‘gps’ - Coordinate data including longitude and latitude(required to equip U-QPS to collect) ‘sonar’ - Frontal sonar and Downward sonar detecting data (required to equip Altimeter and Distance meter module to collect)

Chapter 6 FIFISH App
Toolbox, ROV Log

ROV Log

The navigation information can be recorded and output as a document

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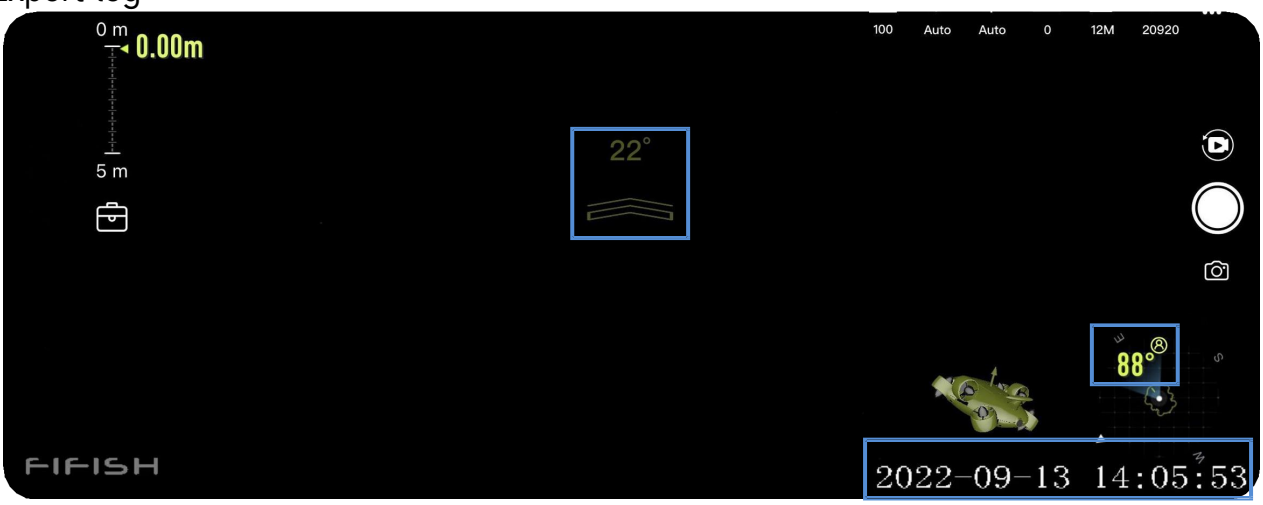

FIFISH APP screen

ɾch":"-90.0","roll":"0.0","yaw":"134.0"},"timestamp":1663049168.140764,"type":"attitude","date":"2022-09-13 14:06:08"},{"payload":{"pitc
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The original json format

	A	B	C	D	E	F
1	payload/pitch	payload/roll	payload/yaw	timestamp	type	date
2	0.0	-1.0	100.0	1663049156.638566	attitude	2022-09-13 14:05:56
3	0.0	0.0	100.0	1663049156.174783	attitude	2022-09-13 14:05:56
4	2.0	3.0	99.0	1663049155.638969	attitude	2022-09-13 14:05:55
5	9.0	2.0	92.0	1663049155.1385531	attitude	2022-09-13 14:05:55
6	21.0	3.0	88.0	1663049154.638114	attitude	2022-09-13 14:05:54
7	22.0	3.0	88.0	1663049154.142657	attitude	2022-09-13 14:05:54
8	22.0	2.0	87.0	1663049153.63833	attitude	2022-09-13 14:05:53
9	22.0	2.0	88.0	1663049153.141131	attitude	2022-09-13 14:05:53
10	20.0	3.0	99.0	1663049152.638188	attitude	2022-09-13 14:05:52
11	23.0	3.0	107.0	1663049152.142138	attitude	2022-09-13 14:05:52
12	24.0	3.0	107.0	1663049151.637951	attitude	2022-09-13 14:05:51
13	24.0	3.0	107.0	1663049151.139433	attitude	2022-09-13 14:05:51
14	25.0	3.0	106.0	1663049150.638698	attitude	2022-09-13 14:05:50
15	24.0	3.0	105.0	1663049150.163193	attitude	2022-09-13 14:05:50

