# FIFISH PRO W6


QYSEA

## Manual V2.0

# Contents

# Chapter 1 Backgrounds
## *Safety and Regulations*

*The FIFISH PRO 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

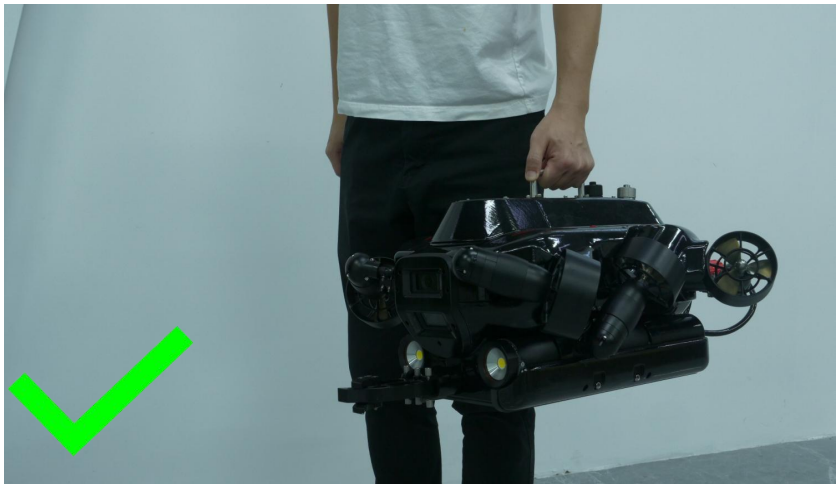
Laser radiation class 3B. Avoid direct exposure to eyes.

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

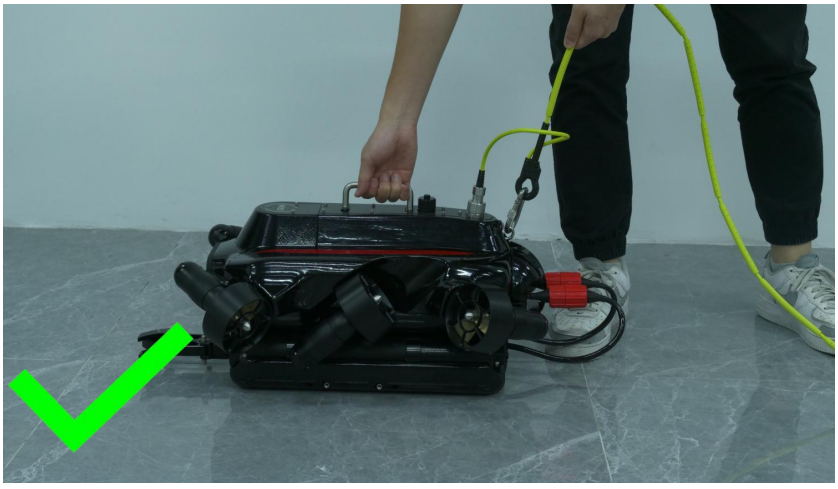
Be part of marine protection and conservation for the local coral and marine life

Maintain after dive, check the, Maintenance Guide in page 32



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

Holding on the battery handle when carrying the battery



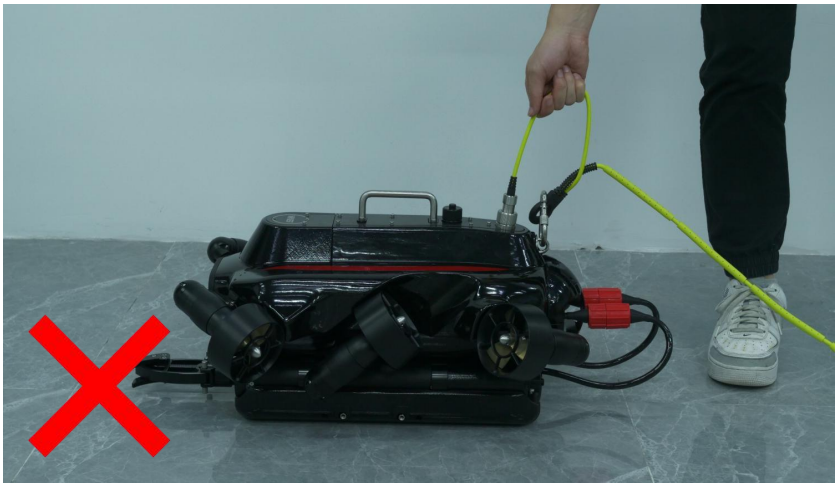
Holding the LAR handle and tether behind safety lock when launch or recovery

# Chapter 1 Backgrounds
*Special Note*

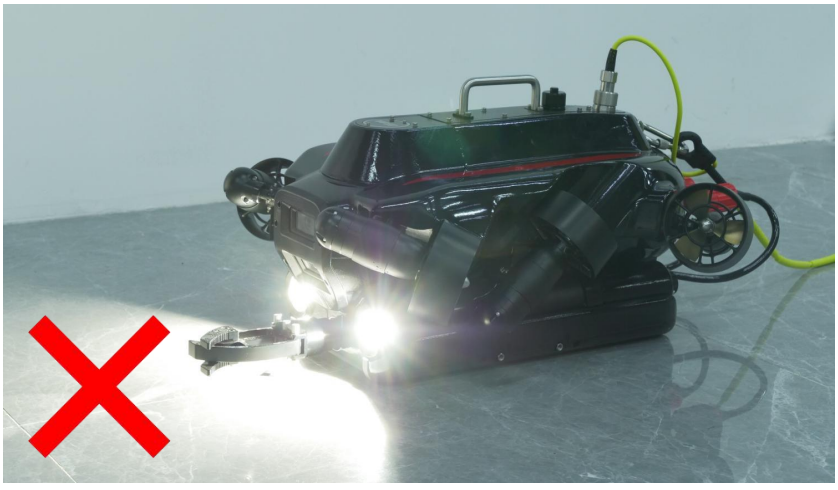
Do **NOT** holding the motor frame when carrying submersible

Do **NOT** pull the battery cable when recovery or carrying the submersible

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



Do **NOT** hold the tether section between ROV plug safety lock



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 over heating

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.

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 PRO W6*

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

- 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, 178° in vertical
- 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

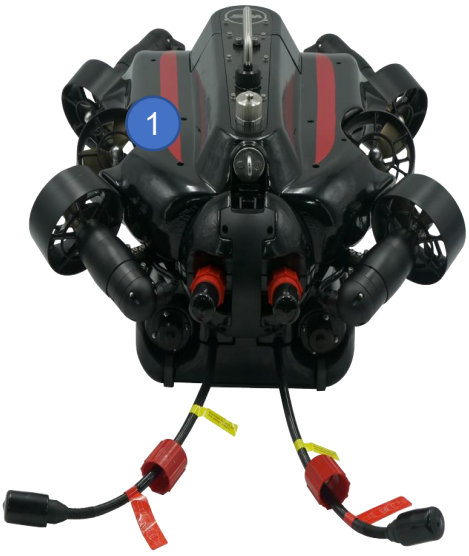
FIFISH PRO W6's Q-BOX is the underwater connector hub, which spilt into 5 ports (3 Type-A Q-Interface, 3 Type-B Q-Interface, 1 Type-B has been occupied by robotic arm). The wide variety of accessories include, 2D image sonar, Station Lock™, U-QPS (underwater quick positioning system), 360° scanning sonar, compass ruler clamp, OPSS (on-shore power supply), mud sampler, water sampler (500 mL and 100 mL), salinity sensor, pH sensor, dissolved oxygen sensor, hydrophone etc. Such wide variety selection of accessories can fulfill the any kind of application filed.

**Submersible Packing Box**

# Chapter 2 Introduction
*Standard Package*


## Spool and RC Packing Box

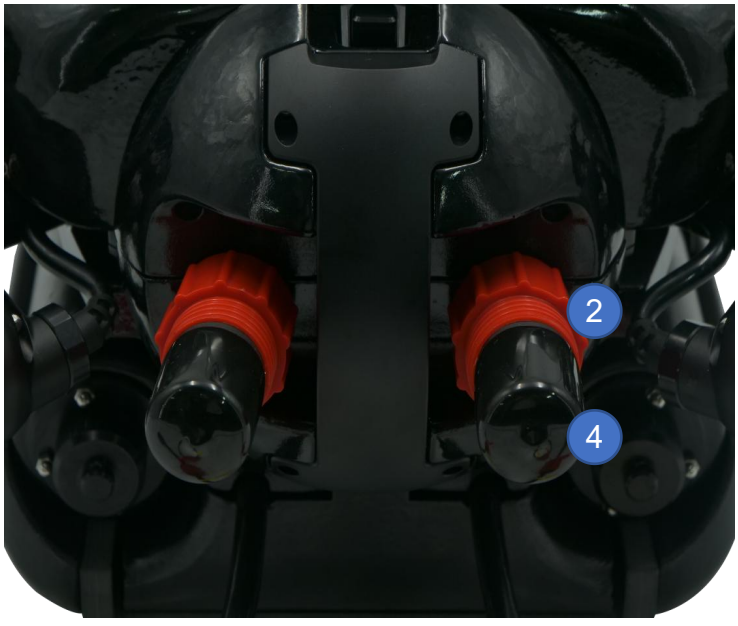
1. Spool with tether
2. Remote Controller
3. Data Transfer Cable
4. RC Adapter
5. Submersible Adapter × 2
6. VR Goggle





