QYSEA

FIFISH W6 hardware user manual

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Manufacturer: QYSEA

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Original manufacturer pages follow unchanged. Product configuration and technical limits are defined by the manufacturer document.

Shared W6 hardware manual linked by current W6 NAVI support. NAVI-specific navigation features are documented separately on the product page.

Official source

https://www.qysea.com/support/guides/fifish-w6/

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QYSEA

FIFISH W6



USER MANUAL
V3.4

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Chapter 1 Backgrounds

Safety and Regulations

The FIFISH W6 is the professional instrument, 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



Avoid overheating of motors, do NOT run the thrusters in air for over 3 seconds



Do NOT throw the submersible when deploying into the water



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



Laser radiation class 3B. Avoid direct exposure to eyes.



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



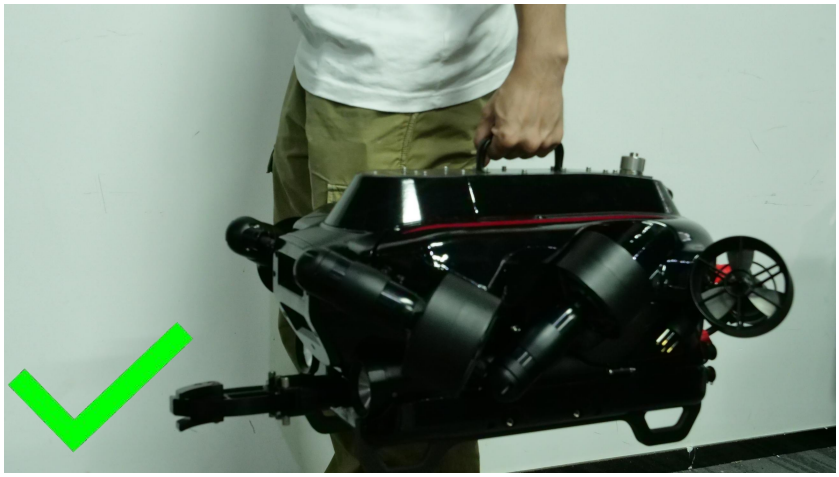
Avoid the reefs, rocks, seaweeds, fishline or other objects that may cause damage to or entanglement of the submersible or tether



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



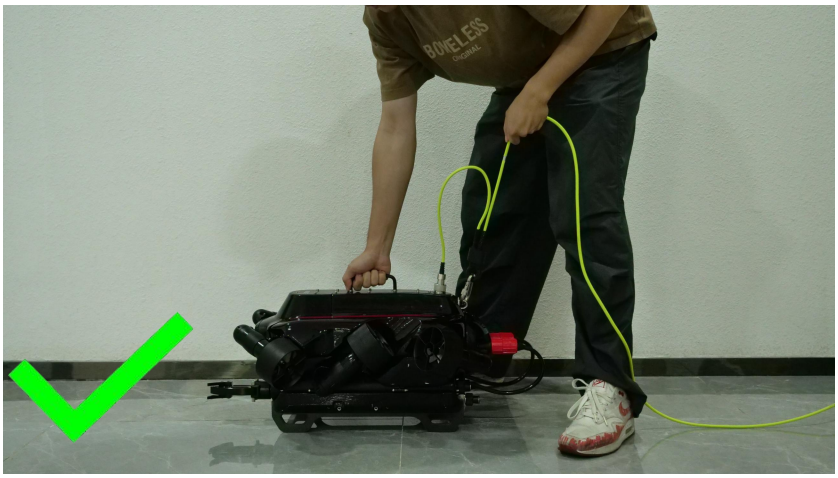
Maintain after dive, check the, Maintenance Guide



Holding on the Launch and Recovery (LAR) Handle when carrying submersible



Holding on the battery handle when carrying the battery



Holding the LAR handle and tether behind safety lock when launch or recovery

Chapter 1 Backgrounds
Special Note



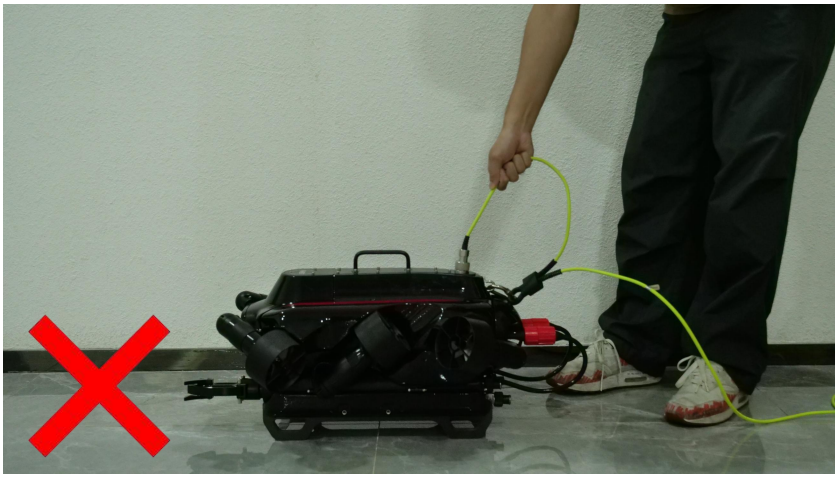
Do **NOT** holding the motor frame when carrying the submersible



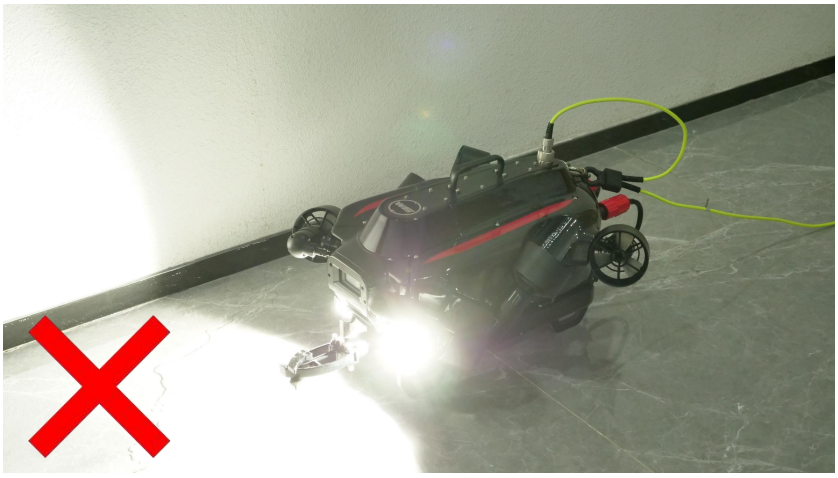
Do NOT pull the battery cable when retrieving or carrying the submersible



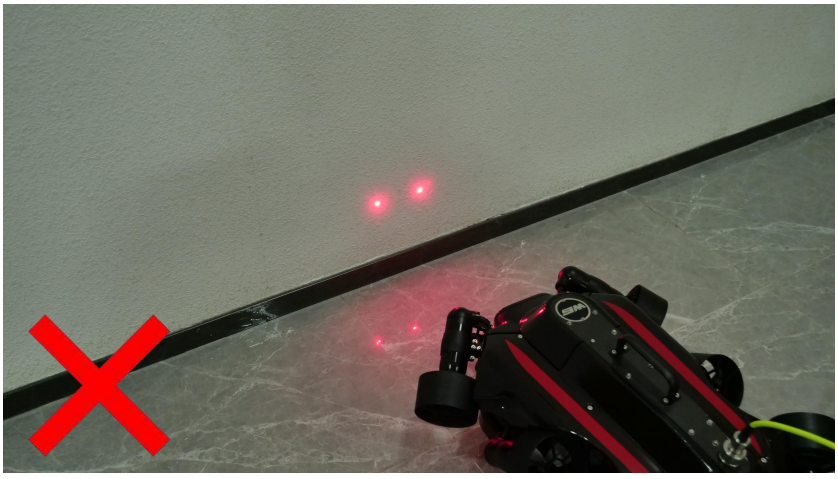
Do **NOT** holding the battery cable when carrying the battery



Do **NOT** hold the tether part used to connect the ROV PLC port



Do **NOT** turn ON the LED **in air** longer than 10 second to avoid over heating



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



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



Check the O-ring inside protective caps regularly



Check the O-ring inside protective caps regularly

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 robot.
- **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

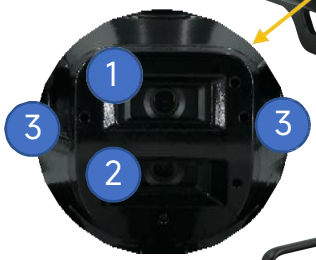
The FIFISH W6 is an ROV (Remote Operated Vehicle) for commercial and industrial underwater operations. Here's highlight of FIFISH W6.

- 6 vector thrusters™ optimize the 6 DoF (Degree of Freedom) omni-directional maneuverability, and 3 knots (1.5 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 measurement

FIFISH W6's Q-BOX is the underwater connector hub, which spilt into 6 ports (4 Type-A Q-Interface, 2 Type-B Q-Interface, 1 Type-B has been occupied by robotic arm). The wide variety of accessories include, 2D image sonar, Station Lock™, U-QPS (underwater quick positioning system), 360° scanning sonar, compass ruler clamp, OPSS (on-shore power supply), mud sampler, water sampler (500 mL), salinity sensor, pH sensor, dissolved oxygen sensor, hydrophone etc. Such wide variety selection of accessories can fulfill the any kind of application filed.











FIFISH W6 Submersible

1. Main Camera (Cam-#1) in 4K
2. Secondary Camera (Cam-#2) in 4K
3. Lasers ×2
4. 6,000 Lumens LEDs ×2
5. Robotic Arm
6. 2nd gen Q-motor Pro Thrusters ×6
7. ROV Tether Port
8. Safety Anchor Point [1]
9. Battery Plug ×2
10. Launch and Recovery (LAR) Handle
11. Q-Interface Upper Starboard Type-A (A1)[2]
12. Q-Interface Upper Port Type-A (A2)[2]
13. Q-Interface Lower Starboard Type-A (A3)[2]
14. Q-Interface Lower Port Type-A (A4)[2]
15. 2D Image Sonar Cabin
16. Carbon Fiber Leg





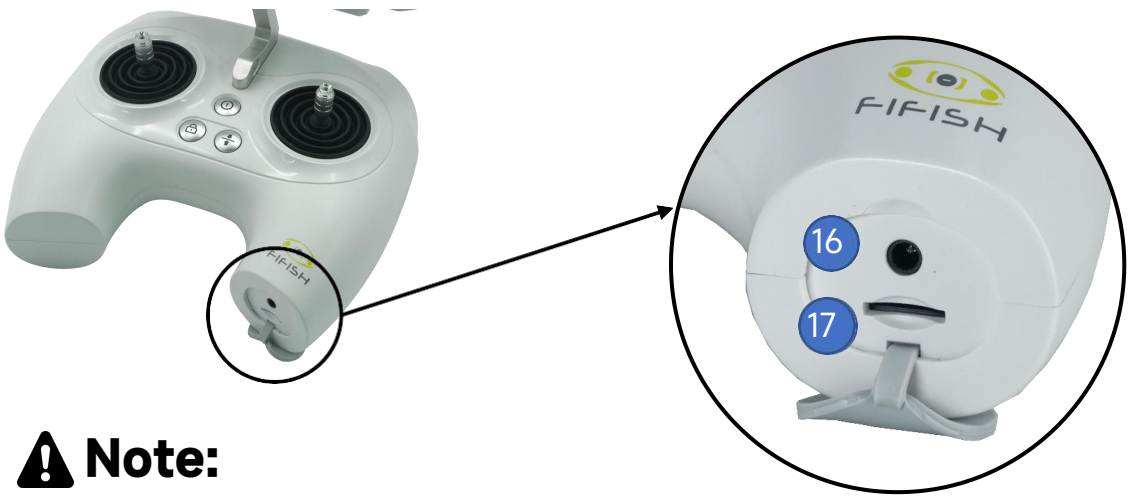
⚠ Note:

1. Lock the Safety Lock in Safety Anchor Point all time.
2. Keep the Q-Interface™ dry and clean at all time.

Chapter 2 Introduction
Remote Controller Definition







RC (Remote Controller)

1. ON/OFF
2. Depth Holding (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 / Combine)
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 about 1 second, will switch to video mode.
2. In video mode, press and hold about 1 second, will switch to phone mode.



Tether Spool

1. Spool Handle
2. Tether Regulator
3. Rotation Reel
4. Rotation Handle
5. Safety Lock
6. ROV Plug
7. RC Plug
8. ROV Plug Position Pin
9. O-rings





⚠ Note:

1. Images may differ from the actual product

Chapter 3 Pre-Dive
Install FIFISH App

3.1.1. FIFISH App Download and Installations

Option 1. Scan the QR code below 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 allow you to see the camera, sonar information, and U-QPS in the same screen.



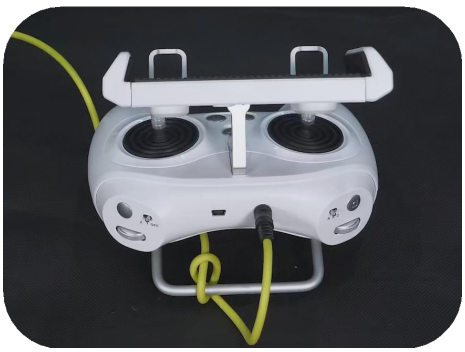
3.2. Hardware Connection

Overview of hardware connection



3.2.1. Plug the tether (3.5 mm head) into remote controller

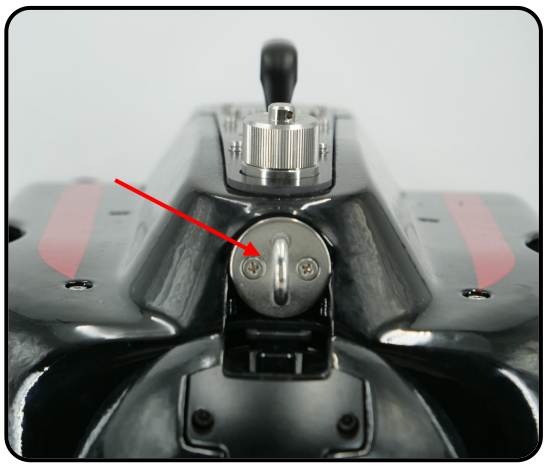




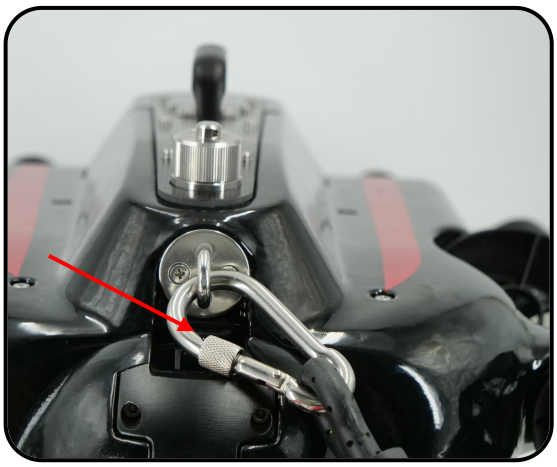
TIPS:

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.

3.2.2. Have the safety lock on the safety anchor point



3.2.2.1 anchor point



3.2.2.2 safety lock on anchor point

3.2.3. Twist off the protective cap, then insert ROV Plug into Tether Port (**finger tight**)



3.2.3.1 twist off the protective cap



3.2.3.2 Inserts the plug of the and seals it. Tighten it for the first time and then press the plug of the submersible to tighten it for the second time to ensure that the connectors are tightly connected.