The converted excel format

Chapter 7 Additional Information
Specifications

ROV

Dimension	770 mm × 590 mm × 338 mm	$30\ ^{19}/_{64}$ in × $23\ ^{57}/_{250}$ in × $13\ ^{3}/_{10}$ in
Weight	23.8 kg	$52\ ^{47}/_{100}$ lbs
Depth Rating	350 m	$1148\ ^{147}/_{500}$ ft
Anti-flow	4.0 Knots (2m/s)	
Loadings	5 Q-interfaces	
Thrusters Designs	6 × Vector	3rd gen Q-Motor × 6
Maneuverability 6 DoF (Degree of Freedom)	Moving	Left / Right / Forward / Backward / Forward / Backward
	Rotation	360° in Pitch, Yaw and Roll
Posture Lock™	± 1.0° accuracy	Either in static or moving
Depth Lock™	± 0.03 m accuracy	Keep ROV suspending
Operating Temperature	-10°C to 60°C	14°F to 140°F
Payload	10kg	

ROV's Power Tank

Input Voltage	200~400VAC	
Output Voltage	24VDC	
Max Output Power	2000W	

Q-Interface

Port Number	5 ports (4 × Type-A, 1 × Type-B)
Material	Aluminum Alloy Anodized
Output Voltage and Current	24.0 V, 3.0 A max
Network Bandwidth	100 Mbps
Network Protocol	Ethernet or RS485 (A1 - Upper Starboard, A2 - Upper Port)
	Ethernet or UART (A3 - Lower Starboard, A4 - Lower Port, B1 - Statboard, B2 - Port)

Robotic Arm

Claws Opening	125 mm	$4\ ^{9}/_{10}$ in
Grip Strength	20.0 kgf	44 lbsf
Claw Material	Aluminum Alloy	

Chapter 7 Additional Information
Specifications

Camera × 2

Image Sensor	1/2.3”	SONY CMOS
Pixels	12 Mega Pixels	Effective Pixels
ISO Range	100-6,400	Auto / Manual
Lens	166°	Filed of View (in air)
	f/2.5	Aperture
	0.3 m	Minimum Focusing Distance
Shutter Speed	5 to 1/5000 second	Auto / Manual (Electronic)
Burst Shooting	1 / 3 / 5 / 10 / 15	Frames
WB (White Balance)	2,500 to 10,000 K	Auto / Manual
EV (Exposure Compensation)	- 3.0 ~ + 3.0 EV	
Video Resolution	4K UHD	25/30 fps; 50/60 fps(H.264 only)
	1080P FHD	25/30/50/60/100/120 fps
	720P HD	25/30/50/60/100/120/200/240 fps
Video Format	MPEG4-AVC/H.264	
Stabilization	EIS (Electronic Image Stabilization)	
Color System	NTSC and PAL	
Photo Resolution	4,000 × 3,000	
Photo Format	JPEG, DNG	

LED Beams × 2

Brightness	12,000 lumens in total
CCT (Correlated Color Temp.)	5,500 K
Beam Angle	120°
Dimming	OFF, 1, and 2

Laser × 2

Wavelength	660 nm (Red)
Type	Spot / Dot
Output Power	200 mW

Chapter 7 Additional Information
Specifications

Tether and Spool

Tether Length	200 m (Standard Package)	656 $^{21}/_{125}$ ft
Tether Diameter	12 mm	$^{47}/_{100}$ in
Breaking Force	200 kgf	440 lbsf
Spool Dimension	912 mm x 356 mm x 360 mm	35 $^{9}/_{10}$ in×13 $^{9}/_{10}$ in×14 $^{1}/_{10}$ in
Spool Weight	59 kg	130 $^{7}/_{16}$ lbs