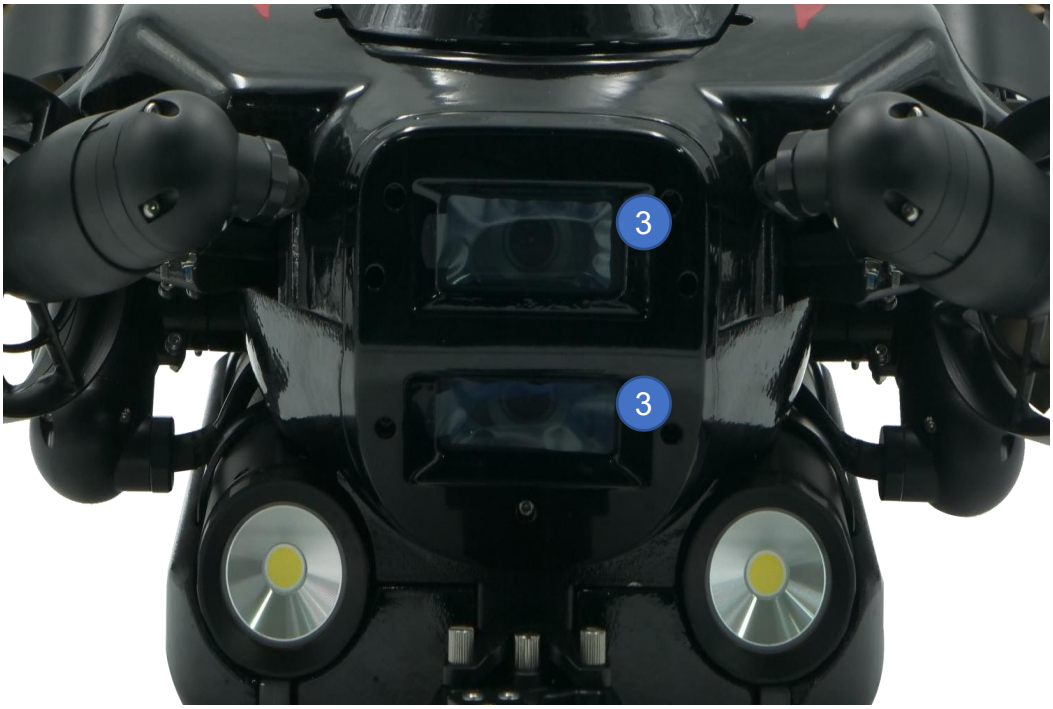
## Submersible Packaging

1. Submersible
2. Battery Sealing Cap-A or Cap-B
3. Dust Free Rubber Cap
4. Dust Free Rubber Cap



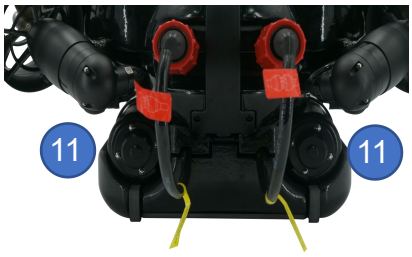

## Submersible Packaging

1. Main Camera
2. Secondary Camera
3. Protective film



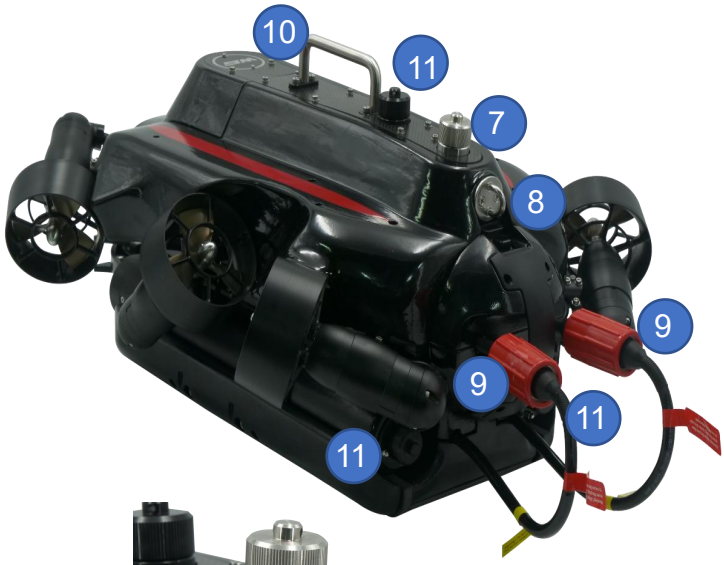







## FIFISH PRO W6 Submersible

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 Type-A [2]
12. 2D Image Sonar Cabin



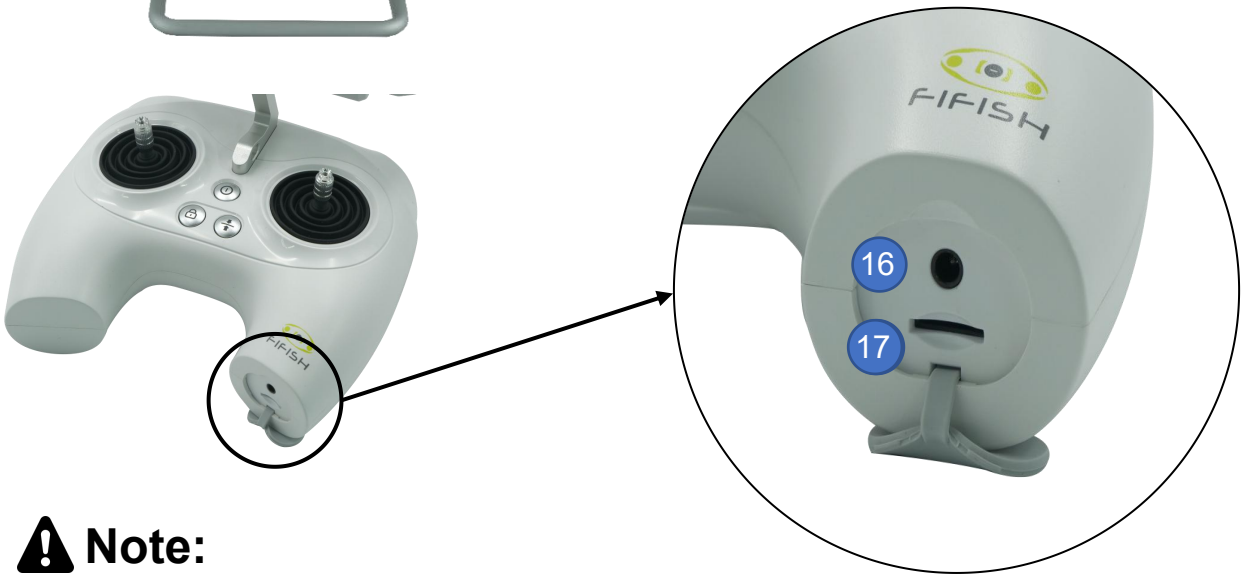


**Note:**

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*





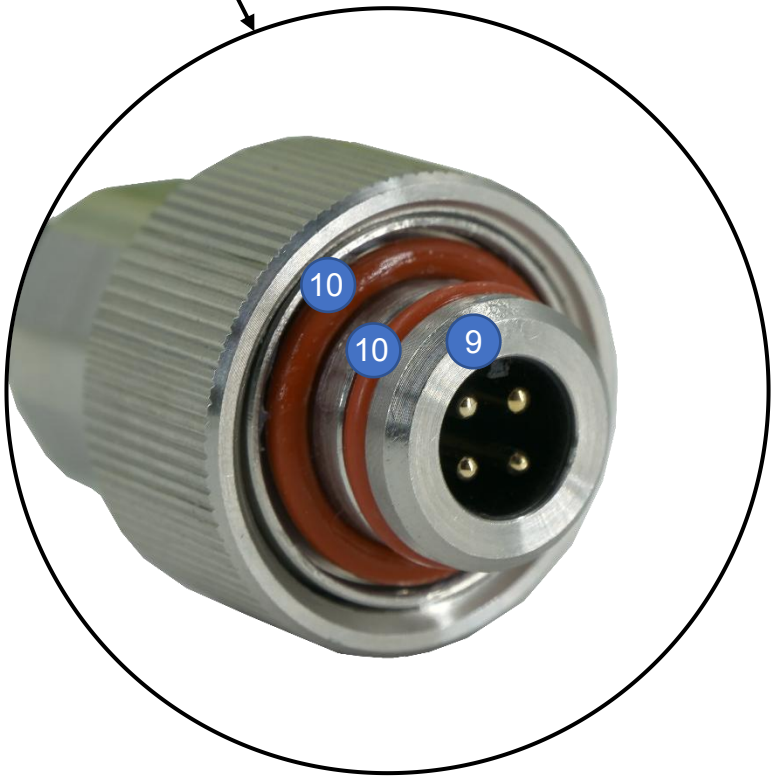

## RC (Remote Controller)

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 on Spool

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

# 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.

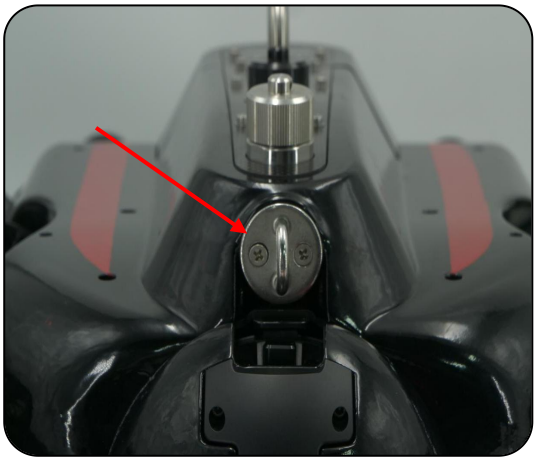
FIFISH App allow you to see the camera, sonar information, and U-QPS in the same screen.