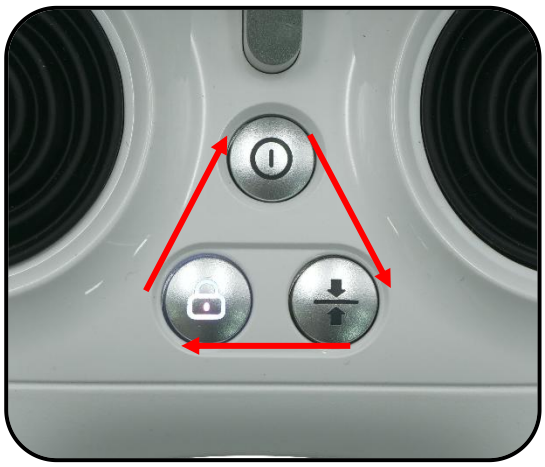
3.2.4. Turn ON the RC. Press and hold the ON/OFF button (3 seconds)

- RC will play 7 chimes from low to high (Do, Re, Mi, Fa, Sol, La, Ti)
- ROV will turn on automatically, and play 5 chimes (Do, Re, Mi, Do, Mi)

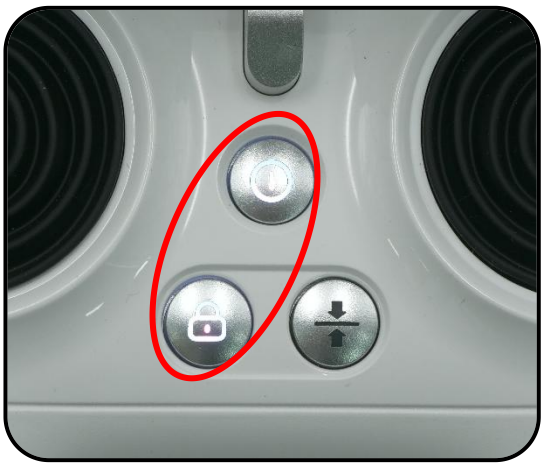


3.2.4. System connecting

- The “ON/OFF”, “Depth Holding" and "LOCK/UNLOCK” 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 that indicates the hardware connection successfully



3.2.5.1 connecting

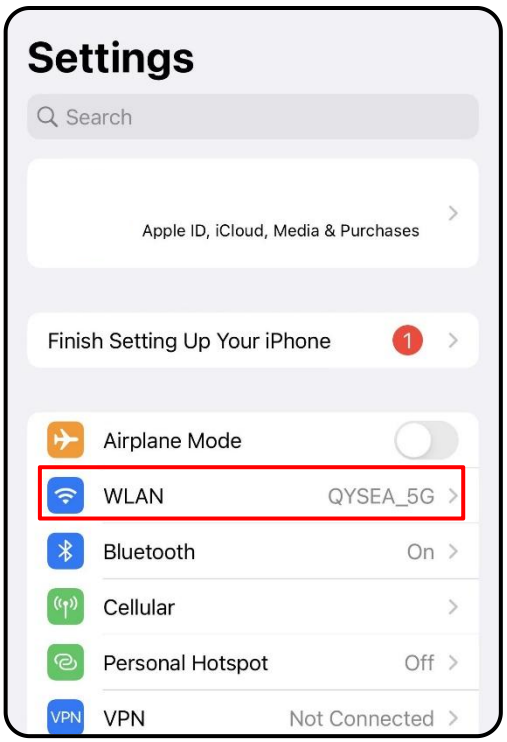


3.2.5.2 connected

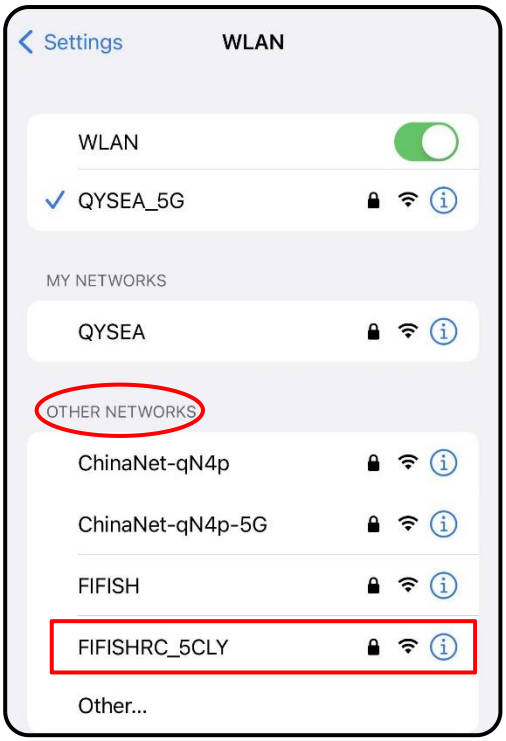
3.3. Software Connection

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

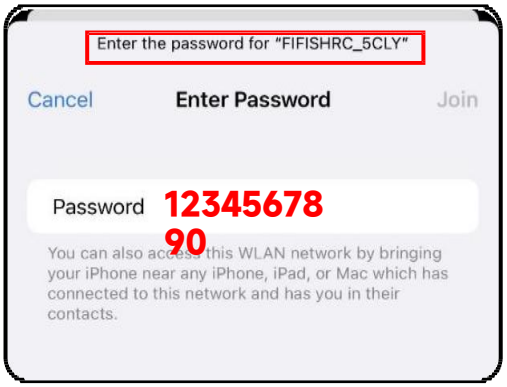
- Go to “Settings”, then “WLAN”
- Find the Wi-Fi network name “FIFISHRC_xxxx”
- Enter the password to connect, the default password is “1234567890”



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

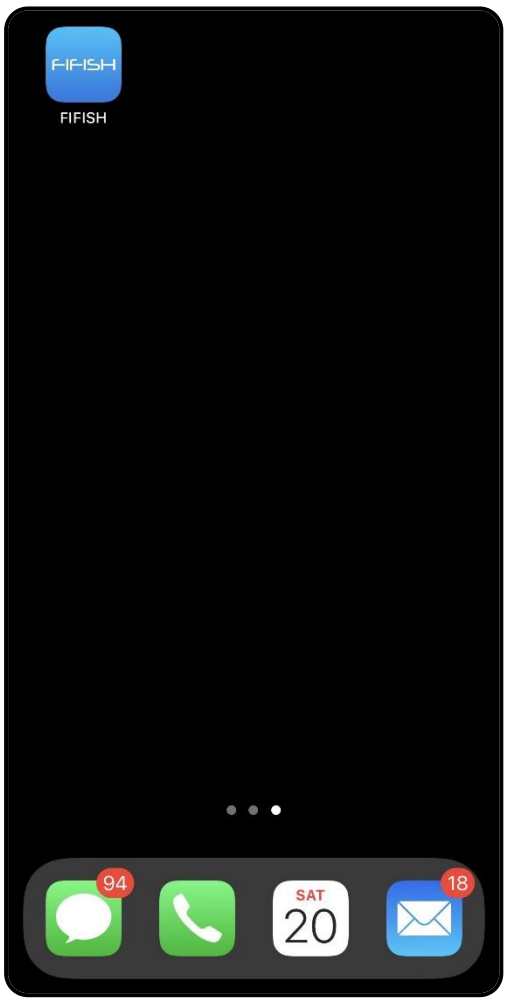
NOTE

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

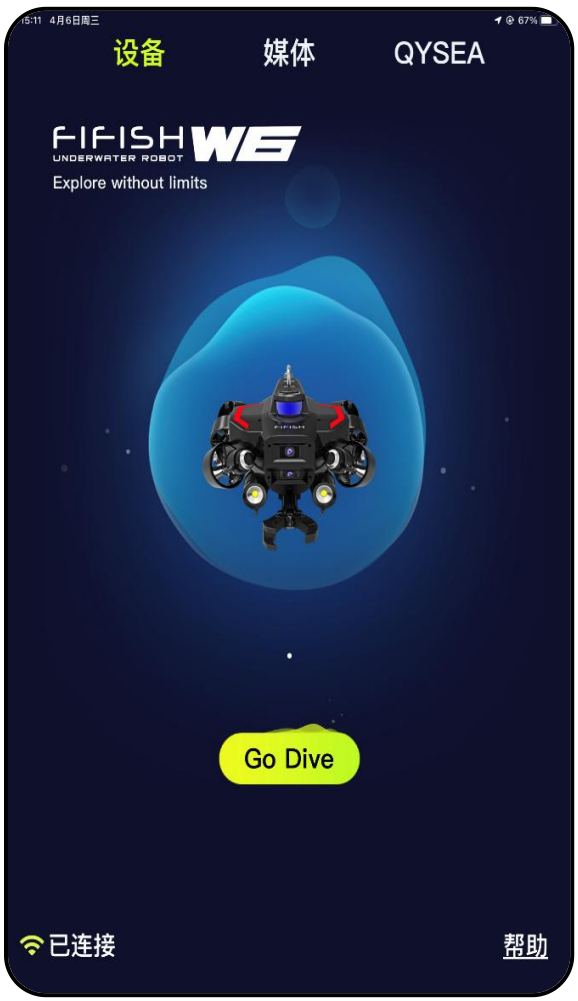
3.3. Software Connection

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

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



3.3.2.1 Open FIFISH App



3.3.2.2 Connected

NOTE

The operate interface will be introduced in Chapter 6 ***FIFISH App****, page 33-47*

Chapter 3 Pre-Dive
Sensor Calibration & Deploy and Retrieve

3.4. Sensor Calibration *(Check the Charter 6, Sensor Calibration Page 40)*

3.4.1. Go to **General Setting**
3.4.2. Select the **Sensor Icon**
3.4.3. Follow the hit on FIFISH App step by step, first ***Gyro-Acce*** then ***Mag***
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. Deploy the ROV

- **ONLY** pulling on the tether to deploy the submersible into the water.
- Please make sure that the propeller is **OFF** when the submersible is launched.
- Unlock the thrusters then start to dive.



NOTE

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

3.6. Retrieve

3.6.1. **LOCK** the thrusters
3.6.2. **STOP RECORDING** the video before closing the FIFISH App
3.6.3. **ONLY PULLING** on the tether to retrieve the submersible

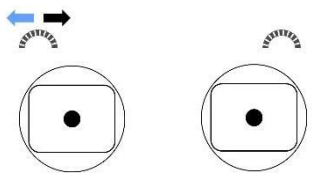
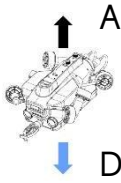
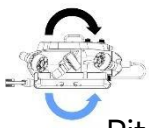
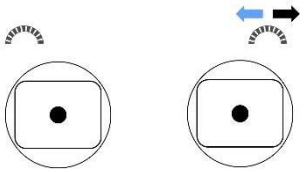
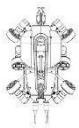
Definition of Controlling

The FIFISH W6 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)
	 Ascend / Descend	 Pitch Up / Pitch Down
	 Left / Right	Roll Counter Clockwise[1]  Roll Clockwise[1]

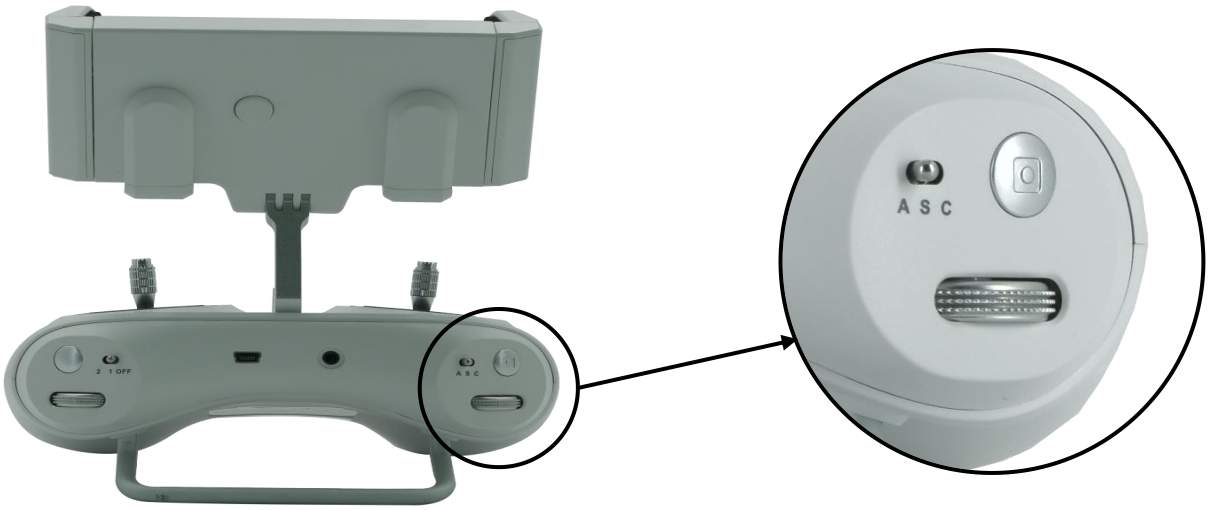
NOTE:

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 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 degree of freedom of W6. Controlling and moving based on the FPV (Frist Person View), do not operate in 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 VR Goggle, which allow pilot to use the VR Goggle to pitch, roll and yaw. Combination mode delivers the intuitive control and immersive experiences. Combination mode supports head tracking and remote controller working together.

Accessories Attached

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.*

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. Connect the RC and the ROV’s tether port by the 3 meter tether
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
Data Copy

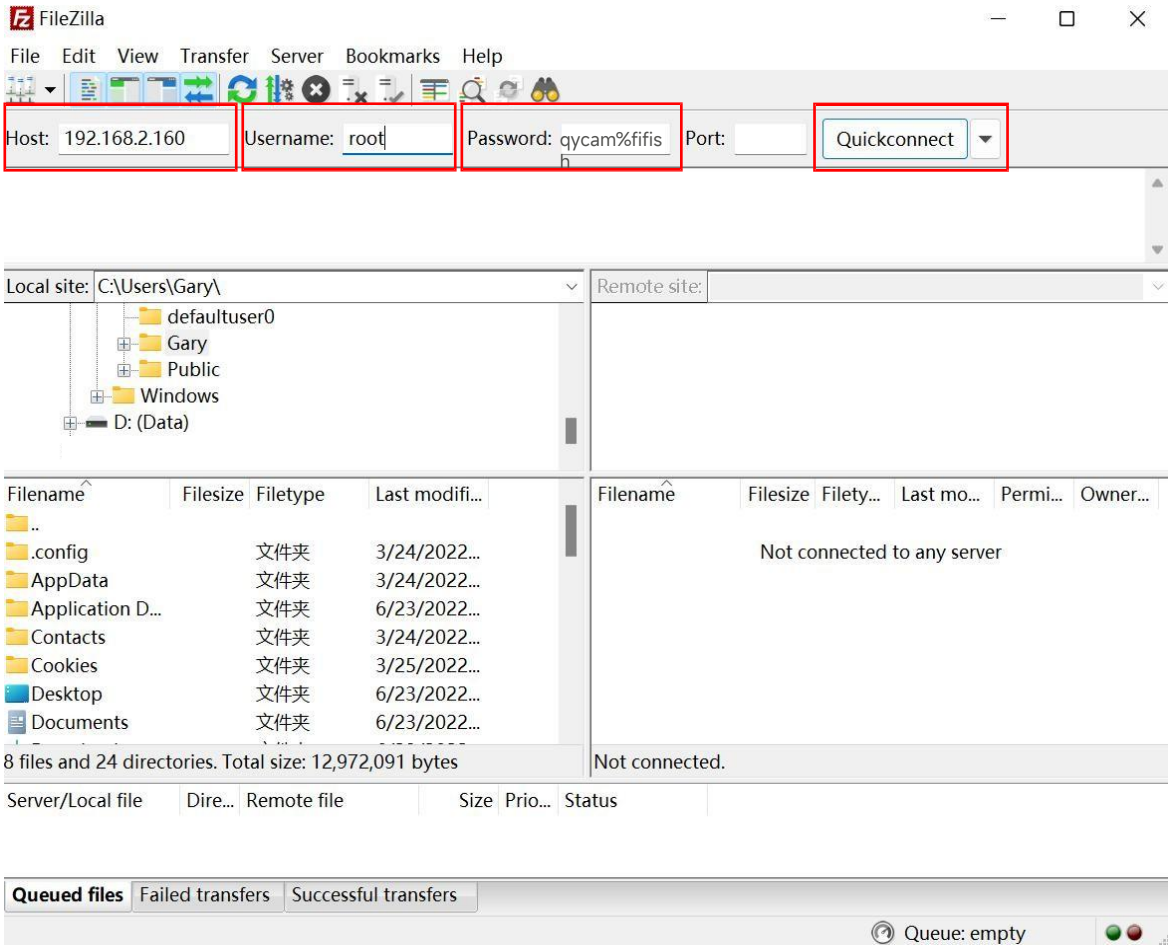
5.1. Data Copy (Method 1)

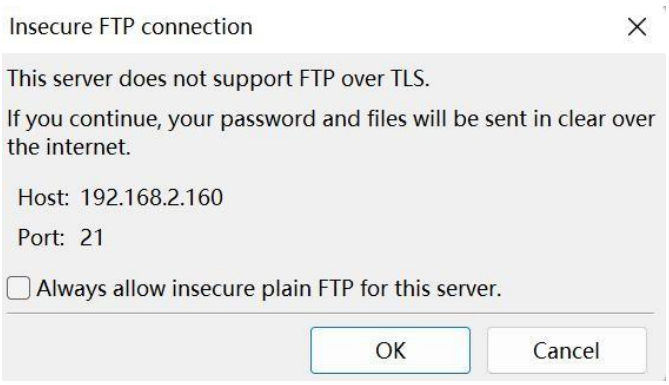
5.1.4. Turn ON the ROV by the RC
5.1.5. Check the remote control network is connected to the PC/laptop.