Direct-powered Case

Dimension	463mm x 360mm x192 mm	18 $^{2}/_{10}$ in×14 $^{1}/_{10}$in×7 $^{1}/_{2}$ in
Weight	8.55kg	18 $^{21}/_{25}$ lbs
Input Voltage	85~265VAC	
Output Voltage	400VDC±5%	
Max Output Power	3000W (220V)	

Remote Controller (RC)

Weight	0.56 kg	1 $^{47}/_{200}$ lbs
Clamp Opening	20.2 cm	7 $^{1191}/_{1250}$ in
Wireless	5 GHz Wi-Fi 11 a,n, ac	
Battery Life	Up to 4 hours	
microSD Card Slot	microSD card format in FAT32 or exFAT (≦128GB), class 10 or higher write and read speed.	
miniUSB Port Bandwidth	100 Mbps	

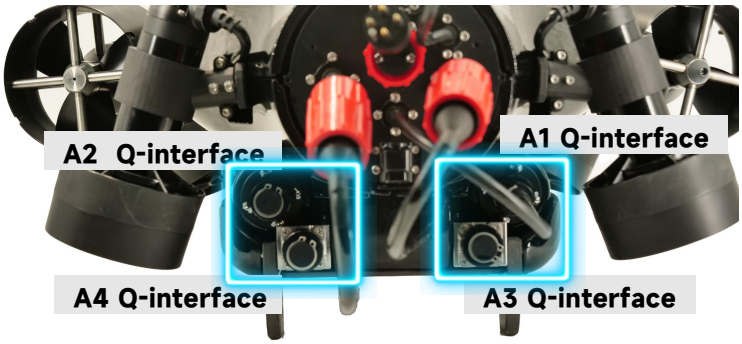
Charger

RC	Max Input	100-240 V, 50/60 Hz, 0.5A
	Output	5.0 V ⎓ 3.0 A

FIFISH App Recommendations for Professional Users

System Recommendation	Hardware	Software
Windows	Panasonic Toughbook FZ-55	Windows 10
iOS	iPad mini 6	iOS 14.0 or higher

Chapter 7 Additional Information
Q-interface, Type-A



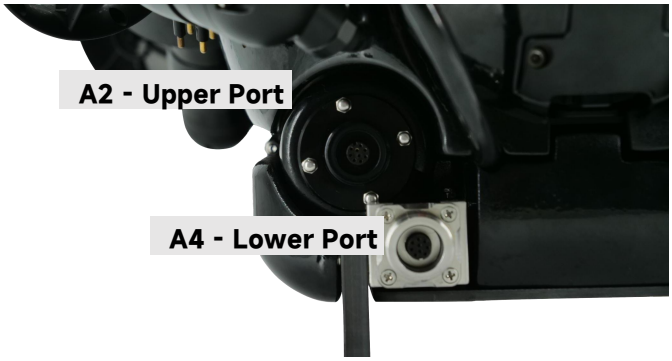
Q-Interface

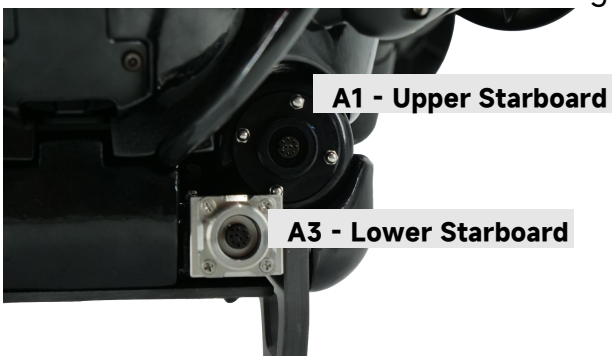
Q-Interface is developed by QYSEA to fit the 9-pin connector on some accessories. The Q-interface can be used for DC power, Ethernet, RS 485 or UART network for accessories, such as, image sonar, station lock module, water sampler, water quality sensor, etc.