### 3.2. Hardware Connection

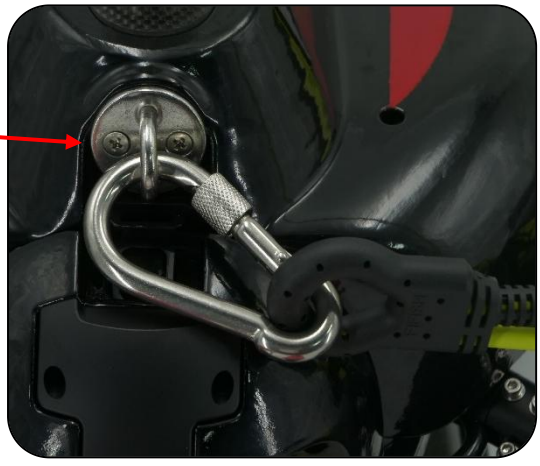
Overview of hardware connection


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

3.2.2. Have the safety lock on the safety anchor point



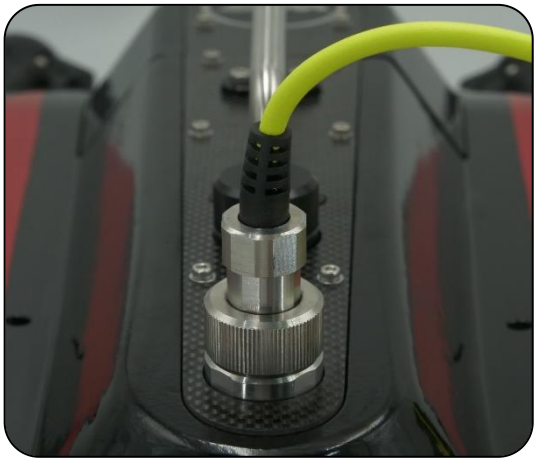
3.2.2.1 anchor point



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



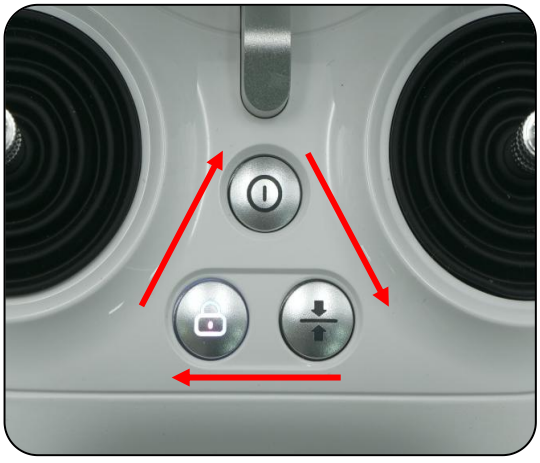
3.2.3.2 insert ROV plug and seal

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

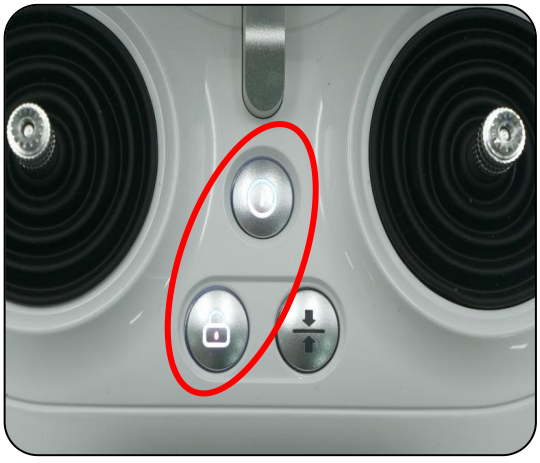
- RC will play 7 chimes from low to high (Do, Re, Mi, Fa, Sol, La, Ti)
- ROV will turn on automatically, and play 5 chimes (Do, Re, Mi, Do, Mi)


3.2.5. 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

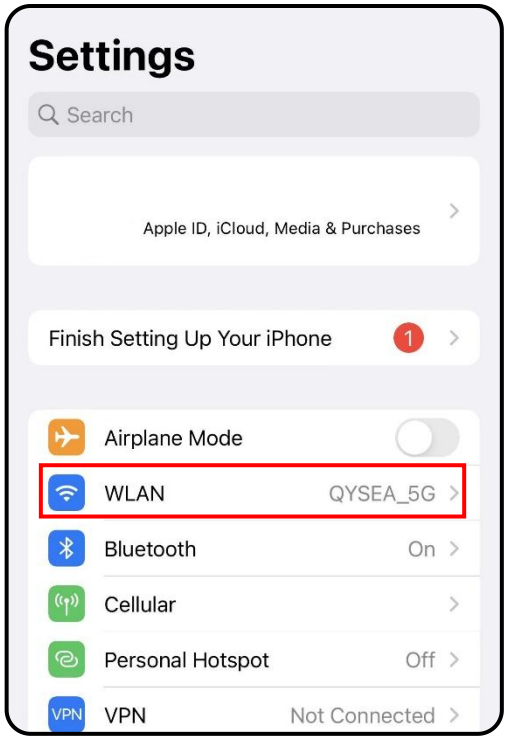


3.2.5.2 connected

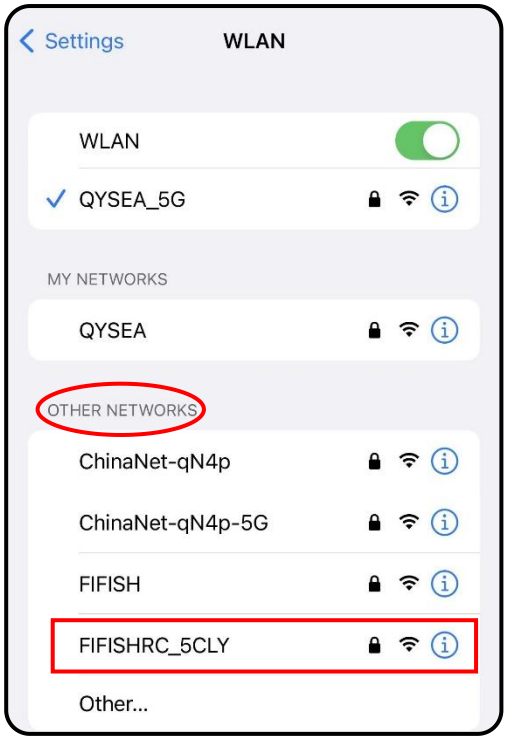
### 3.3. Software Connection

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

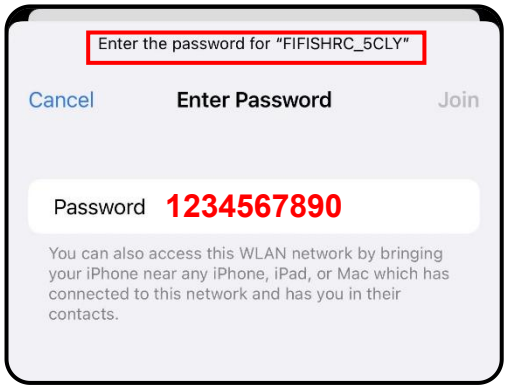
- Go to “Settings”, then “WLAN”
- Find the Wi-Fi network name “FIFISHRC_xxxx”
- Enter the password to connect, the default password is “1234567890”