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 appear

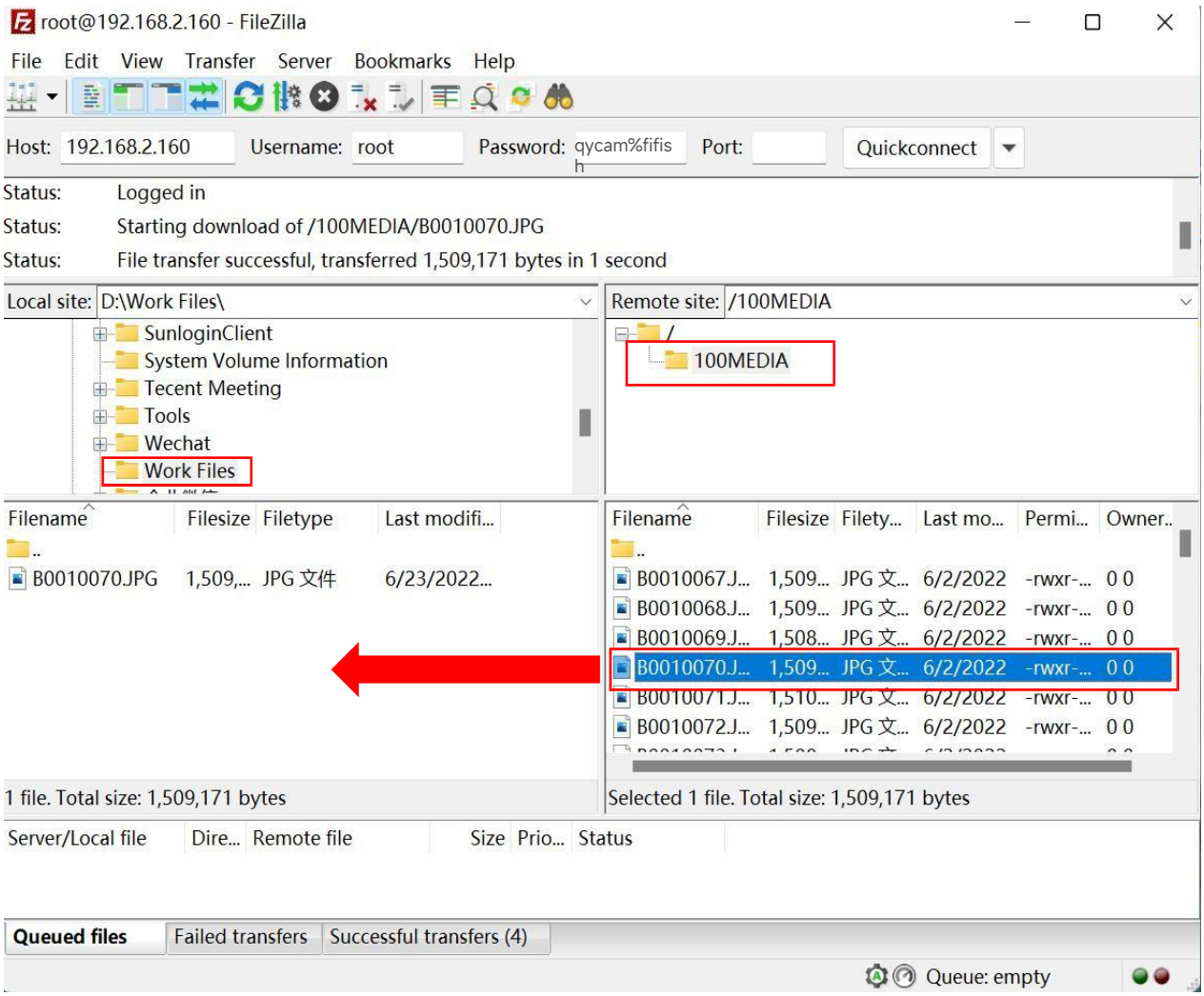




Chapter 5 Post-Dive
Data Copy

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



5.1. Video/Photo Download (Method 2)

5.1.1. Connect with RC and Submersible with Data Transfer Cable
5.1.2. Insert a microSD card in the RC[1]
5.1.3. Software connect







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
Data Copy

5.1. Video/Photo Download(Method 2)

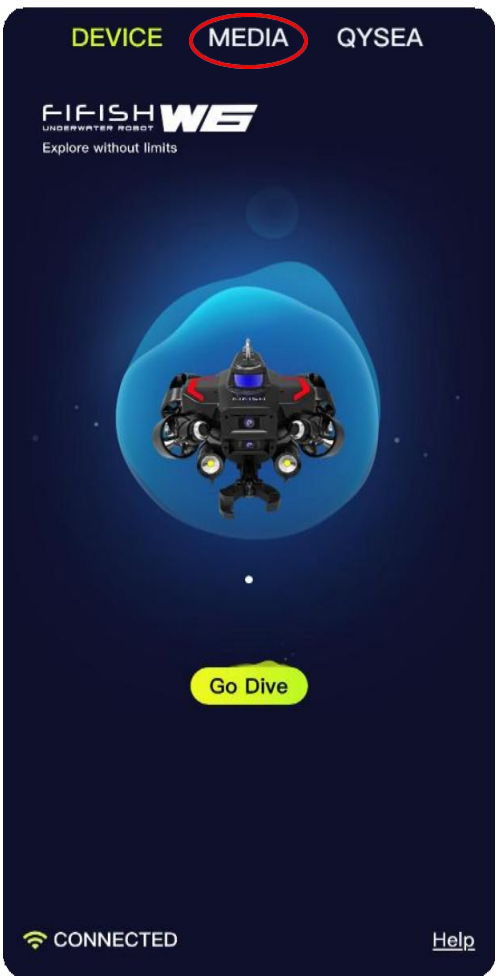
5.1.4. Turn ON the Depth Holding (submersible will not beep after 10 min static)

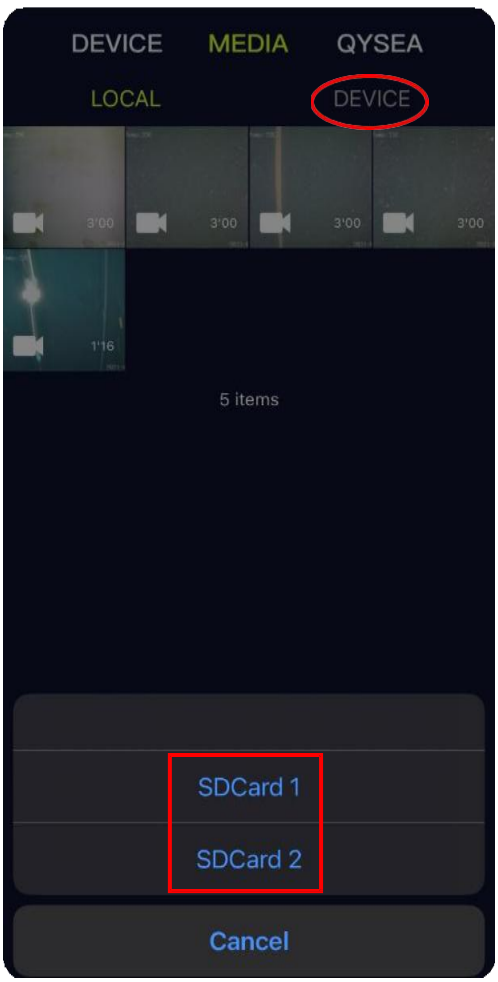




5.1.5. Press **MEDIA**, then Press **DEVICE**

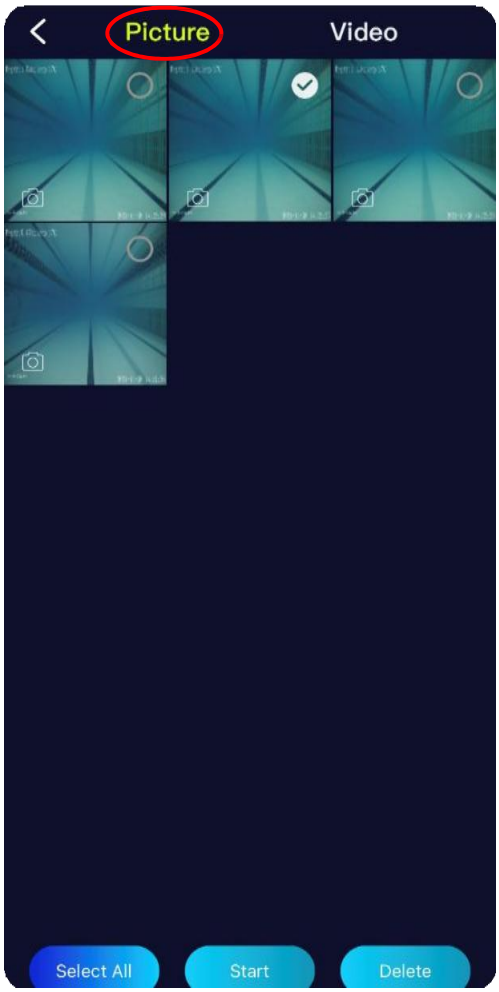
5.1.6. Select the Camera, SDCard 1 is the main camera, SDCard 2 is the secondary camera





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 you satisfied then press the **Start**



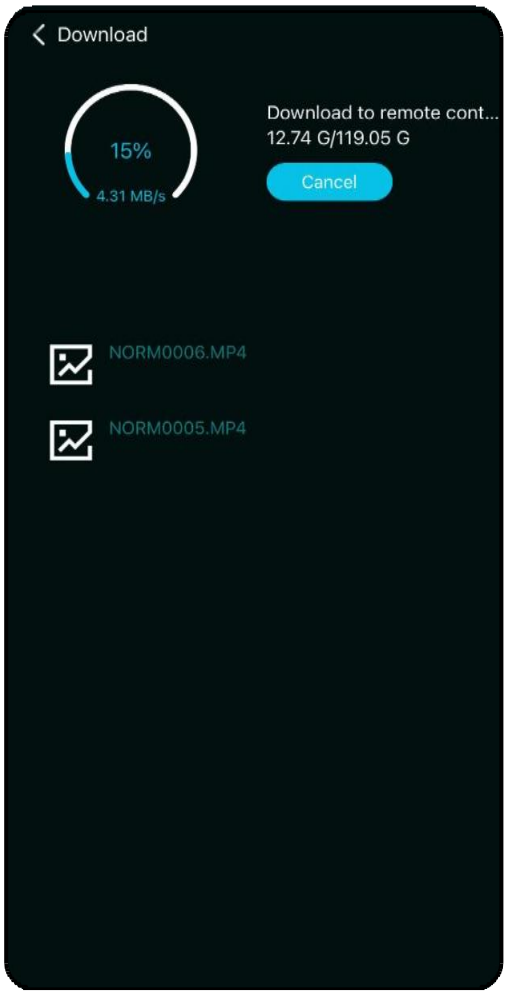


Chapter 5 Post-Dive
Data Copy

5.1. Video/Photo Download

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





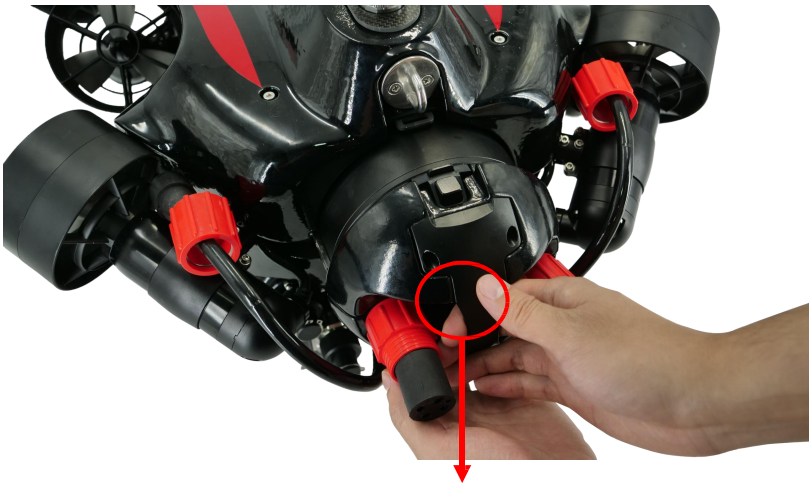
5.2. Submersible Battery



5.2.1. Unfasten the battery sealing cap and pull out the battery plug



5.2.2. Press the battery release button and holding the back of submersible to unlock the battery, then pull out a little



5.2.3. Once the battery has released then pull out the battery while holding on the battery handle

5.2. Submersible Battery

5.2.4. Connect 2 Submersible Adapter
5.2.5. Algin the positing pin
5.2.6. Plug all the way

RED LED indicator illuminates while charging and **GREEN** LED indicator illuminates while fully charged.







Chargi ng

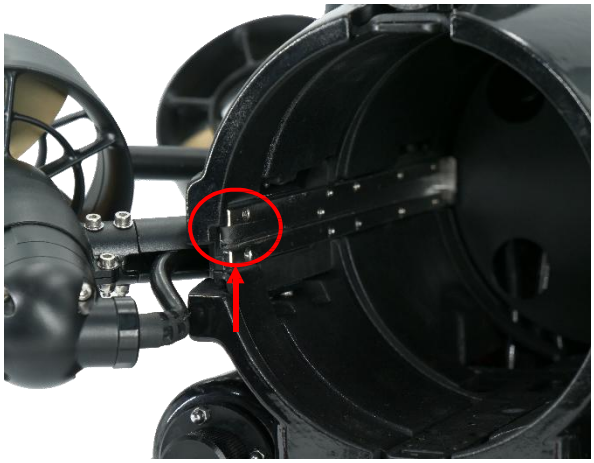


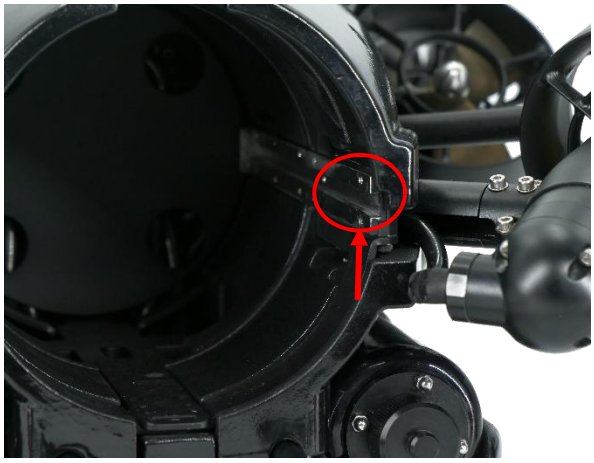
Fully Charged

5.2. Submersible Battery

5.2.7. Align the track both side when putting back the battery



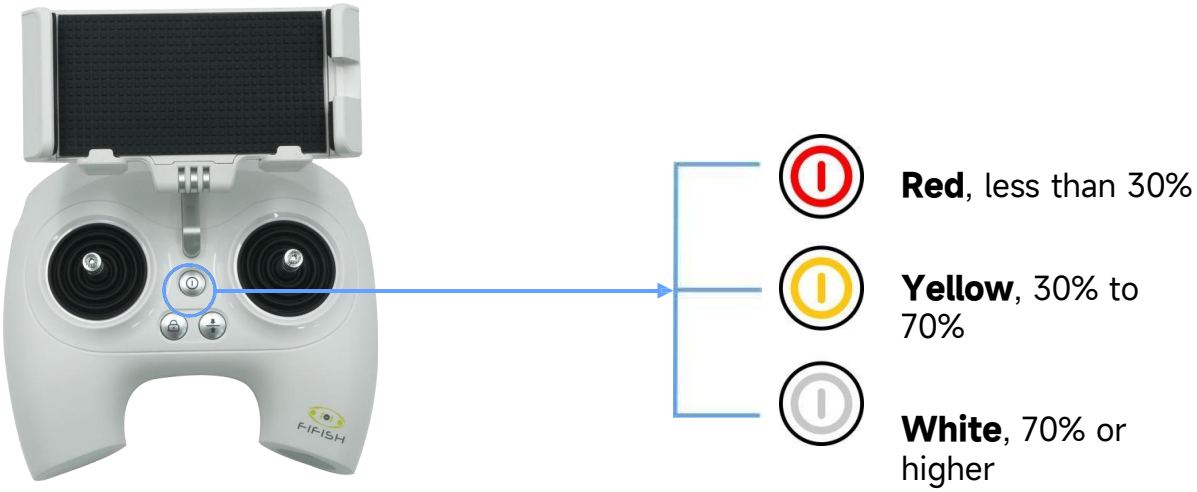




Chapter 5 Post-Dive
RC Charging

5.3. RC Charging

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







⚠NOTE:

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

Chapter 5 Post-Dive
Maintenance

1. The vehicle should be visually inspected following each dive to ensure that no mechanical damage has occurred.

2. Soak the submersible in fresh water at least 1 hour, then rinse the submersible with fresh water, then air dry and avoid direct sunlight.