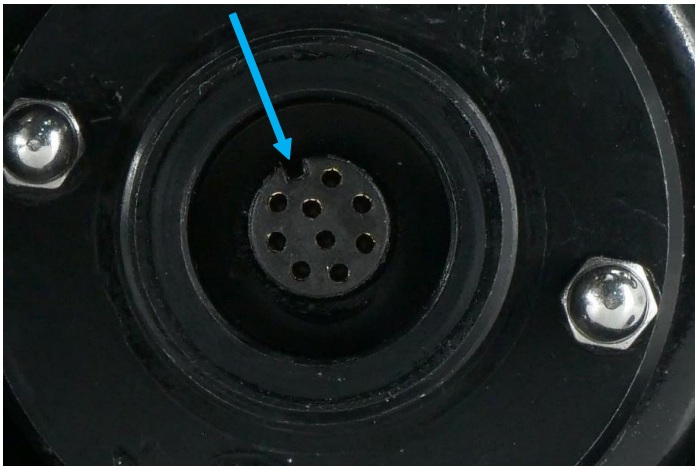
There are 4 type-A Q-Interfaces on the back of the ROV.

NOTE:

Please orient the black alignment key of the male connector to the Q-interface's small cut before connecting.



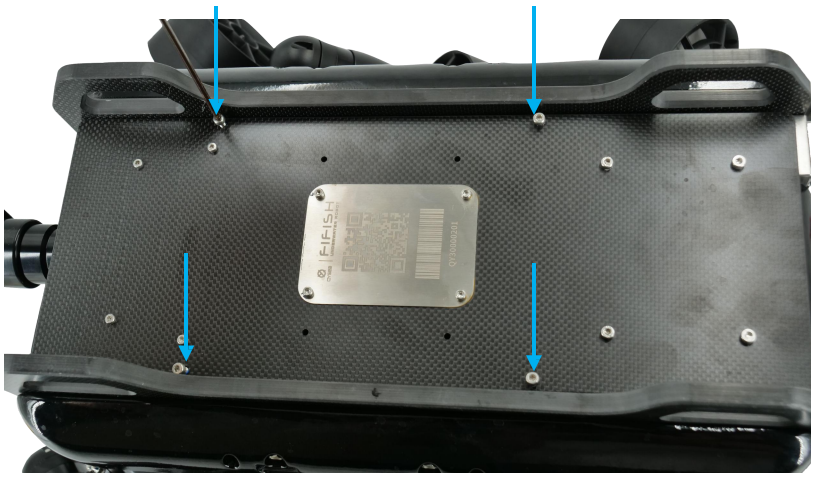


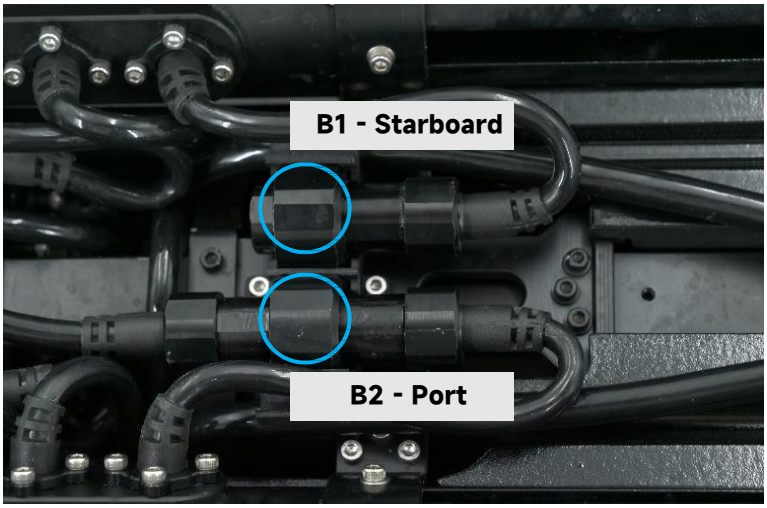


Chapter 7 Additional Information
Q-interface, Type-B

Two bottom type-B Q-Interface are protected by the bottom plate.
1. Unfasten 4 nuts with M3 Allen wrench
2. Open the bottom plate

NOTE
The robotic arm has occupied 1 Type-B Q-interface





Chapter 7 Additional Information

Q-interface, Type-B

The protective cap designed for the type-A Q-interface can be removed by unscrewing it, while the removal of the type-B Q-interface requires a tool.