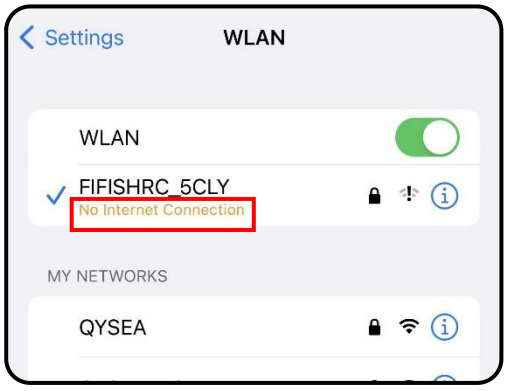

3.3.1.1 System settings




3.3.1.2 Select RC’s Wi-Fi




3.3.1.3 Enter password




3.3.1.4 Connected

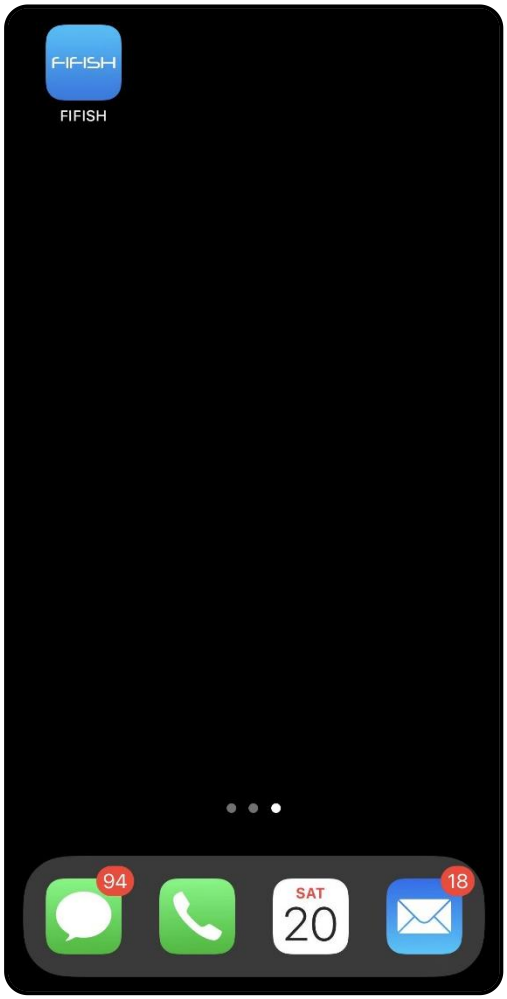
**NOTE**

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

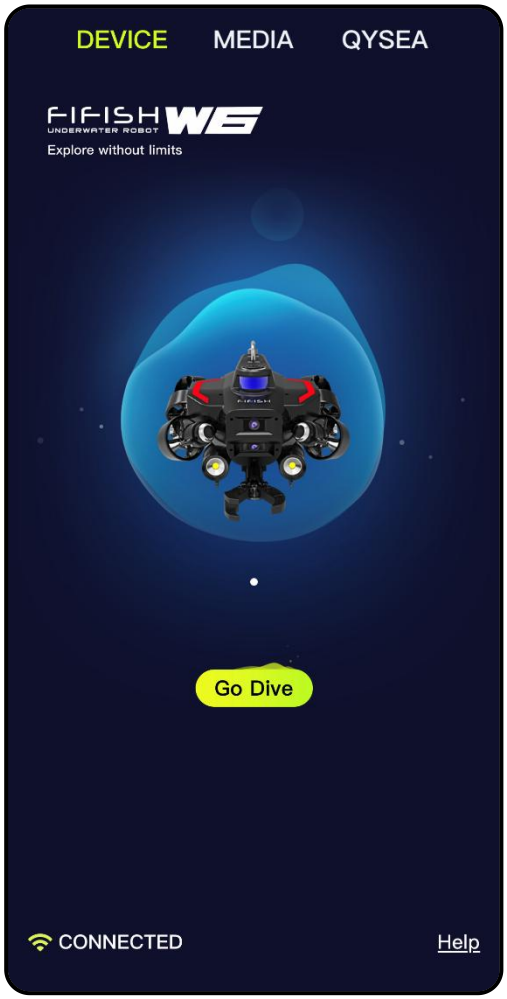
### 3.3. Software Connection

3.3.2. Open FIFISH App, then press "**Go Dive**"

- 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*

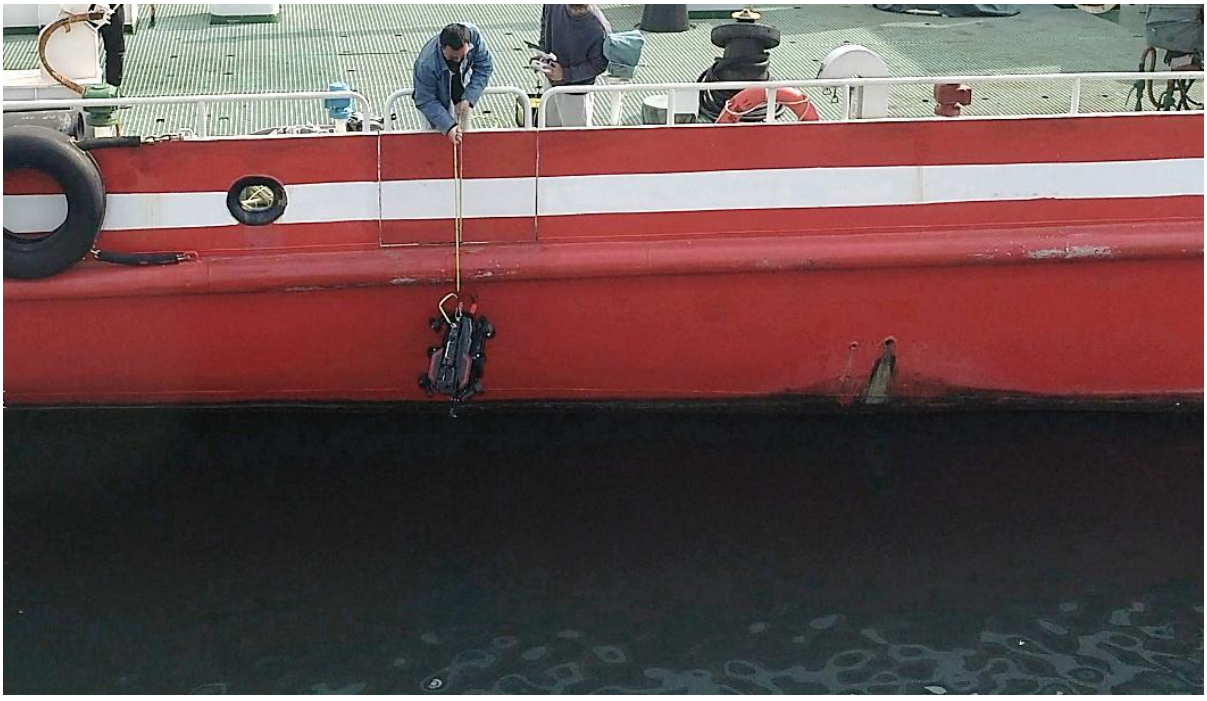
# Chapter 3 Pre-Dive
## *Sensor Calibration & Deploy and Retrieve*

### 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. **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.
- 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

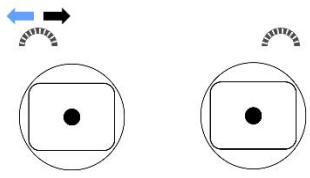
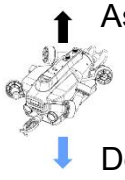
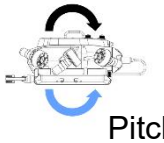
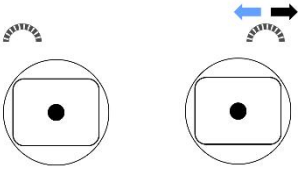
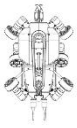
6.1. **LOCK** the thrusters
6.2. **STOP RECORDING** the video before closing the FIFISH App
6.3. **ONLY PULLING** on the tether to retrieve the submersible

**Definition of Controlling**

The FIFISH PRO 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] |

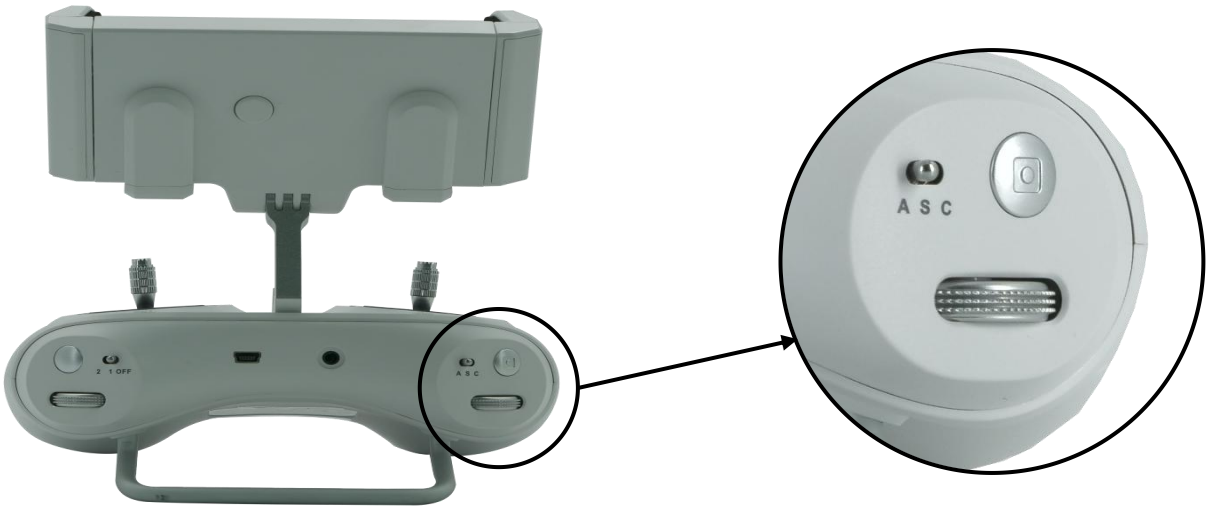
**NOTE:**

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 PRO 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 FIFISH VR Goggle, which allow pilot to use the FIFISH 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. Video/Photo Download

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 (Check the Chapter 3, Page 19-20)