3. Keep every connector (port and plug) dry and clean at all time. Put the protective cap back on the connector when not using. The salt and moisture may cause corrosion on the connectors. Clean the plug with running fresh water and dry with air blow gun or dust blower.

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

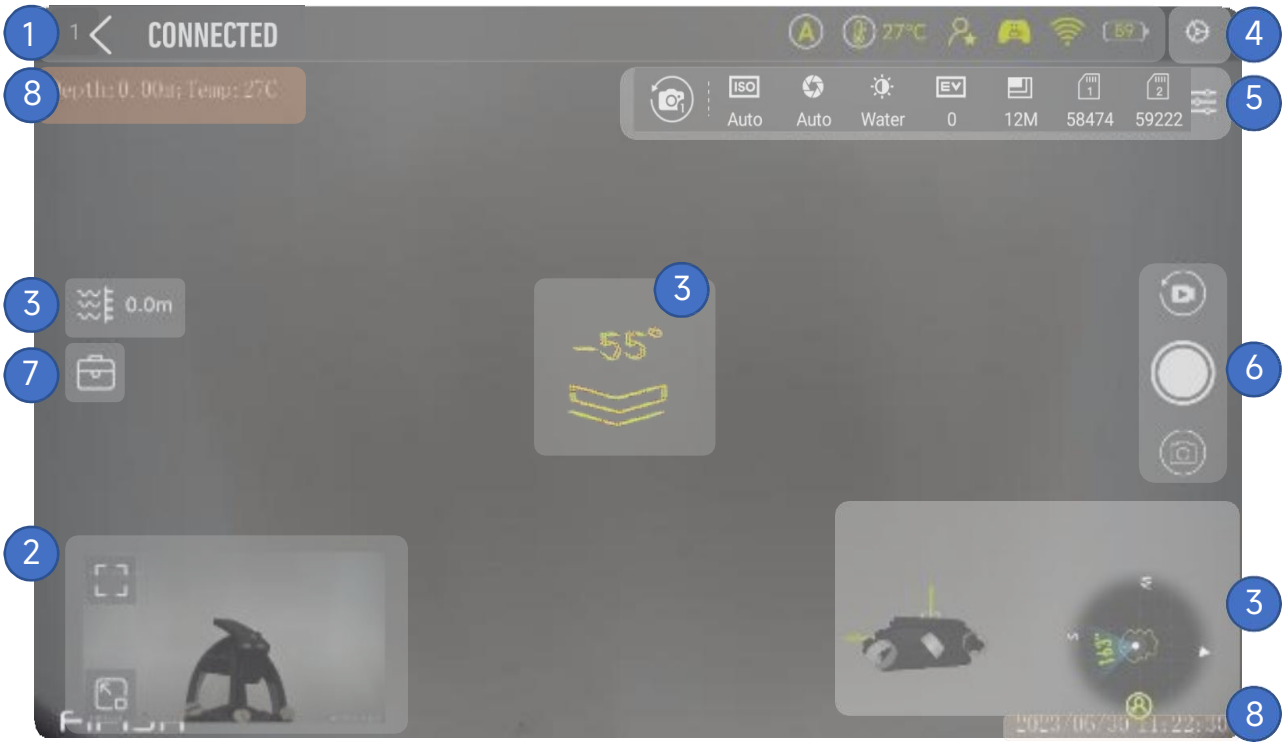
5. Inspect the tether for cuts and/or nicks or kinks in the outer shell.

6. If you have spot malfunction part or parts after dives, contact your local services center for help. For more information about FIFISH Authorized Services Centers https://www.qysea.com/support/repair-center/

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

8. For long-term storage, keep 50% to 60% of **battery** level. Charge and discharge every 90 days to keep the activation of Lithium battery.

Chapter 6 FIFISH App
User Interface

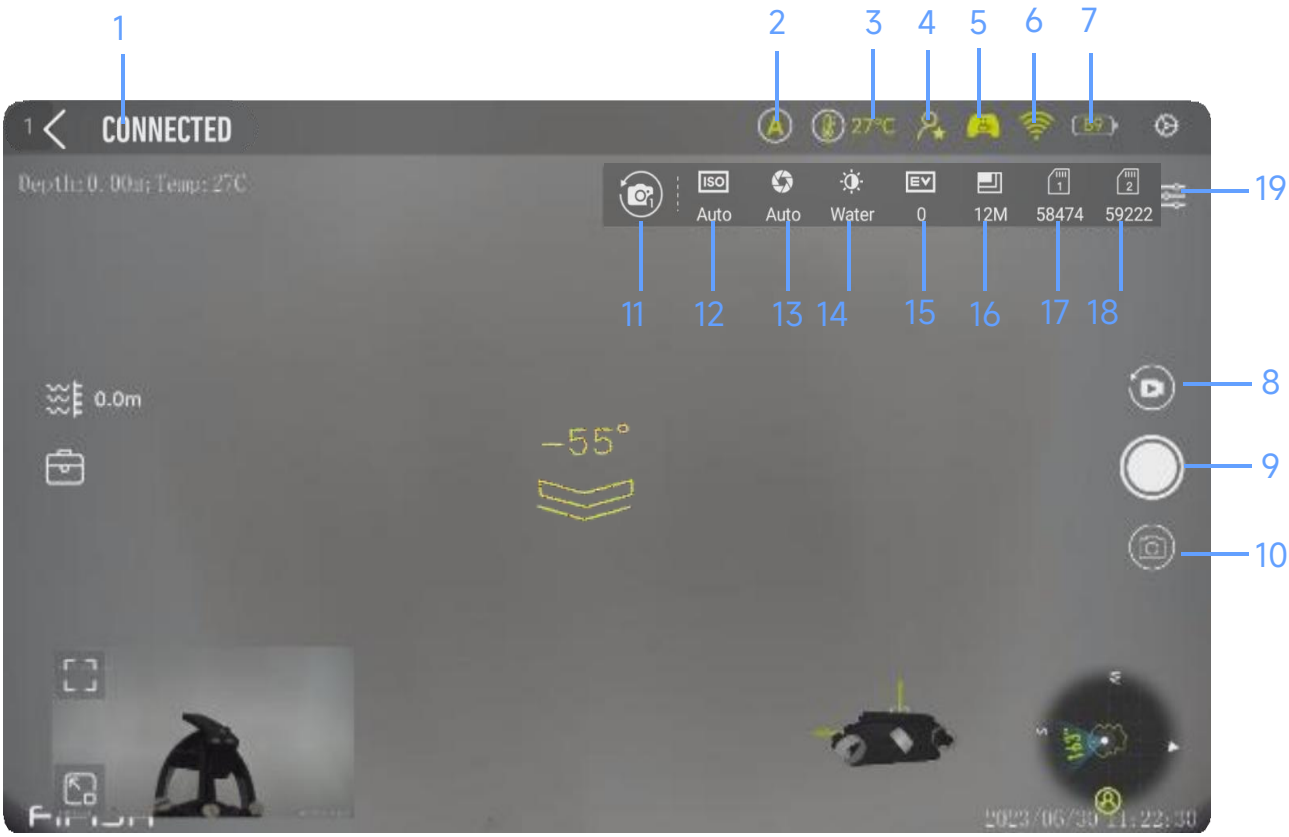


FPV Interface in FIFISH App

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

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 facing any problem, reach our technical support team, please.
Email: support@qysea.com



System Status

1. System
2. Status
3. Control Mode
4. Water Temperature in
5. C/F Pilot or Spector
6. Status Controlling
7. Preference RC's Wi-Fi

Camera Buttons

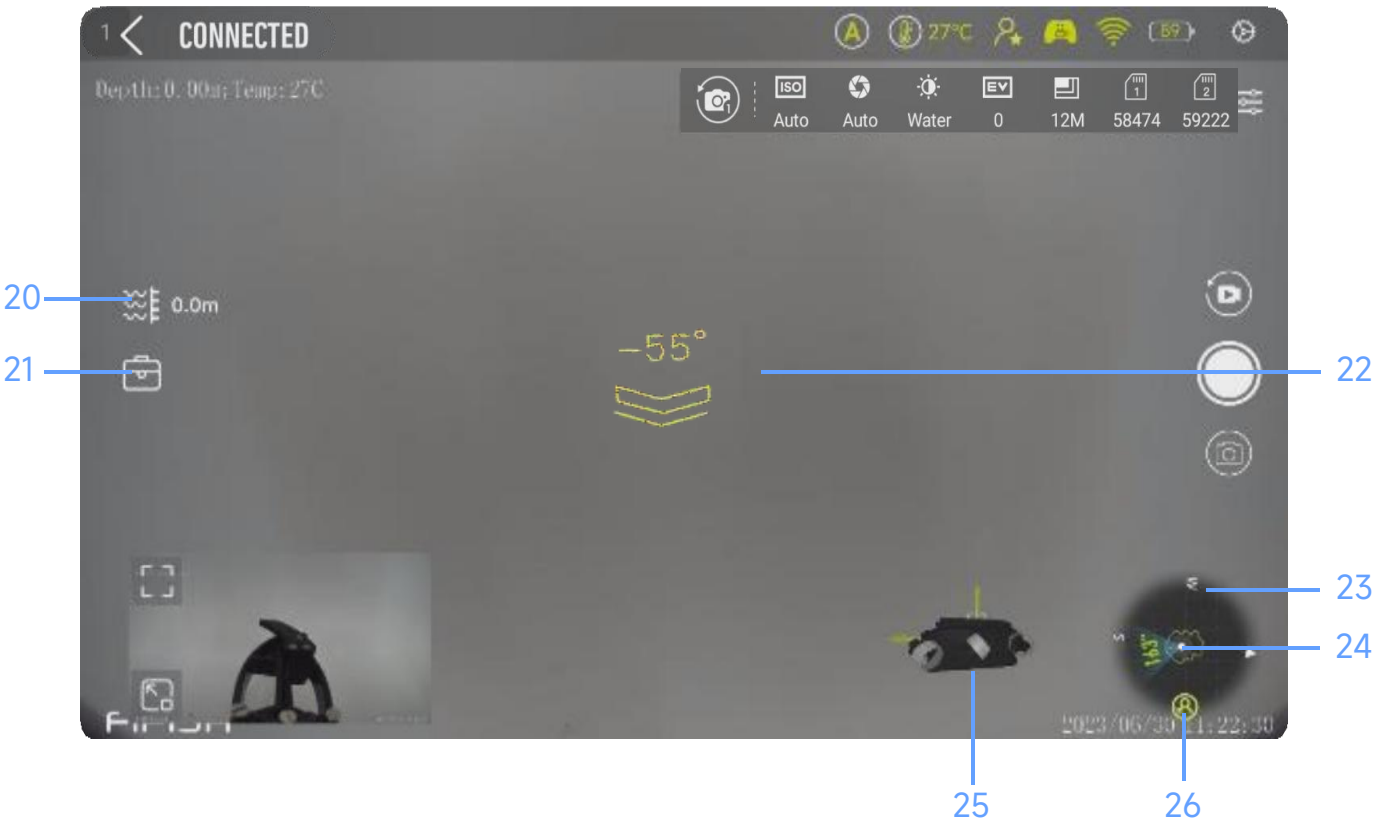
8. RC's Battery Mode Switch
9. Record / Stop / Snap
10. Slow Motion or Normal

Camera Setting & Shortcut

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

Chapter 6 FIFISH App

User Interface



Navigation Information

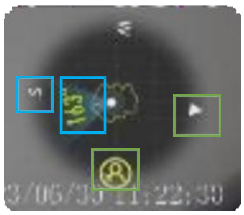
20. Current Depth (m/ft)
21. Toolbox
22. Pitch Angle
23. Compass
24. Submersible Heading [1]
25. Posture in 3D Model
26. Pilot's Facing Direction

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 North and East, so the pilot's orientation is almost East.

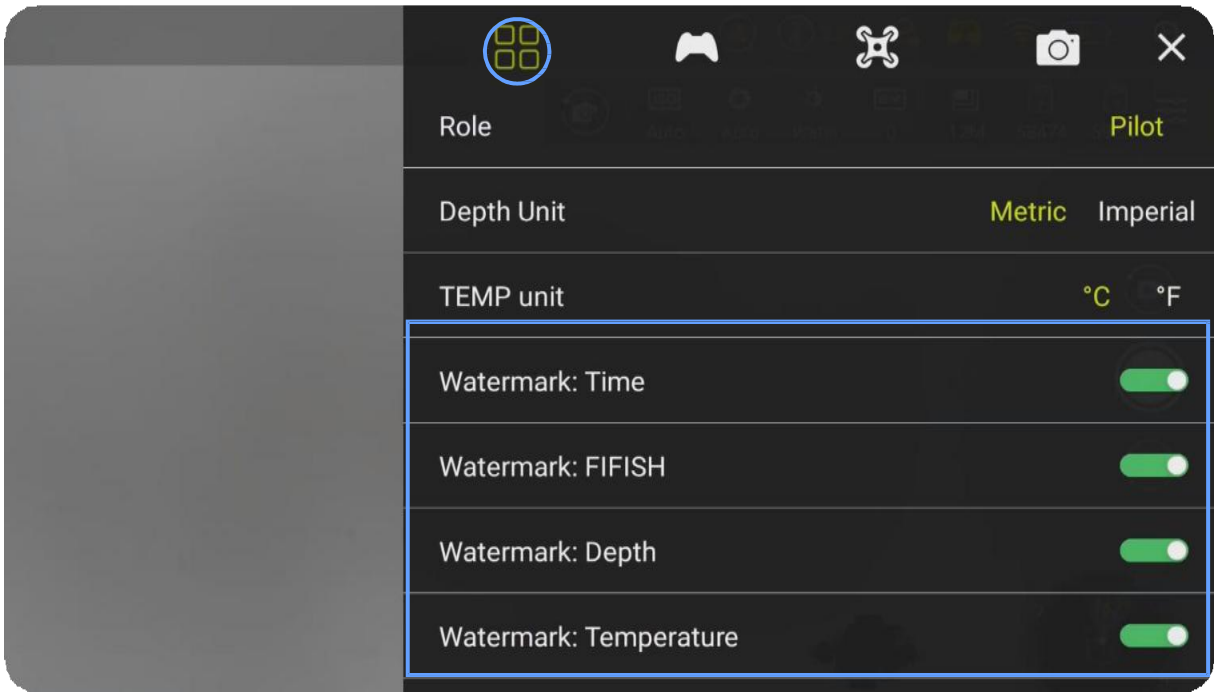
2.As shown in blue, the heading degree of the submersible is 163°, which lies between the South and the East, so the submersible faces almost South.

NOTE:

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

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

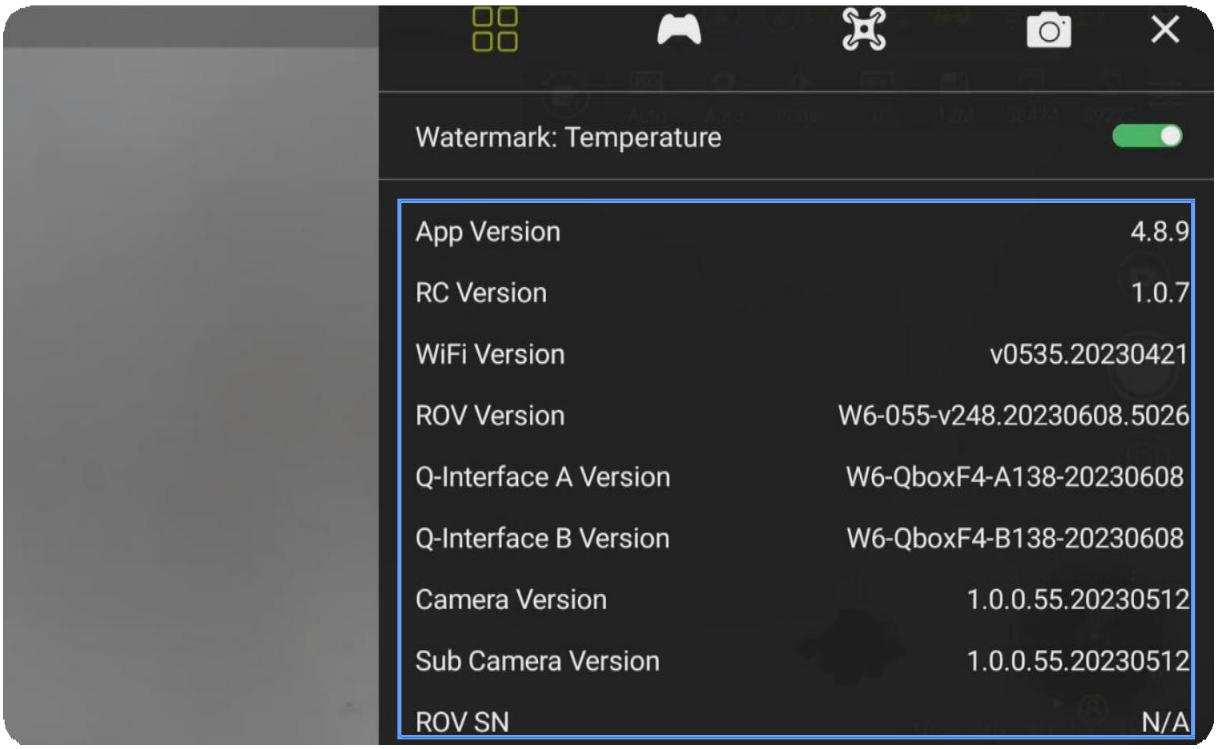
General Settings, Select **System Setting Icon** in 1st column



- If you have 2 devices connect to the RC, role are including **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



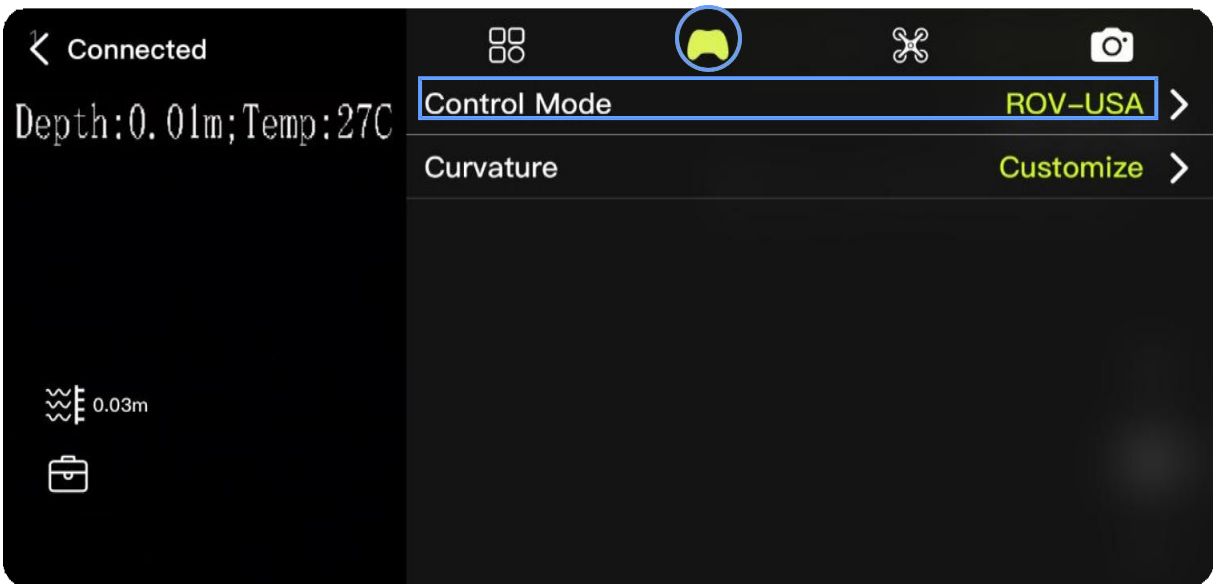
- The App Version is the FIFISH App version in your cell or tablet
- The RC Version is the RC's motherboard version
- WiFi Version is the RC's Wi-Fi module version
- ROV Version is the ROV's current software version
- Camera Version is the camera module software version
- ROV SN is the identical SN for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

NOTE:

Screen shot of these versions for remote technical support when you are facing any issues.

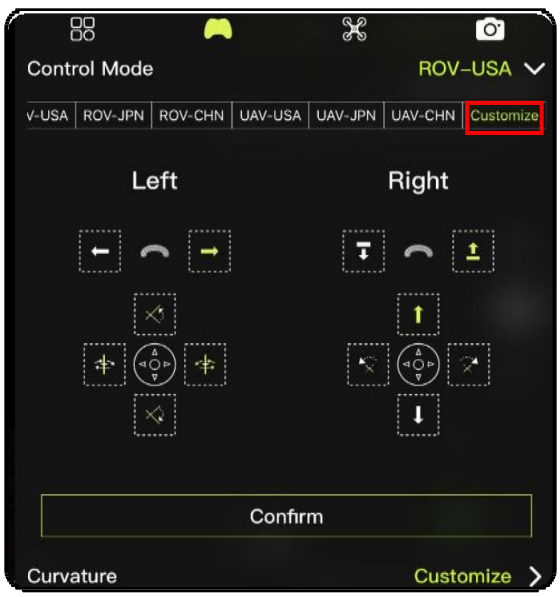
Controlling Preferences

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



- Click "**Control Mode**", the default is ROV-USA Control Mode, you can select your preferences if you like
- Click "**Confirm**", after setting



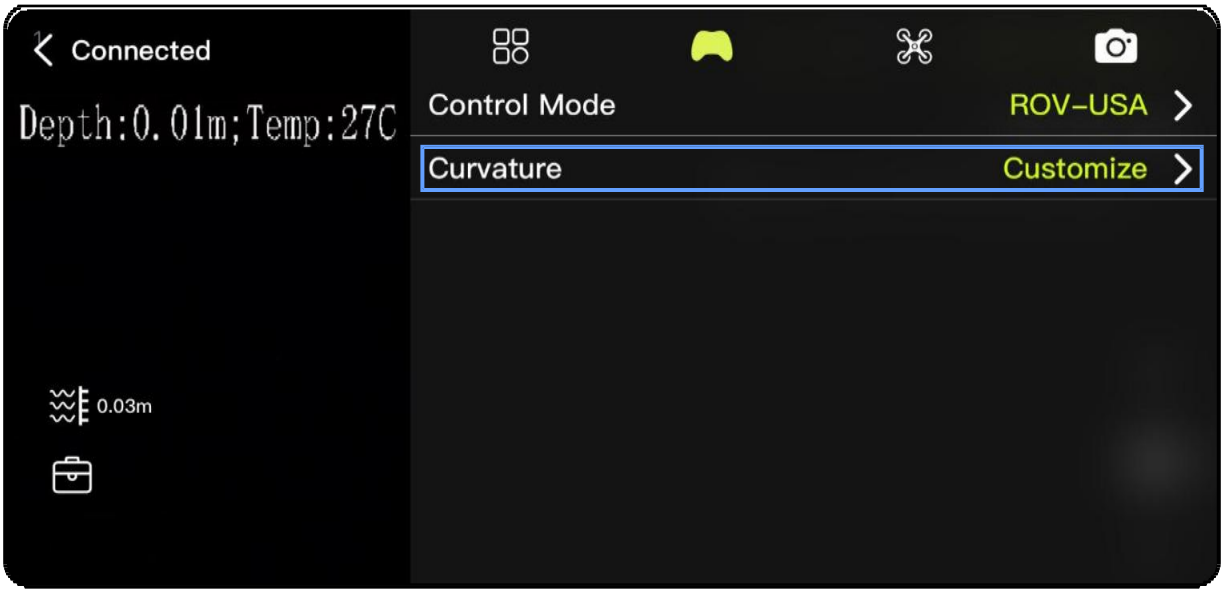


***As for advance level pilot seek for customized setting demo. Please check FIFISH authorized local Dealer or Service Center for more details and training programs.*

Chapter 6 FIFISH App
Control Setting

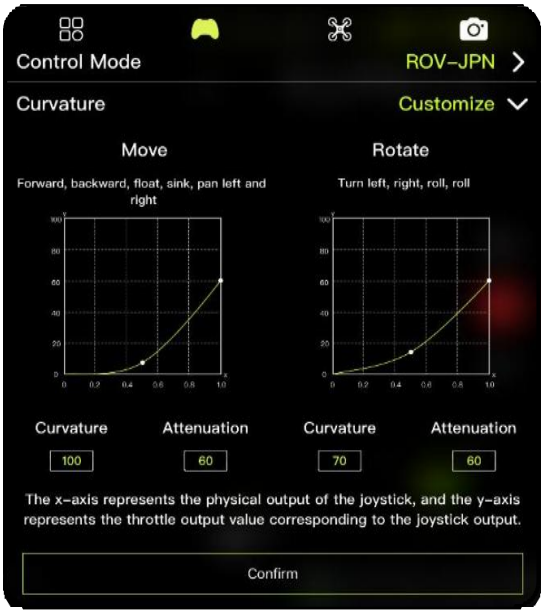
Control Curvature

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



Set the Move & Rotate

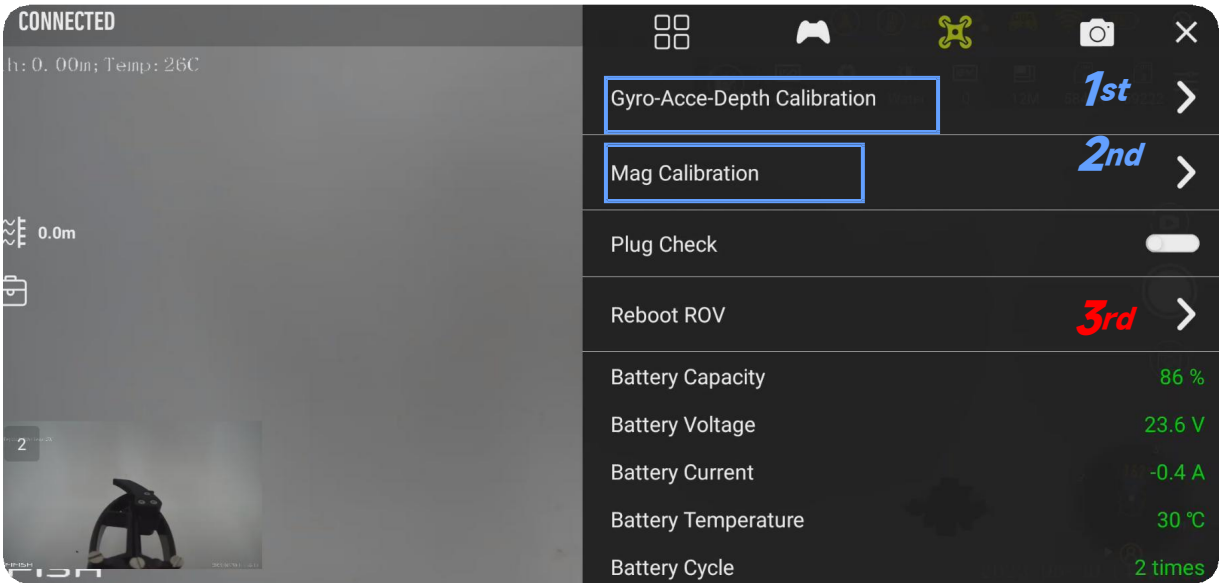
- Adjusting the curvature (set the center sector output sensitivity)
- Adjusting the attenuation (set the maximum output)



***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

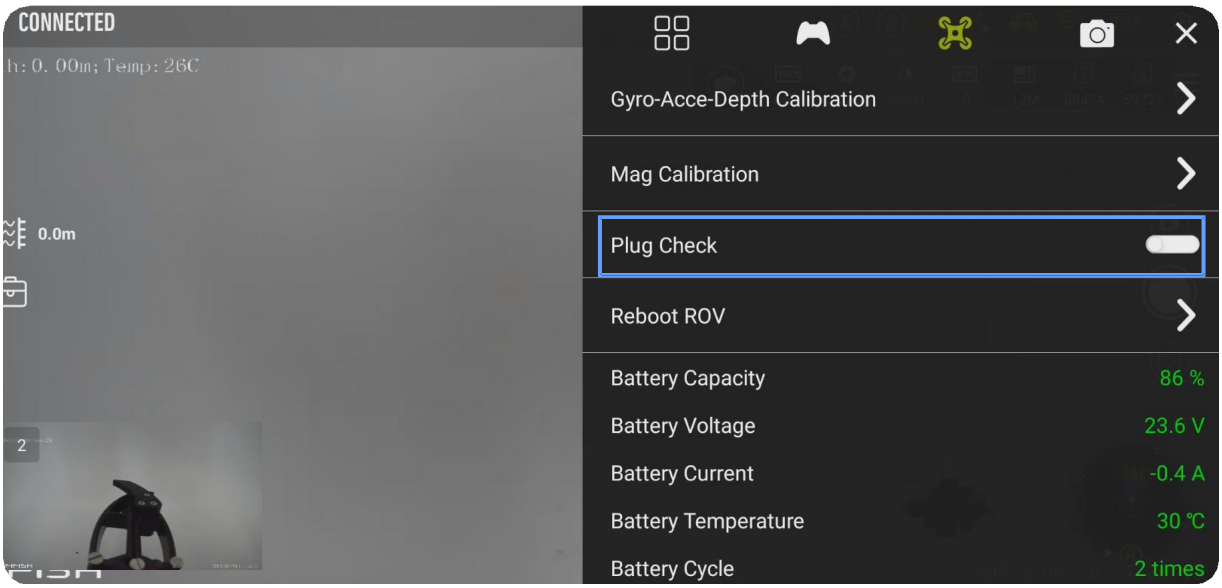


- Follow the hit on FIFISH App step by step, first **Gyro-Acce** then **Mag**
- **Reboot ROV** in FIFISH App, and Power ON/OFF RC if necessary

Chapter 6 FIFISH App
Plug Check

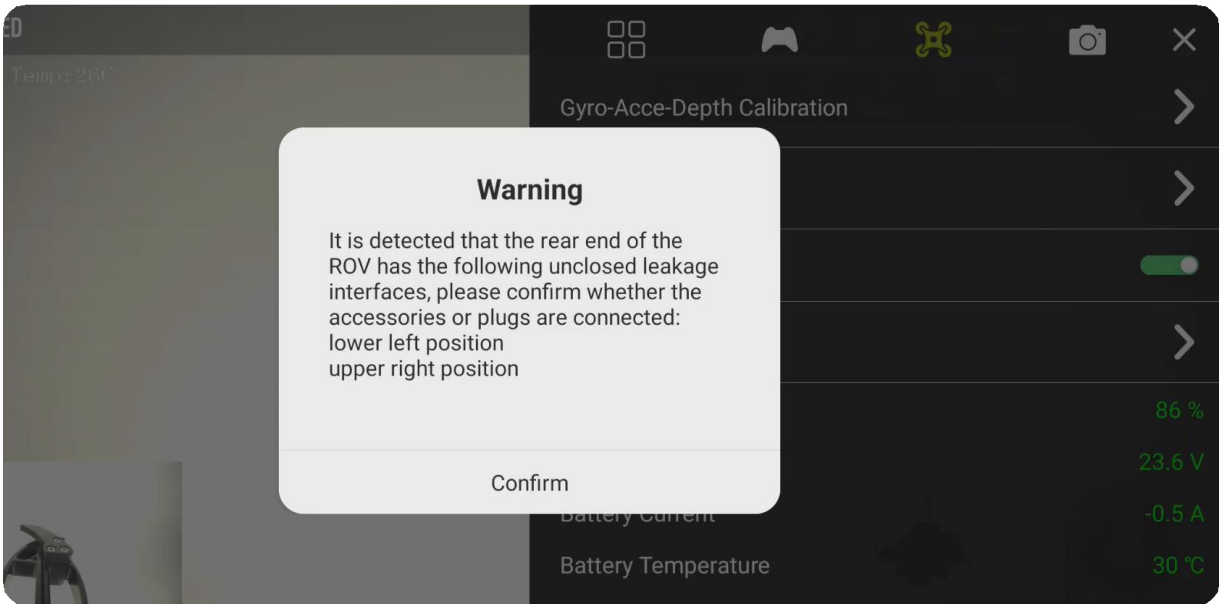
Plug Check

Once the function is activated, the system will automatically detect if the A-type Q-interfaces (A1/A2/A3/A4 Interfaces only) are safeguarded by a protective cover or fitting joint of accessories.