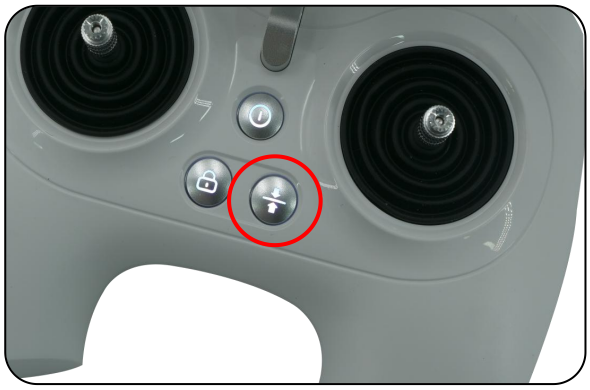
**NOTE** ***for microSD card***

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 Transfer*

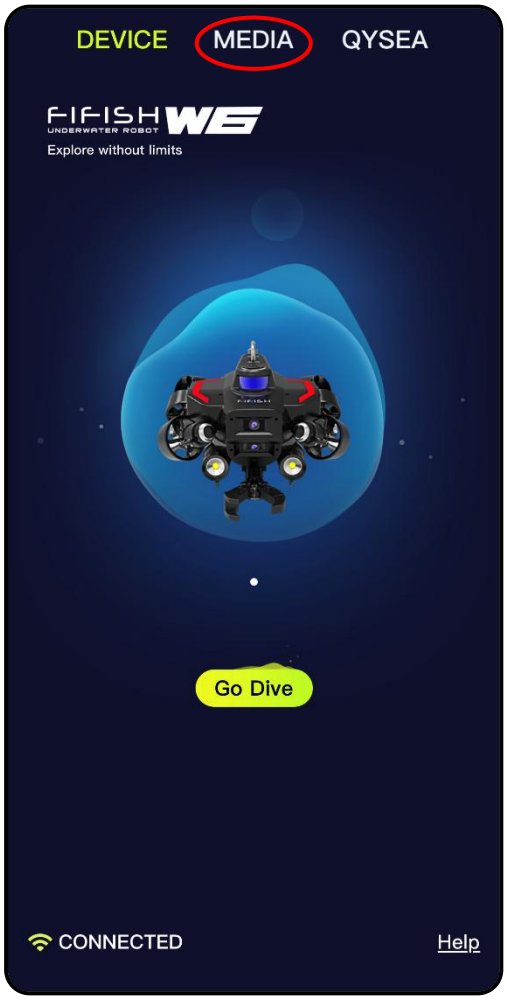
## 5.1. Video/Photo Download

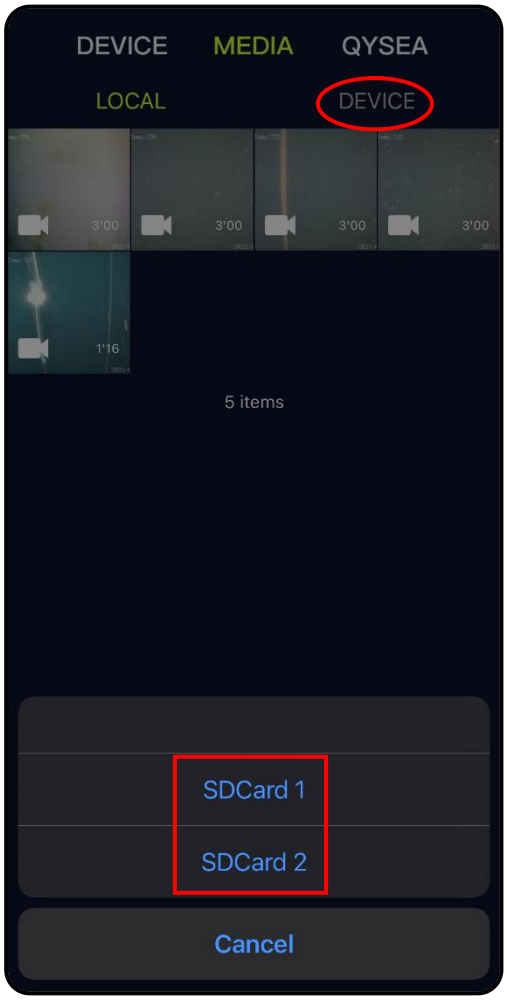
5.1.4. Turn ON the Depth Holding (submersible will not beep after 10 min static)



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

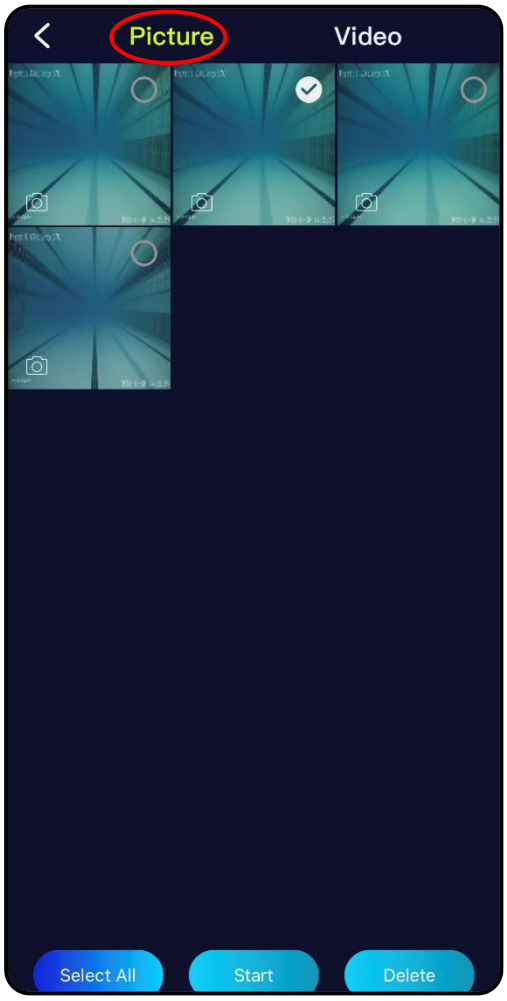
5.1.6. Select the Camera, SDCard 1 is the main camera, SDCard 2 is the secondary camera



## 5.1. Video/Photo Download

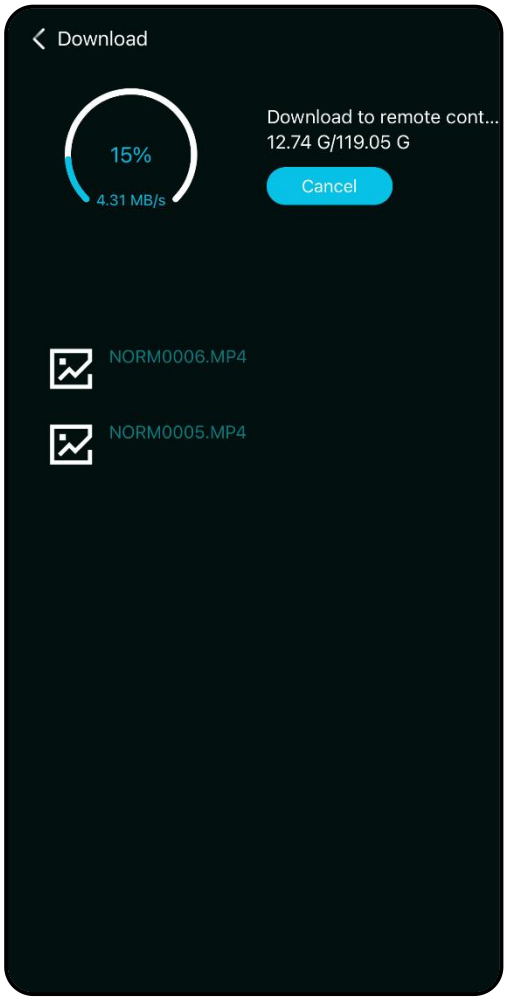
5.1.7. The default is **Picture**, select **Video** if you only want to copy out the videos
5.1.8. Press and hold on desired clip over 1 second, then you can select the clip(s) you would like to copy
5.1.9. After you satisfied then press the **Start**



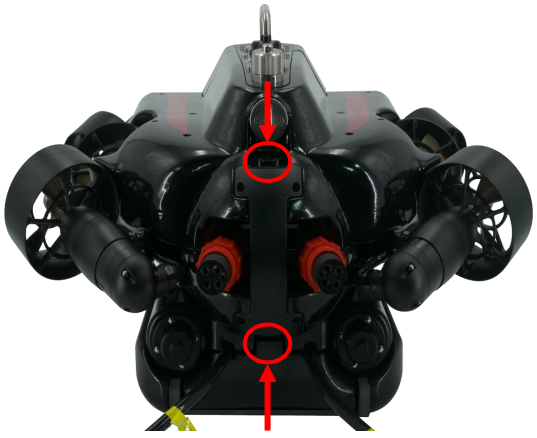

# Chapter 5 Post-Dive
*Data Transfer*

## 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

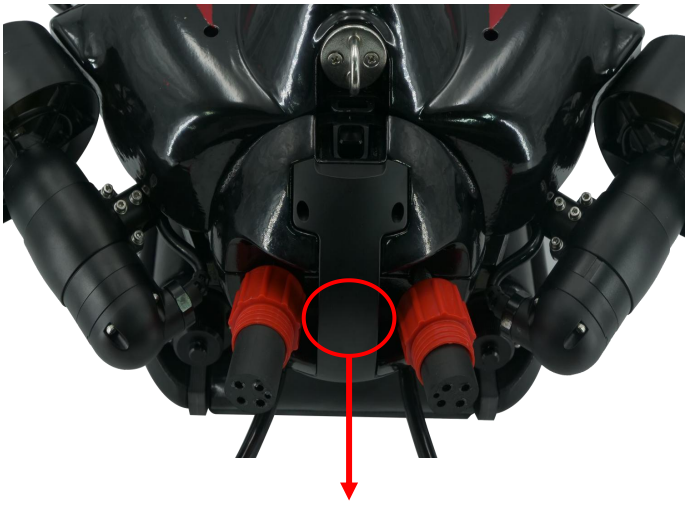



## 5.2. Submersible Battery



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

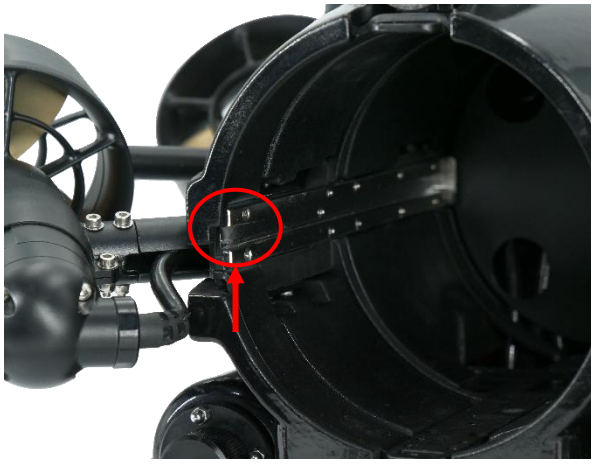
### 5.2. Submersible Battery

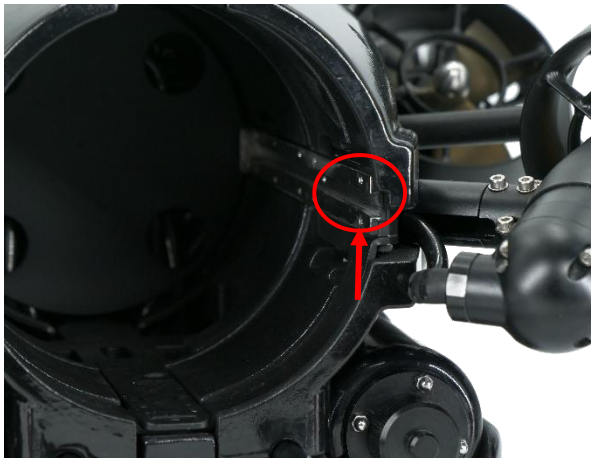
5.2.4. Connect 2 Submersible Adapter
5.2.5. Algin the positing pin
5.2.6. Plug all the way