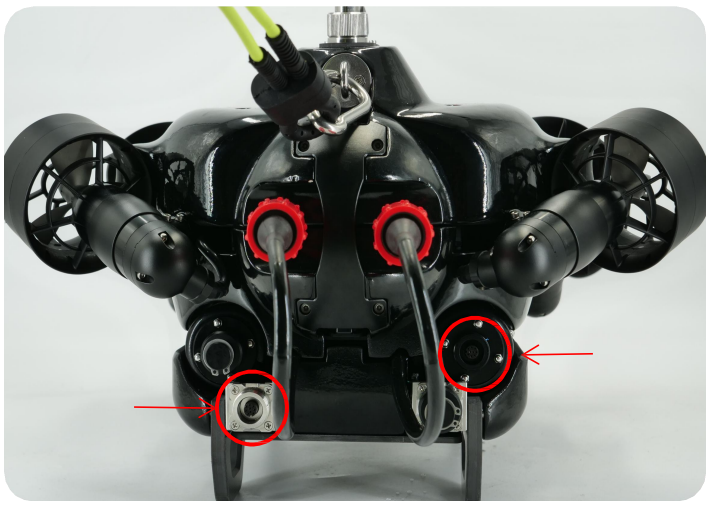


Plug Check

Once the function is activated, the system will automatically detect if the A-type Q-interfaces are safeguarded by a protective cover or fitting joint of accessories[1].



Upon activating the function, if the A-type Q interface (including A-type Q interface above starboard (A1), A-type Q interface above port (A2), A-type Q interface below starboard (A3), and A-type Q interface below port (A4)) 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 connector.



NOTE:

1 This function will only be effective once the robot is successfully powered on
2 The LED flashing prompt will last only 60 seconds.

Chapter 6 FIFISH App
Camera Setting

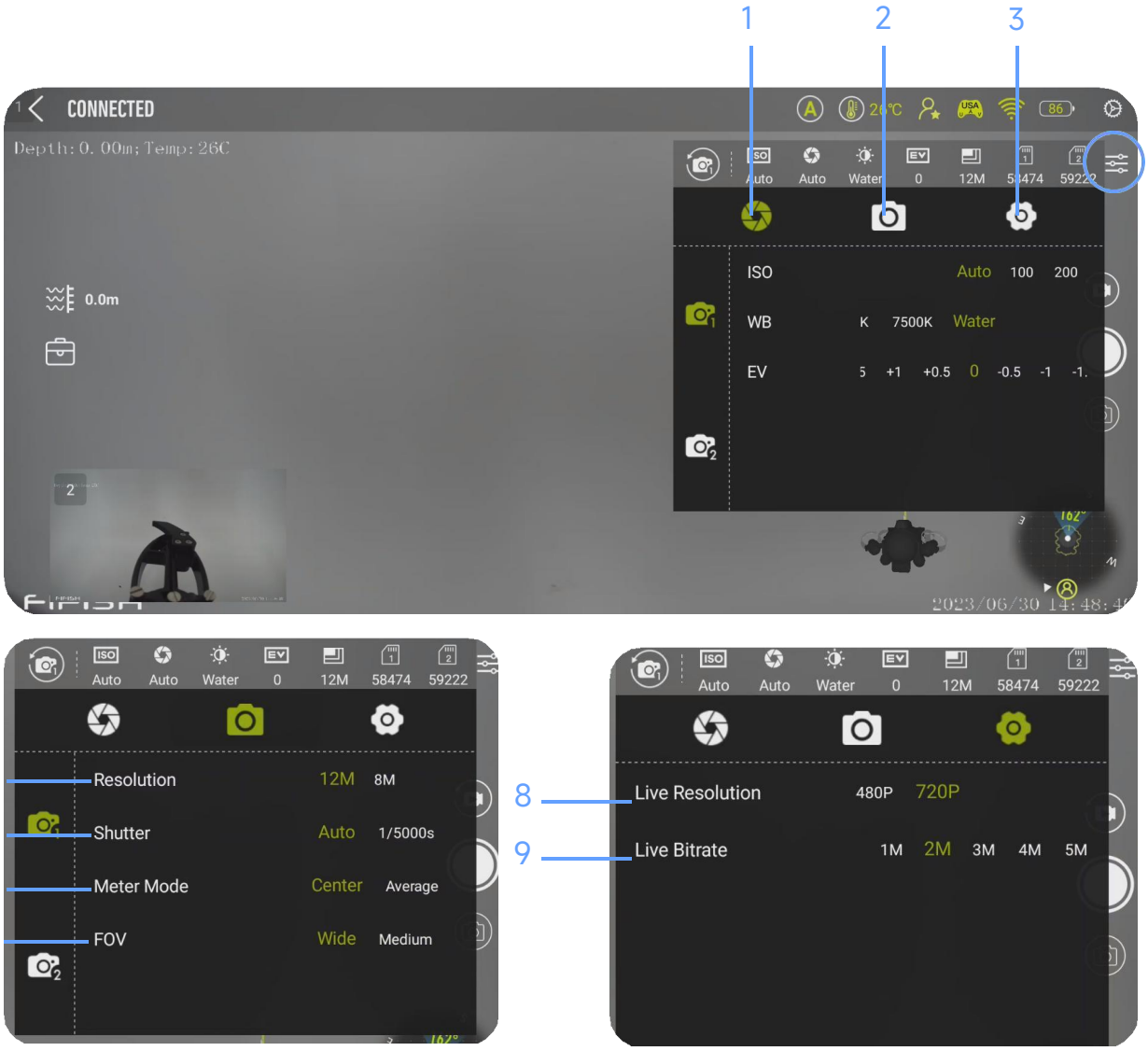


Image Settings

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

Camera General Setting

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

NOTE:

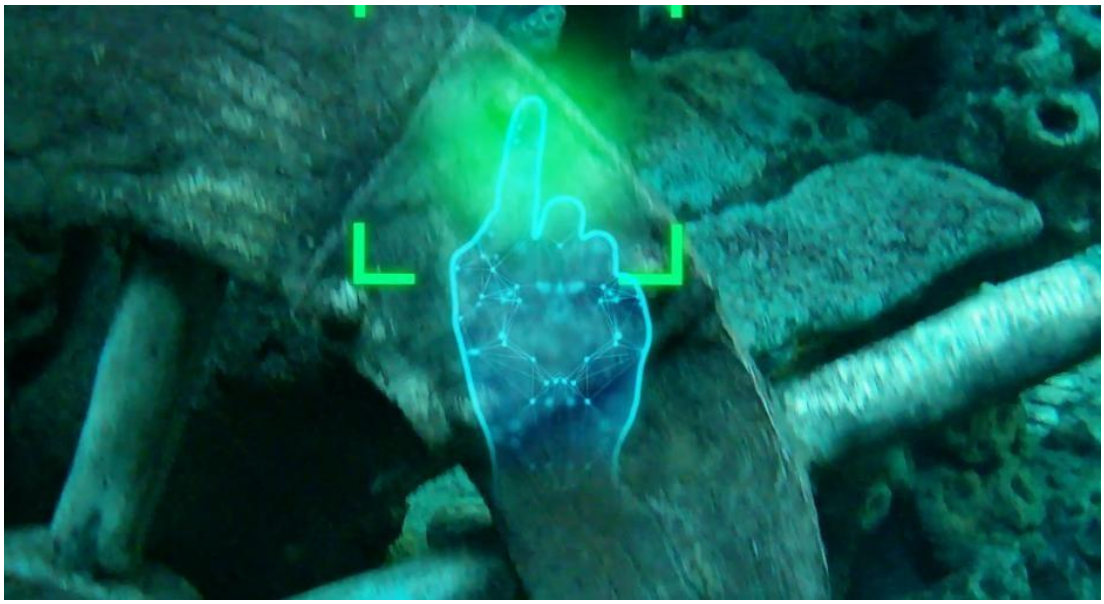
1. The main camera and auxiliary camera can have separate parameters configured.
2. Shortcut camera setting will have the same results.

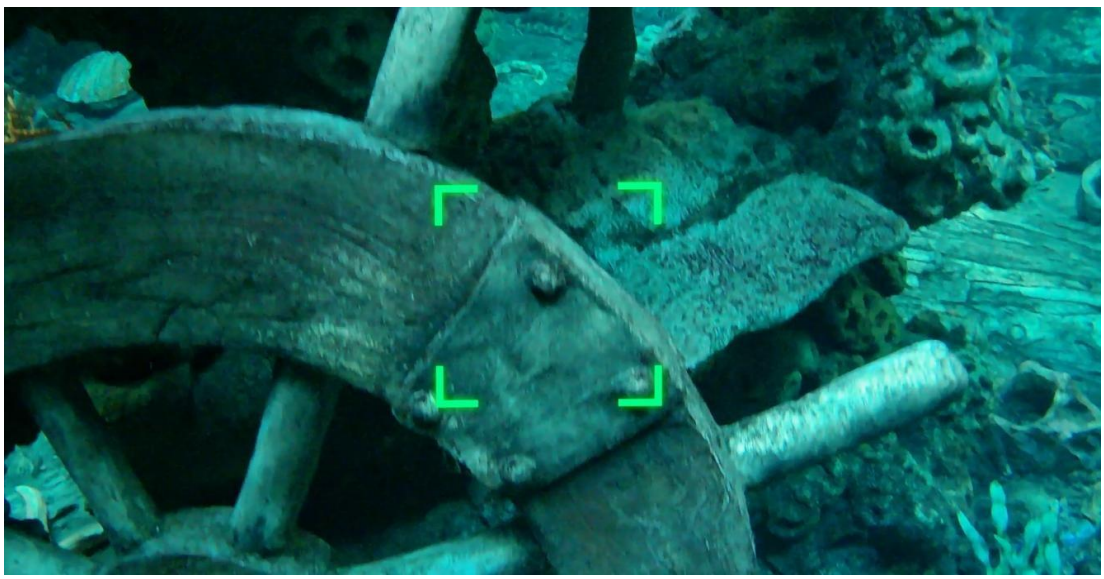
Vision Lock

Lock the positions of objects at focus

Click Icon  to active vision lock

1. Click the position on the screen, and the submersible 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 in an unfamiliar environment

Chapter 6 FIFISH App
Toolbox, Vision Lock

Vision Lock

Lock the positions of objects at focus

Click Icon  to active vision lock

2. Touch the screen for seconds with your finger and drag it in the (up/down/left/right) direction, which can realize the dragging of the visual field in the screen.





NOTE:

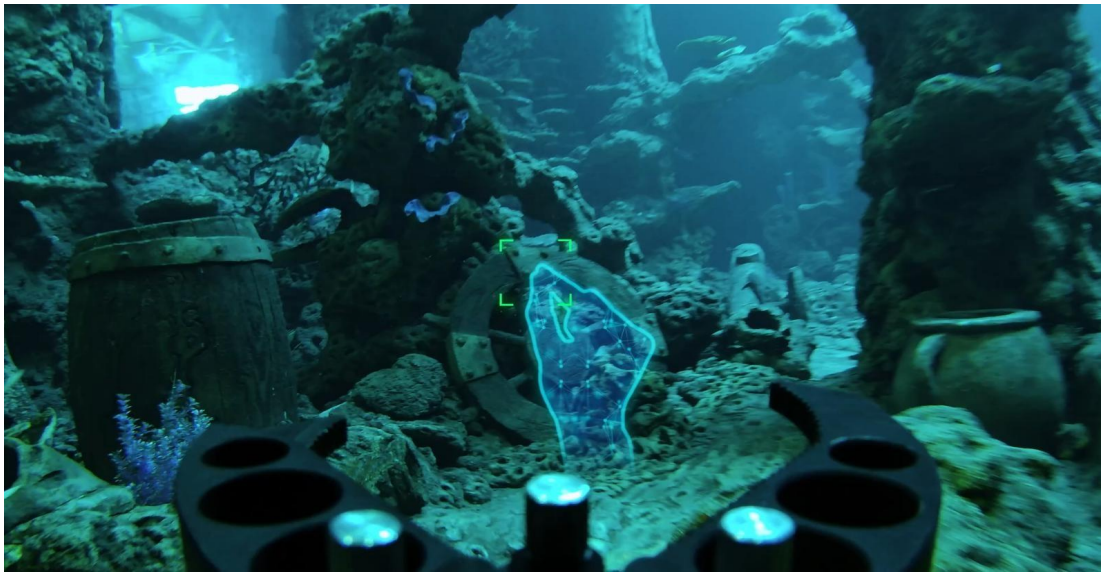
It is not recommended to use this Vision Lock in an unfamiliar environment

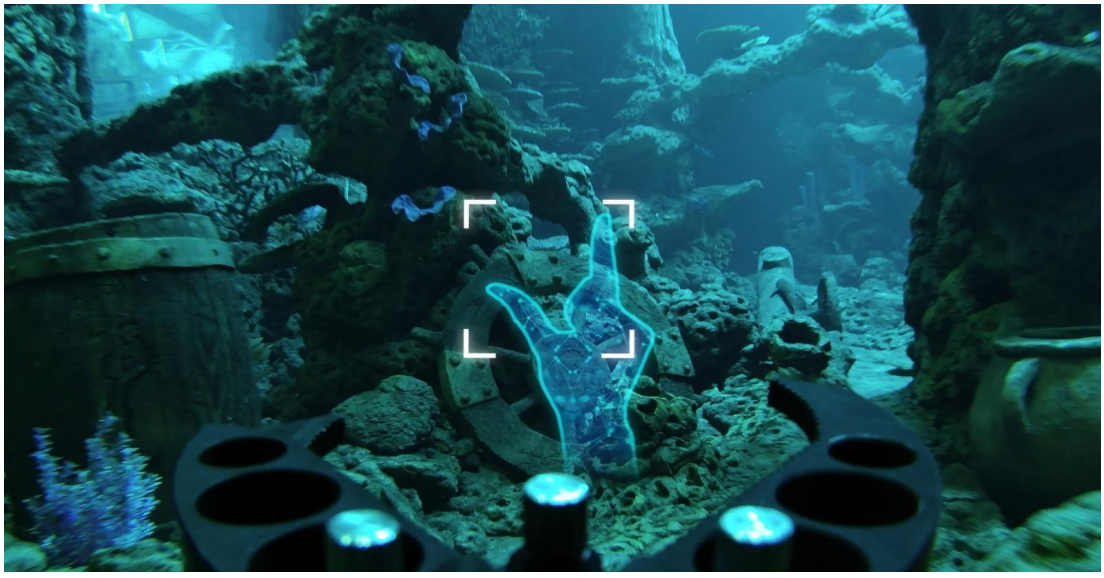
Vision Lock

Lock the positions of objects at focus

Click Icon  to active vision lock

3. Two fingers press the screen for seconds, and when you open/clamp your fingers to make a zoom-in/zoom-out gesture, you can zoom in/out the current picture of the camera's field of vision





NOTE:

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

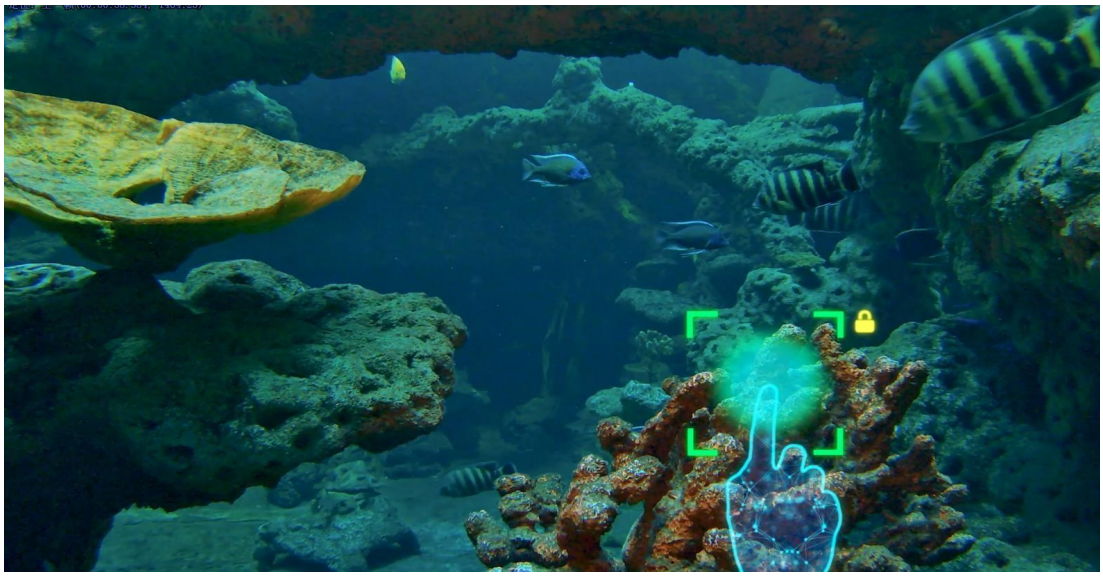
Chapter 6 FIFISH App
Toolbox, Vision Lock

Vision Lock

Lock the positions of objects at focus

Click Icon  to active vision lock

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 in an unfamiliar environment

Vision Lock

Lock the positions of objects at focus

Click Icon  to active vision lock

5. Active the icon  to use dynamic lock

When controlling the submersible 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 in an unfamiliar environment

Chapter 6 FIFISH App
Toolbox, Vision Lock

Vision Lock

Lock the positions of objects at focus

Click Icon  to active vision lock

How do relize the Surround shooting?