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

### 5.2. Submersible Battery

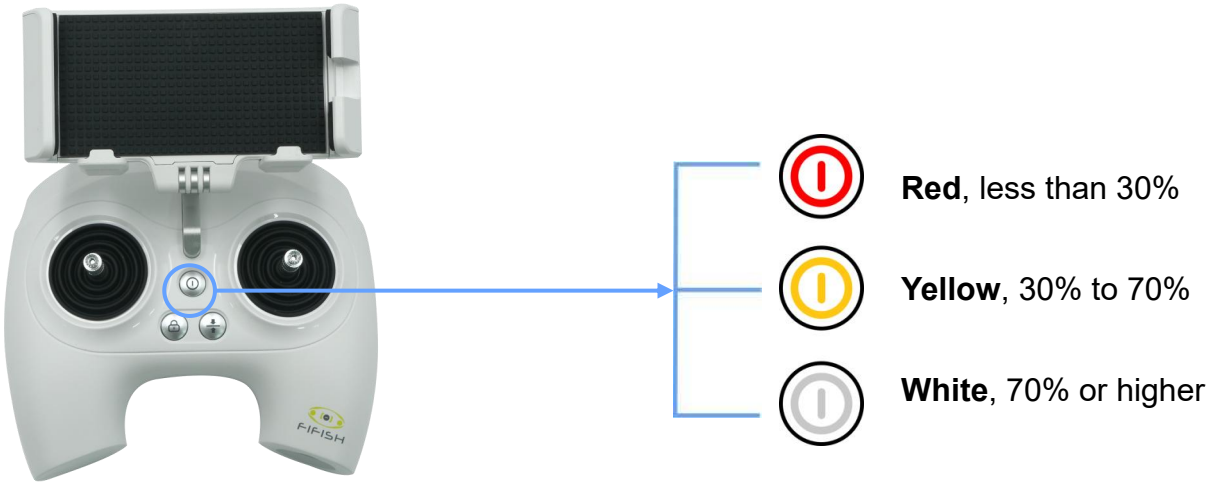
5.2.7. Align the track both side when putting back the battery





# 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.




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.

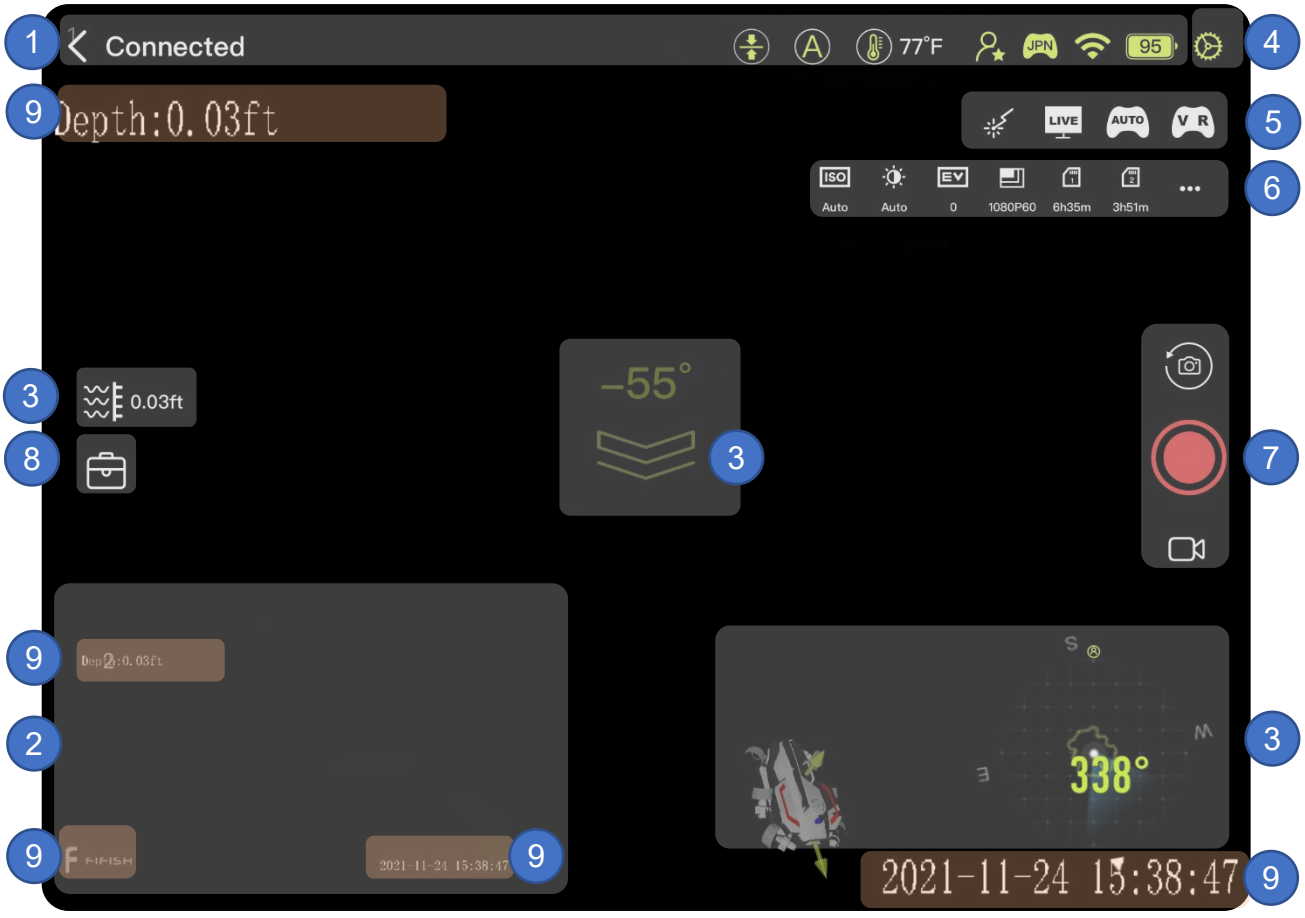
5. Inspect the tether for cuts and/or nicks or kinks in the outer shell.

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*



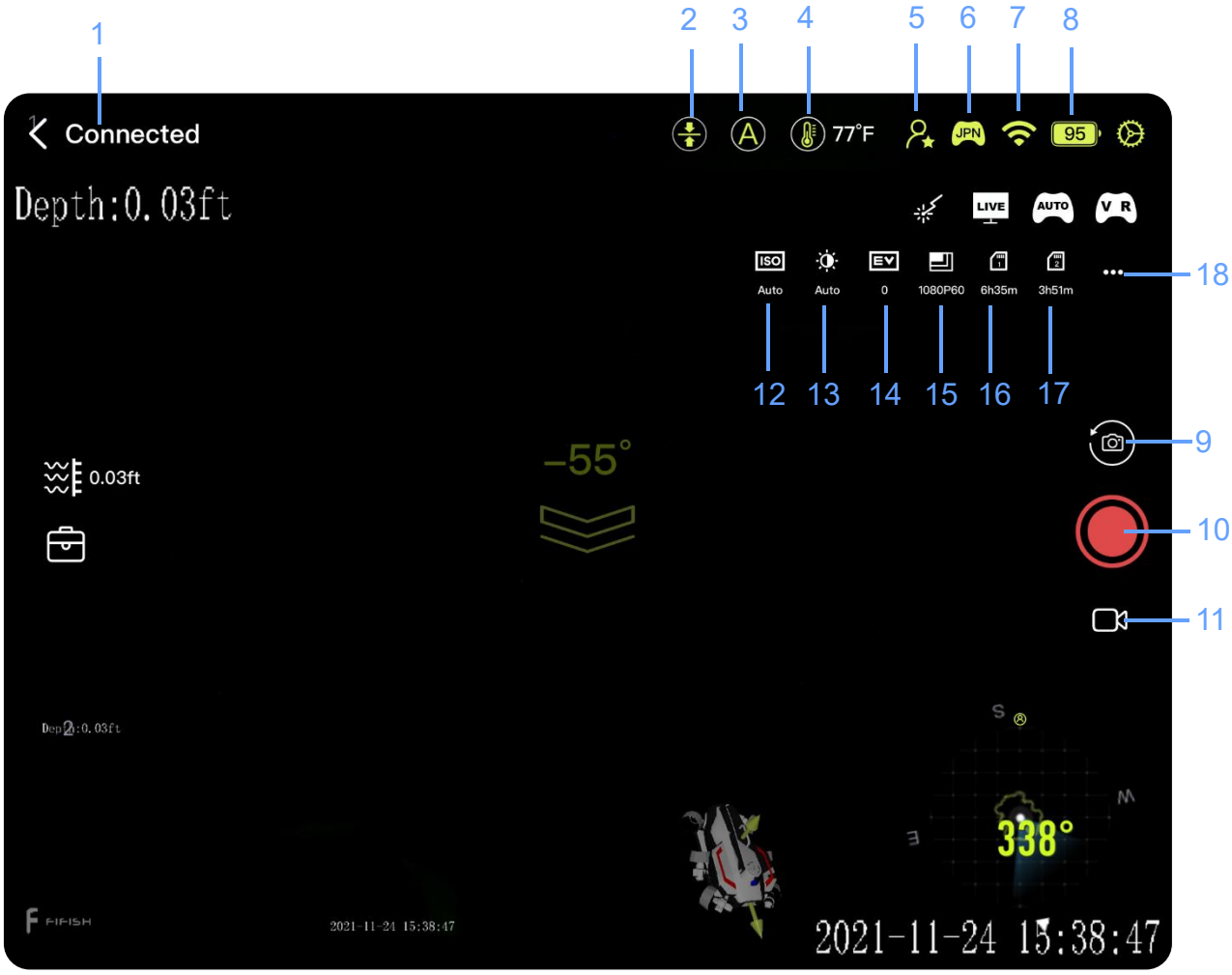

**FPV Interface in FIFISH App**

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

**NOTE**

*This FIFISH App interface is iOS 4.2.6. 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 Status
2. Depth Holding ON/OFF
3. Control Mode
4. Water Temperature in C/F
5. Pilot or Spector Status
6. Controlling Preference
7. RC's Wi-Fi Signal
8. ROV's Battery in Percentage

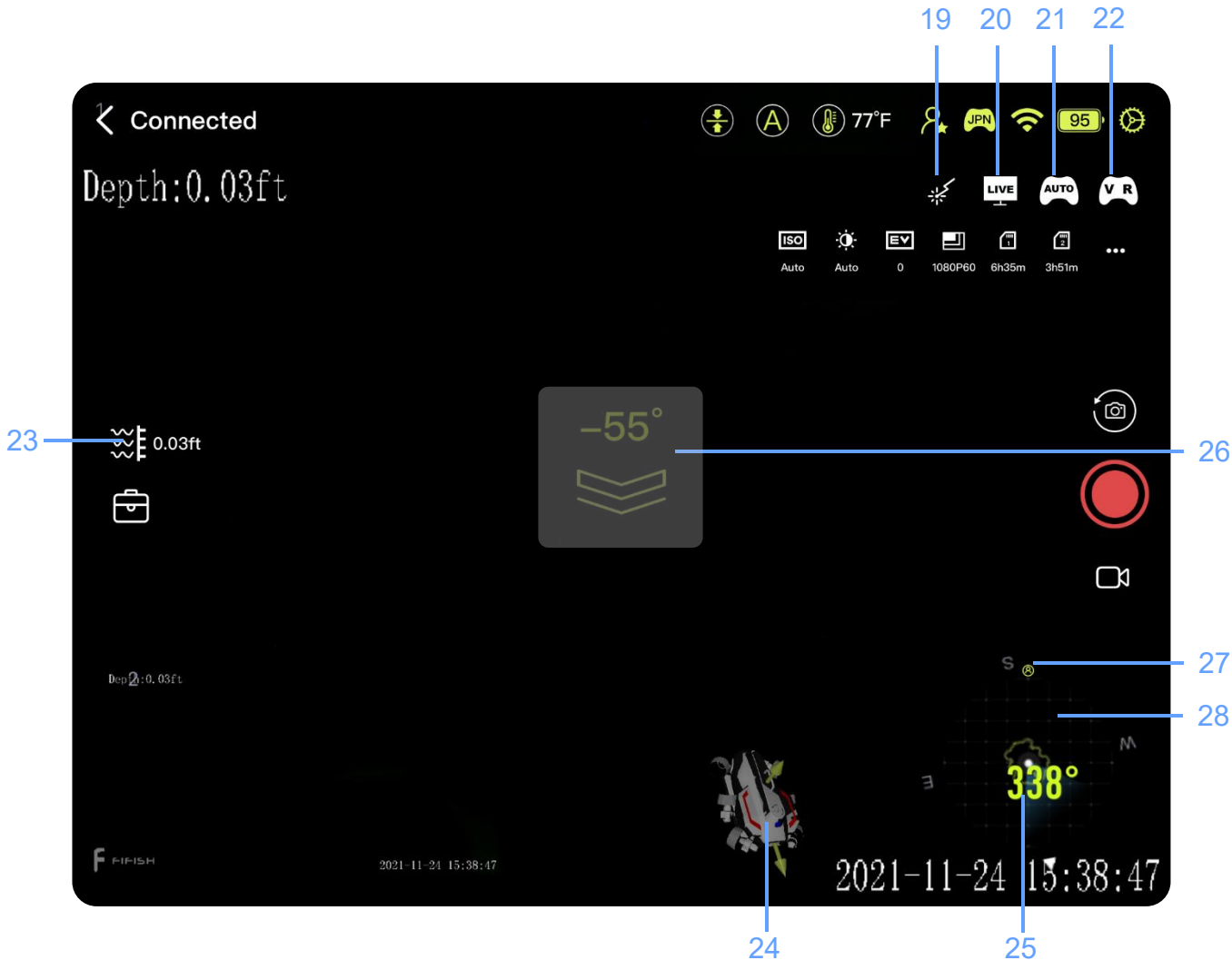
**Camera Buttons**

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

**Camera Setting & Shortcut**

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*




**Special Features**

19. Laster Scaler ON/OFF
20. LIVE Stream Broad Casting
21. AUTO Pilot 2nd Gen
22. VR Head Tracking

**Navigation Information**

23. Current Depth (m/ft)
24. Posture in 3D Model
25. Heading in Degrees [1]
26. Pitch Angle [2]
27. Pilot's Facing Direction [3]
28. Compass

**Note:**

1. *Heading in degrees,*

   *0° is North, 90° is East, 180° is South, 270° is West.*

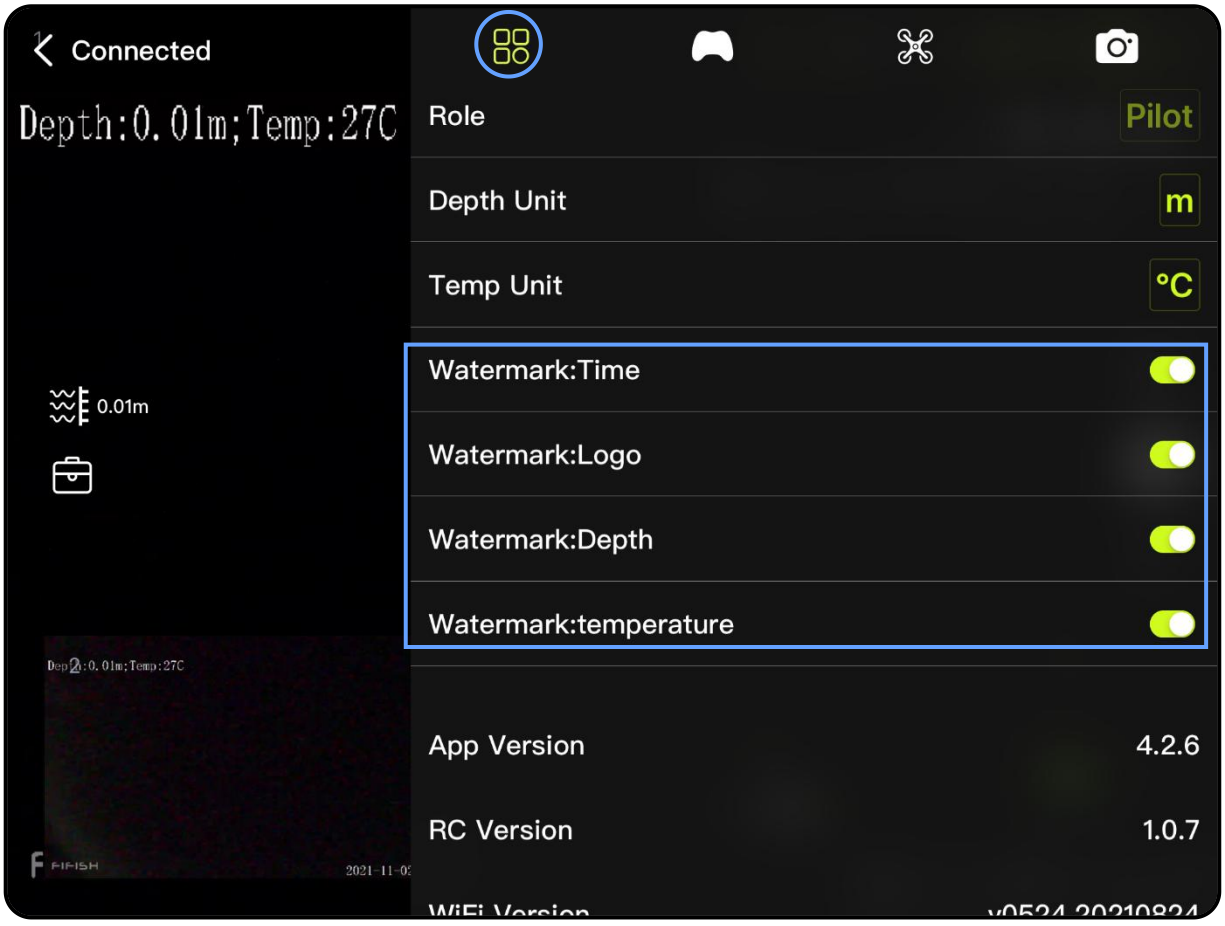
   *For Example, 316°* is NW
2. *Pitch Angle in Degrees*