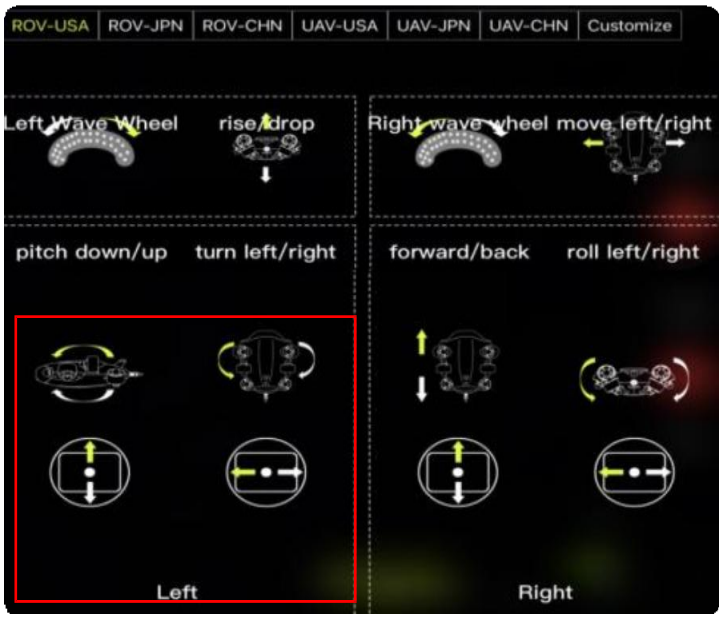
Move the certain stick to perform turning left/right or pitching up/down.

Taking the ROV-USA mode, for 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

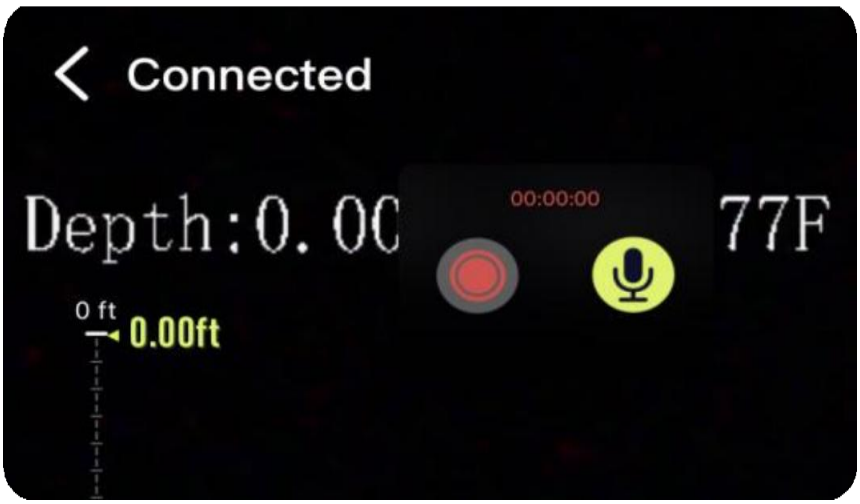
2.Move the driving stick/rod the perform moving forward/ backward/ left/ right/ rising/ dropping, which enable the ROV to unlock the object.

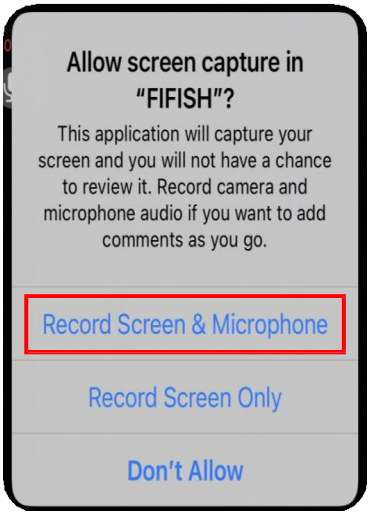


Mission Log(M-Log)

Record the screen and voice

1. Click to Icon  to open M-Log
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 video recoding button to start
5. Optional recorded quality: High/Medium/Low





NOTE:

1. Record files are directly stored in the smart devices. Please check storage 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

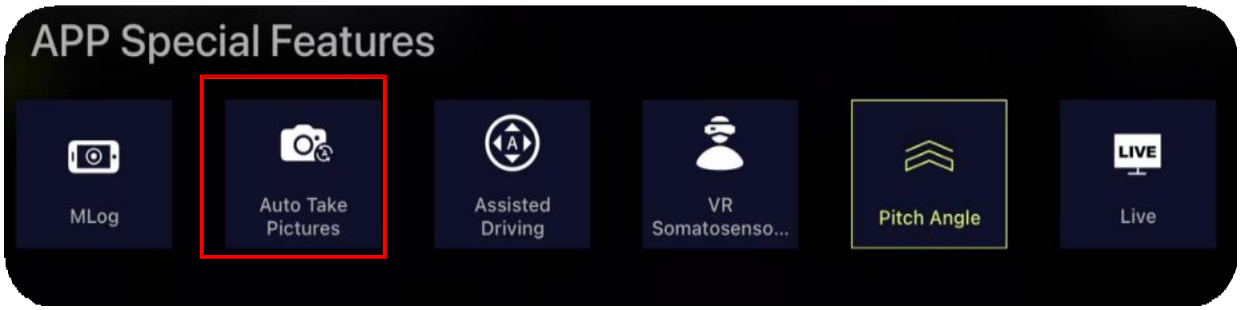
3. The microphone is turned off by default.

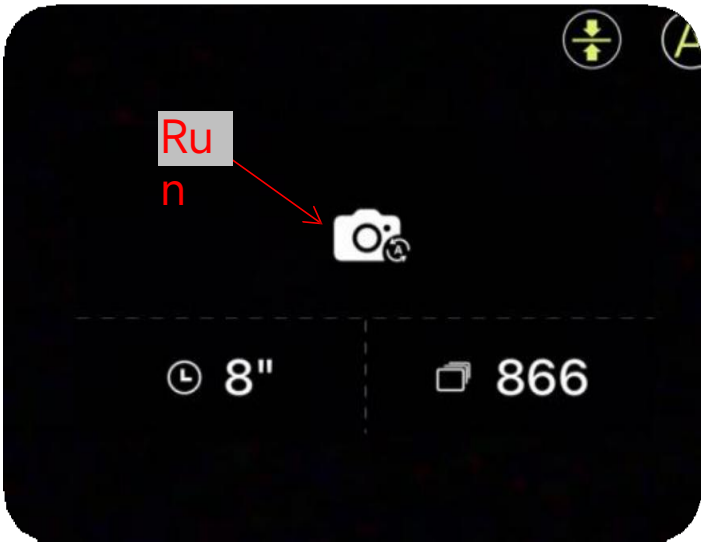
Chapter 6 FIFISH App
Toolbox, Auto Take Pictures

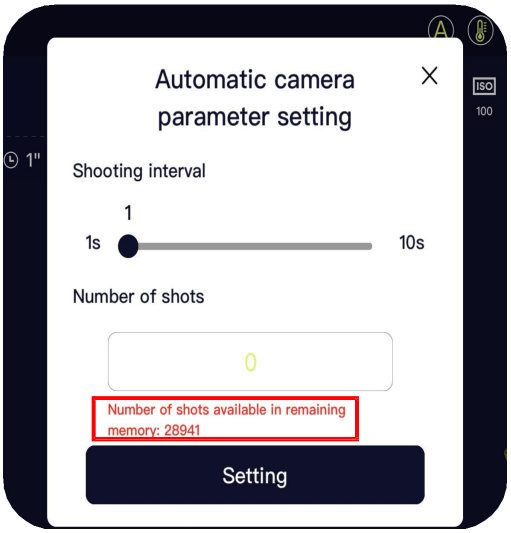
Auto Take Pictures

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 setting interface
3. The number of photos that can be stored in the memory card is displayed below.
4. After setting the parameters, click the Auto Photo icon  to run the function.



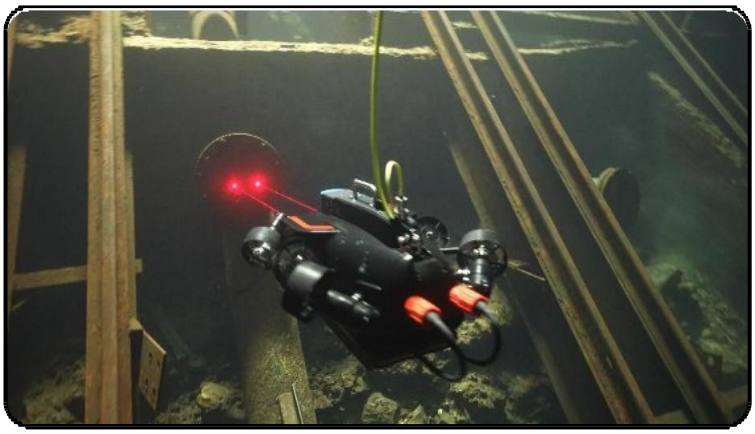




Laser Scaler

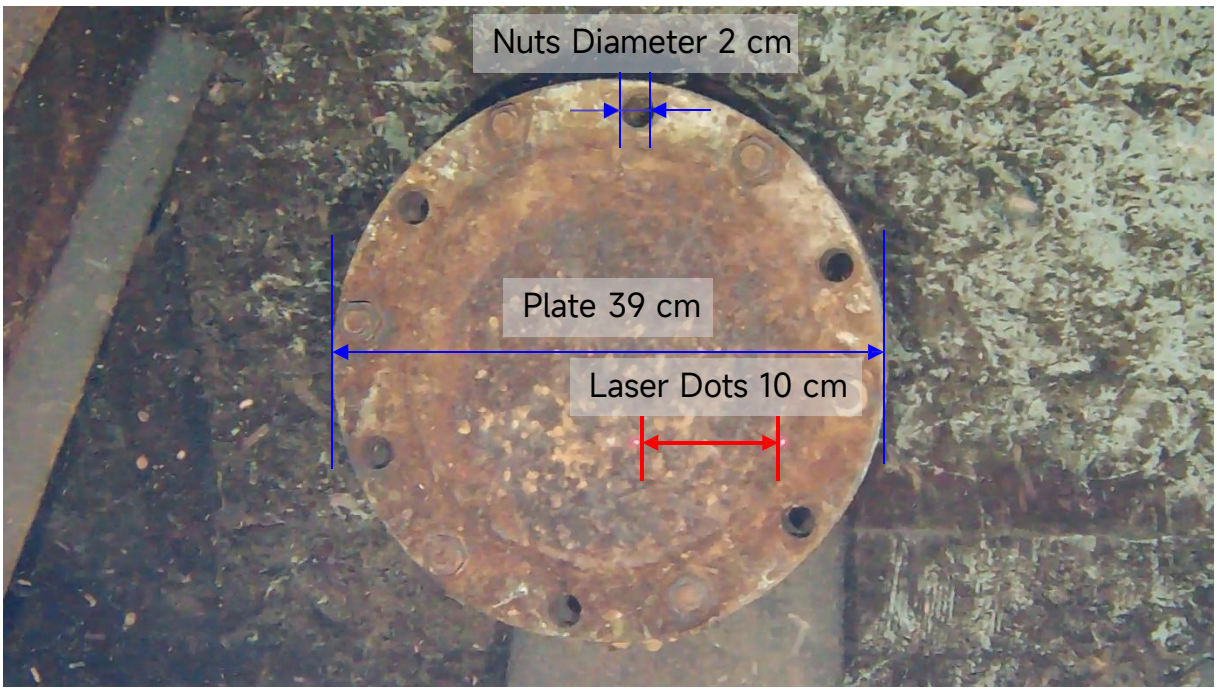
The Laser Dots could be the reference dots; Can be opened in the toolbox

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



For Example,
Object dimension processing

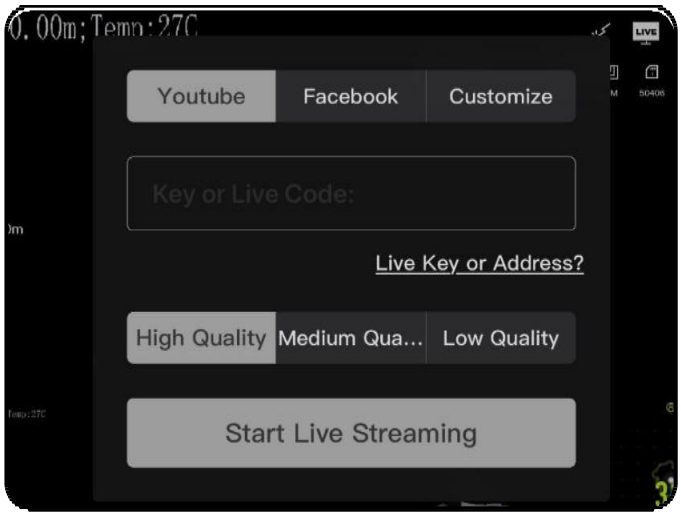
Object	Image Length	Actual Length
Scale	22.0 mm	10 cm
Plate	86.0 mm	39 cm
Nut Di	4.5 mm	2 cm



Chapter 6 FIFISH App
Toolbox, LIVE Streaming

LIVE Streaming

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



1. Generate a **Stream Key** and **Stream URL** on YouTube or Facebook
2. Opne 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 ample. Please contact the local service provider for related charges.
2. 2.The live broadcast resolution can support a maximum of 720P and is subject to the quality of local mobile signals.

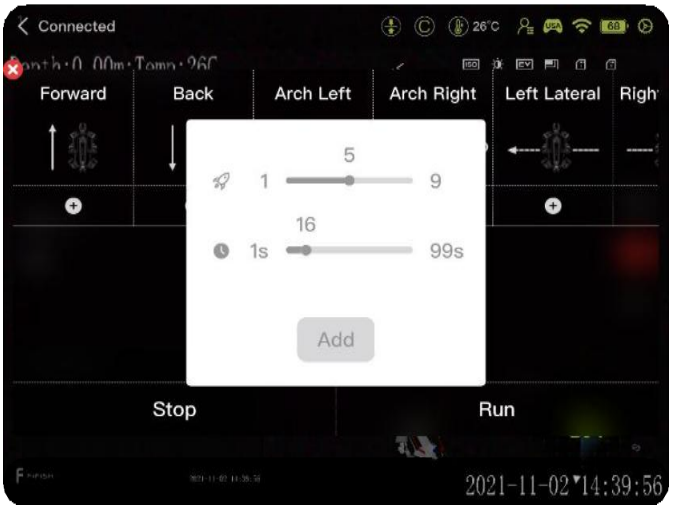
Assist Driving

The *Assist Driving* is able programable auto moving commands.

1. Open the Toolbox and select the assist driving
2. Select moving behavior
3. Set speed of such segment
4. Set time of such segment
5. Program next segment
6. Click "Run" to activate the program





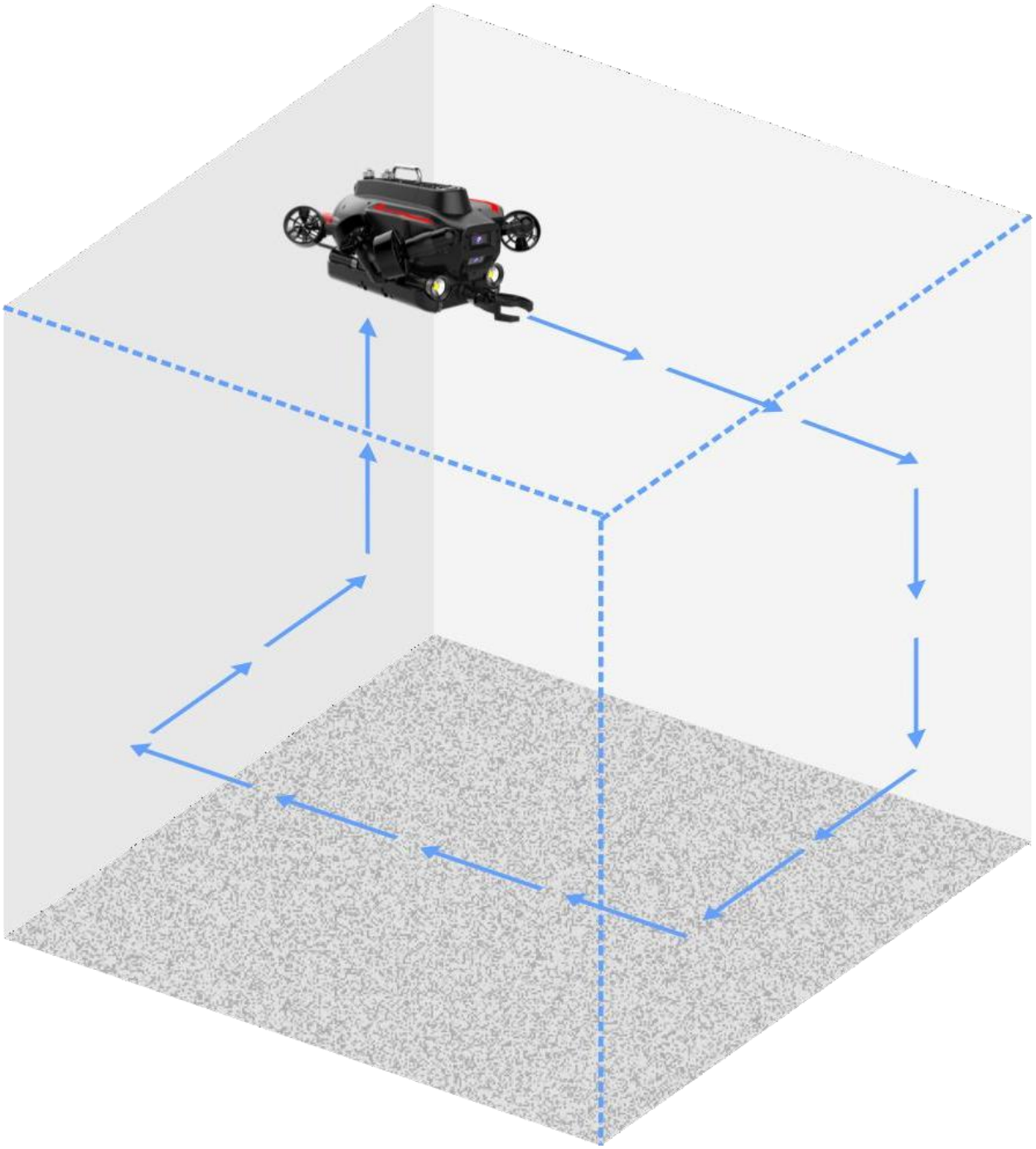




Chapter 6 FIFISH App
Toolbox, Assist Driving

Assist Driving

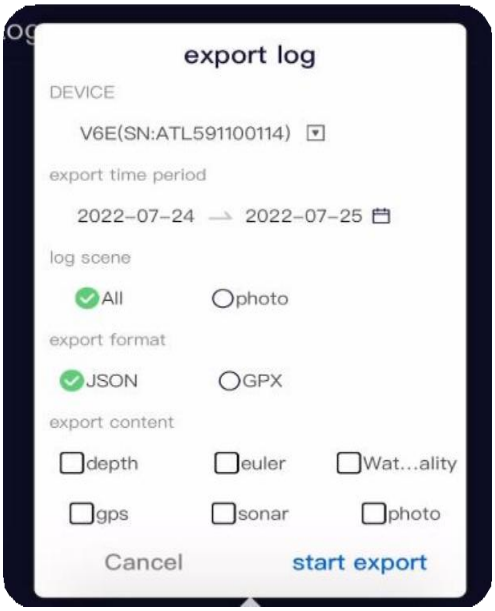
The Assist Driving Overview



ROV Log

The navigation information can be recorded and output as a document

1. Return the homepage and click Help in the lower right corner
2. Select ROV Log
3. Turn ON the Log Collection
4. Click 'Connect' 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)

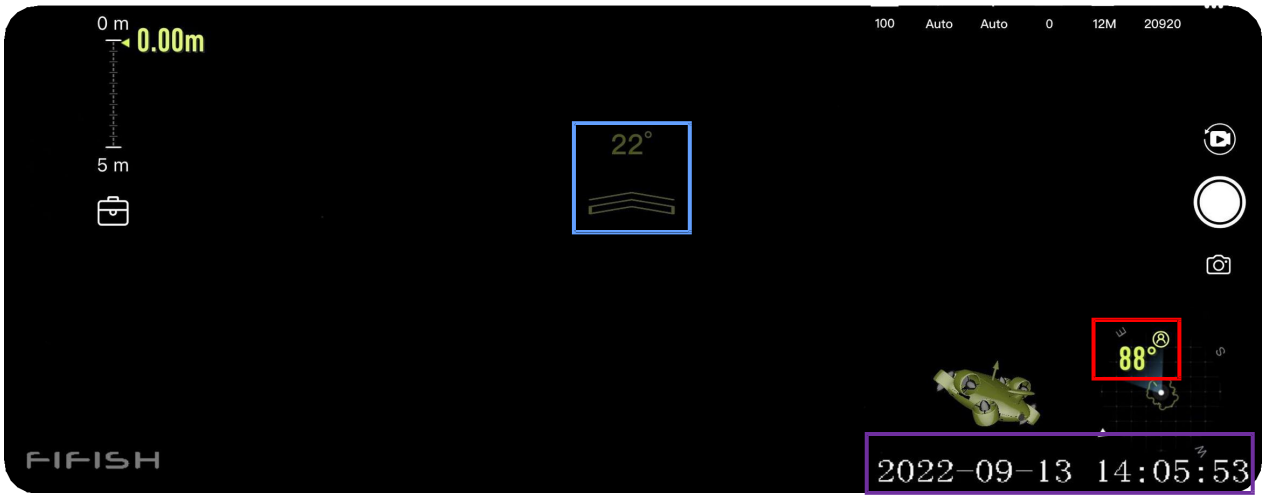
3. Export content:
'depth' - The corresponding dive depth
'euler' - Posture data including pitch angle, roll angle and yaw angle
'water quality' - Water quality data including dissolved oxygen, turbidity, salinity and pH (required to equip related sensor to collect)
'gps' - Coordinate data including 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
ROV Log

ROV Log

The navigation information can be recorded and output as a document

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



FIFISH APP screen shoot

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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6:01"},{"payload":{"pitch":"-67.0","roll":"-5.0","yaw":"131.0"},"timestamp":1663049160.6407781,"type":"attitude","date":"2022-09-13 14:0
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","yaw":"39.0"},"timestamp":1663049113.4927468,"type":"attitude","date":"2022-09-13 14:05:13"},{"payload":{"pitch":"-90.0","roll":"0.0","

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

Submersible

Dimension	710 mm(L) × 490 mm(W) × 339 mm(H)	
Weight	21.3 kg	
Depth Rating	350 meters	
Anti-flow	3.0 Knots (1.5 m/s)	
Loadings	5 ports in Q-interface	
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™	± 1cm accuracy	Keep ROV suspending
Operating Temperature	-10°C to 60°C	14°F to 140°F
Battery	Type 6S6P	Panasonic 18650 Li-ion
	Rated Capacity	18,000 mAh 21.6 V / 388.8 Wh
	Run time	1~4 hours (depends on the actual situation)
	Recharge	1 Hour Quick Charge (70%)
	Weight 3.94 kg	

Q-Interface

Port Number	5 ports (4 × Type-A, 1 × Type-B)
Material	Aluminum Alloy Anodized
Output Voltage and Current	24.0 V, 5.0 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
Grip Strength	20.0 kgf
Claw Material	Aluminum Alloy

Chapter 7 Additional Information
Specifications

Camera × 2

Image Sensor	1/2.3”	CMOS
Pixels	12 Mega Pixels	Effective Pixels
ISO Range	100-3,200	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	Frames
WB (White Balance)	2,500 to 7,500 K	Seawater/Freshwater, Auto / Manual
EV (Exposure Compensation)	- 3.0 ~ + 3.0 EV	Auto / Manual
Video Resolution	4K UHD	25/30 fps
	1080P FHD	25/30/50/60/100/120 fps
	720P HD	25/30/50/60/100/120/200/240 fps
Video Encoding	H.264	
Image Stabilization	EIS (Electronic Image Stabilization)	
Photo Resolution	4:3 = 4,000 x 3,000 16:9 = 3840 x 2160	
Color System	NTSC and PAL	
Photo Format	JPEG, DNG	
Storage microSD	Camera 1	Standard 128G
	Camera 2	Standard 128G

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	two-point laser
Output Power	200 mW

Tether and Spool

Tether Length	305 meters (Standard Package)
Tether Diameter	6.0 mm
Breaking Force	200 kgf
Spool Dimension	255 mm × 250 mm × 450 mm
Spool Weight	12.5 kg

Remote Controller (RC)

Weight	0.56 kg
Clamp Opening	20.2 cm
Wireless	5GHz WiFi: 802.11a/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

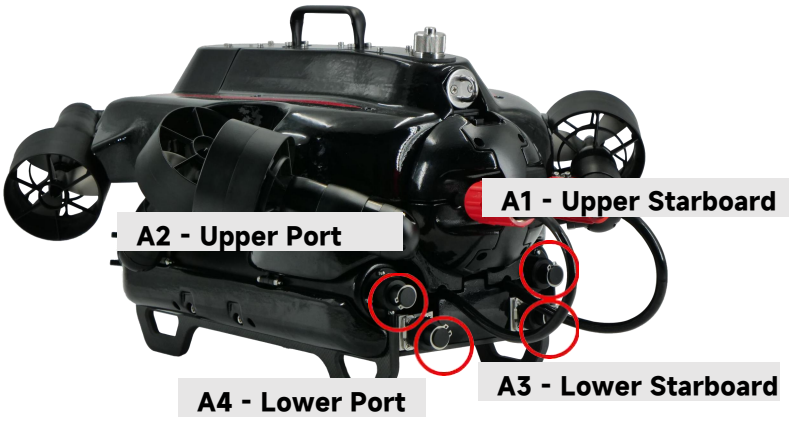
ROV	Max Input	100-240 V, 50/60 Hz, 3.0A
	Output	25.2 V ⎓ 6.0 A × 2
RC	Max Input	100-240 V, 50/60 Hz, 0.5A
	Output	5.0 V ⎓ 3.0 A

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



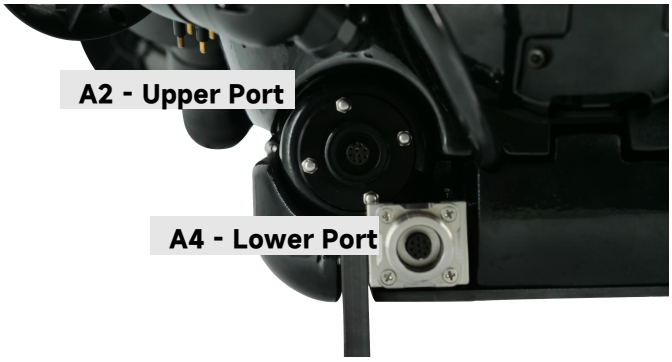
Q-Interface

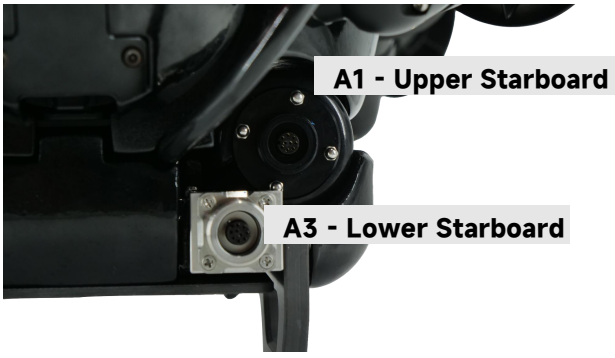
Q-Interface is the QYSEA developed underwater 9 pins connector, provide DC power, ethernet, RS 485 or UART network for accessories, such as, image sonar, station lock, water sampler, water sensor, etc.

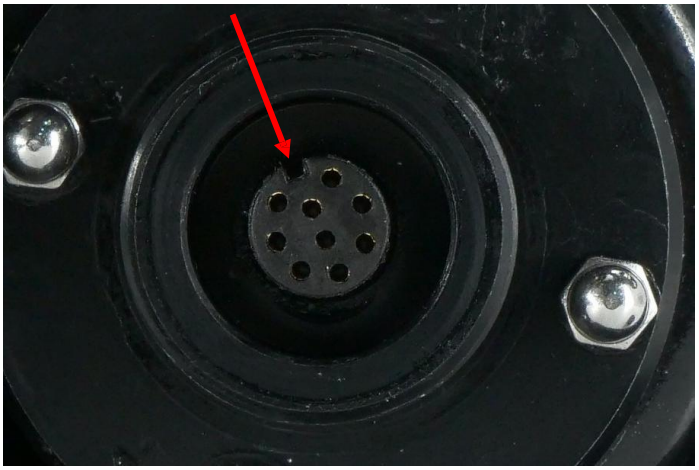
There are 4 Q-Interface Type-A, in submersible's back, stern starboard and stern port side.

NOTE:

Align the positioning socket first, when connecting accessory





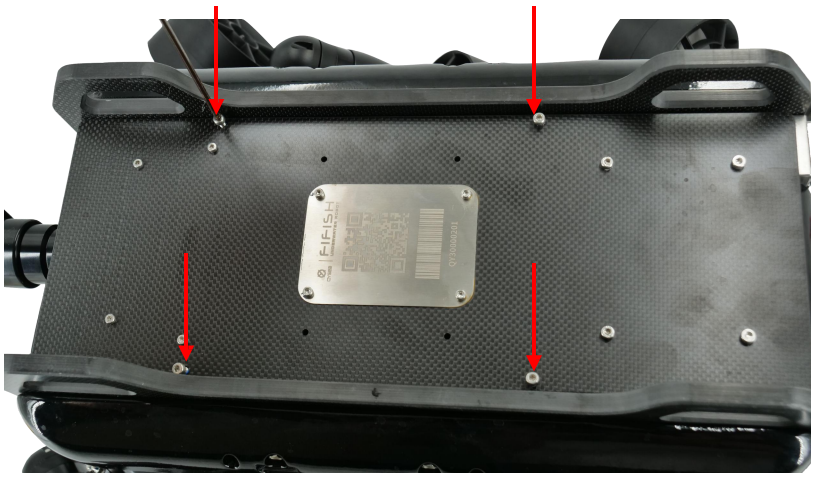


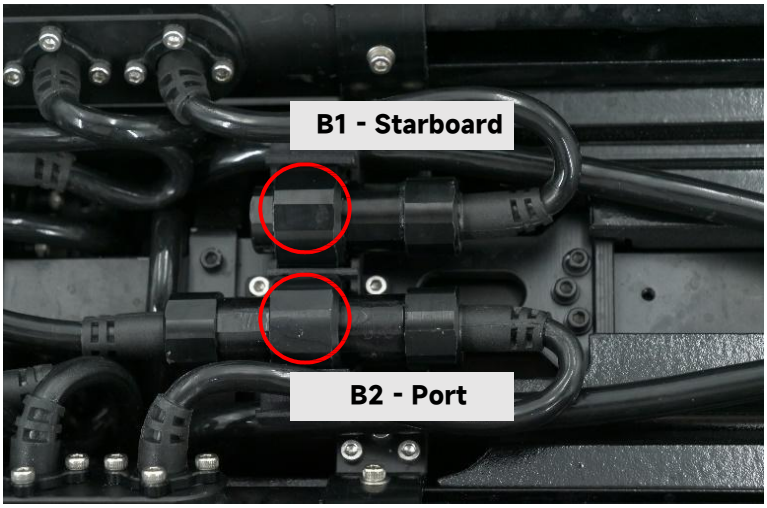
There are 2 Q-Interface Type-B, which have been protect with bottom armor .

1. Unfasten 4 nuts with M3 Allen wrench
2. Open the bottom armor

NOTE

The robotic arm has occupied 1 Type-B





Chapter 7 Additional Information
Q-Interface, Type-B

Unlike the Q-Interface Type-A can be twisted open and close, Type-B need a lever to open or close.