   *Heading down is in a minus digit degree with downward arrow*

   *Heading up is in a positive digit degrees with upward arrow*
3. *Pilot's Facing Direction is the icon showing on the compass*

   *For Example, the pilot is heading Southeast*

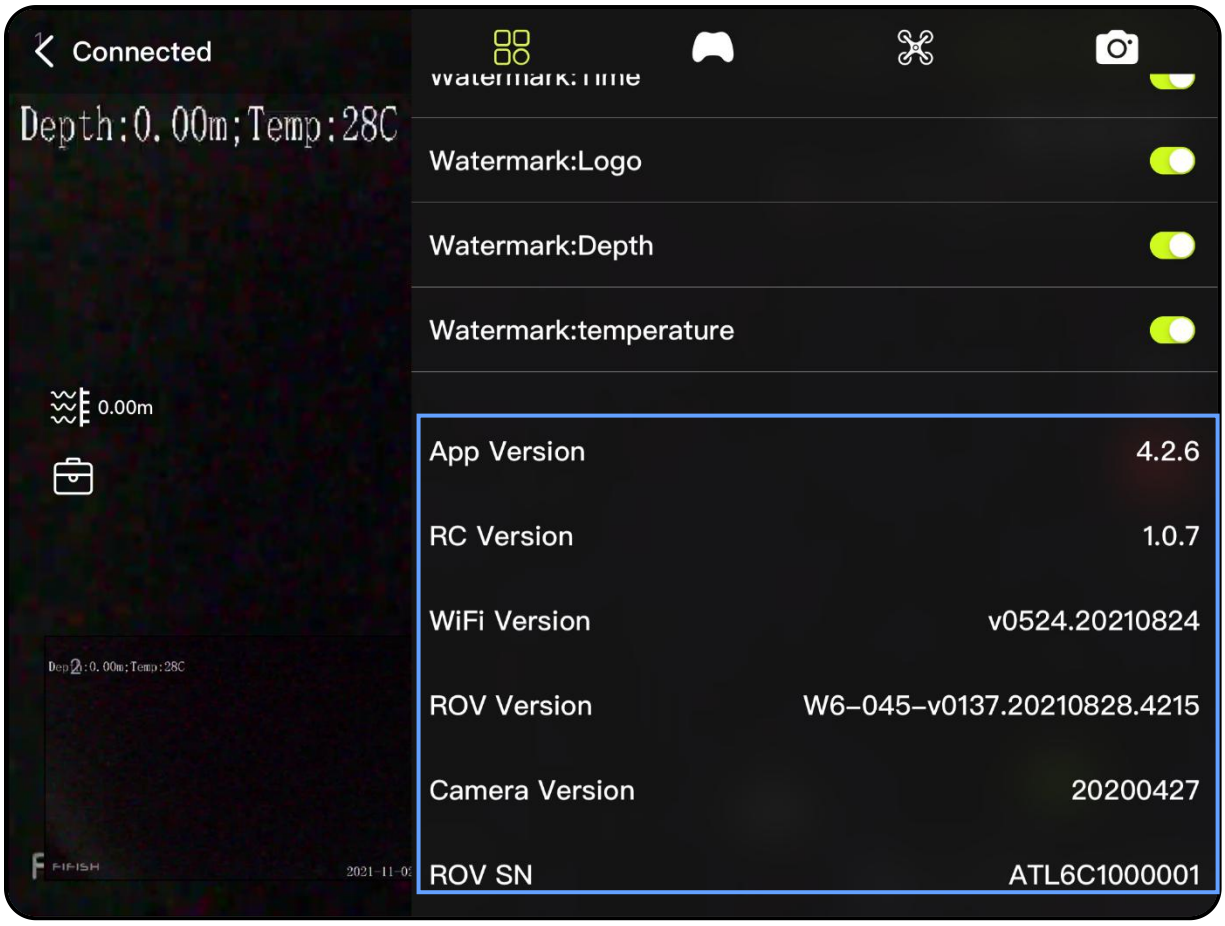
General Settings, Select **System Setting Icon** in 1st column




- 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



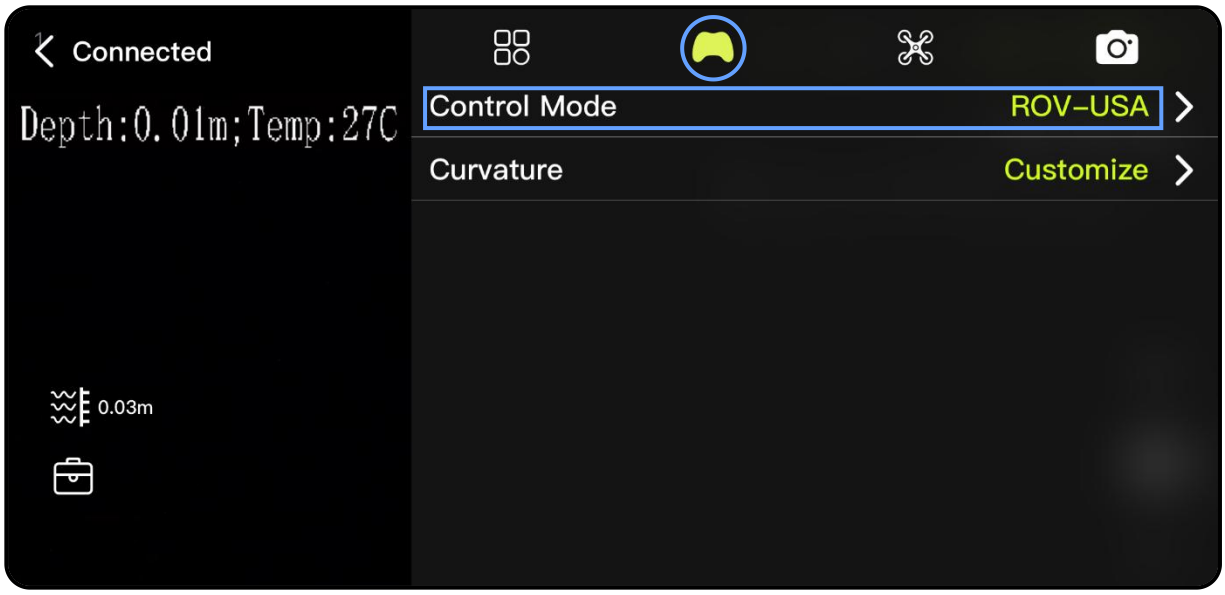

- The App Version is the FIFISH App version in your cell or tablet
- The RC Version is the RC's motherboard version
- WiFi Version is the RC's Wi-Fi module version
- ROV Version is the ROV's current software version
- Camera Version is the camera module software version
- ROV SN is the identical SN for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

**NOTE:**

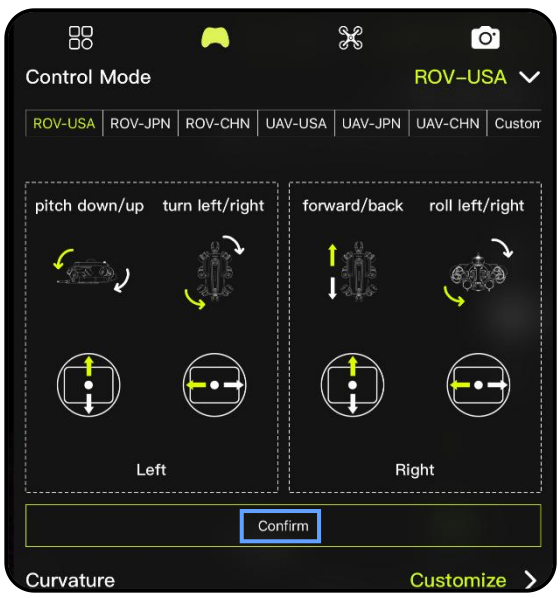
*Screen shot of these versions for remote technical support when you are facing any issues.*

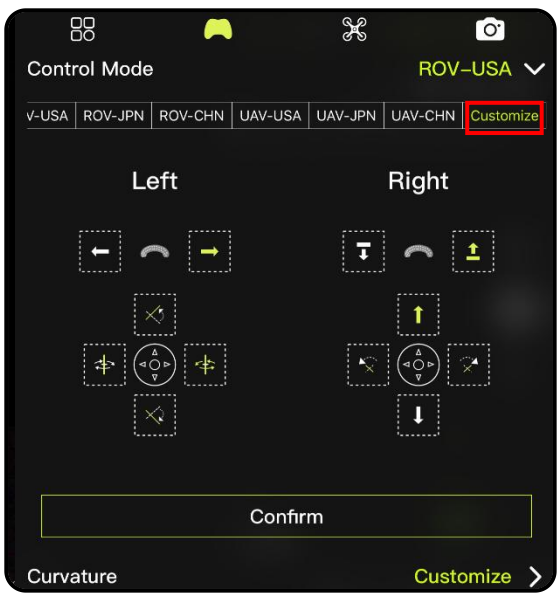
## Controlling Preferences

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



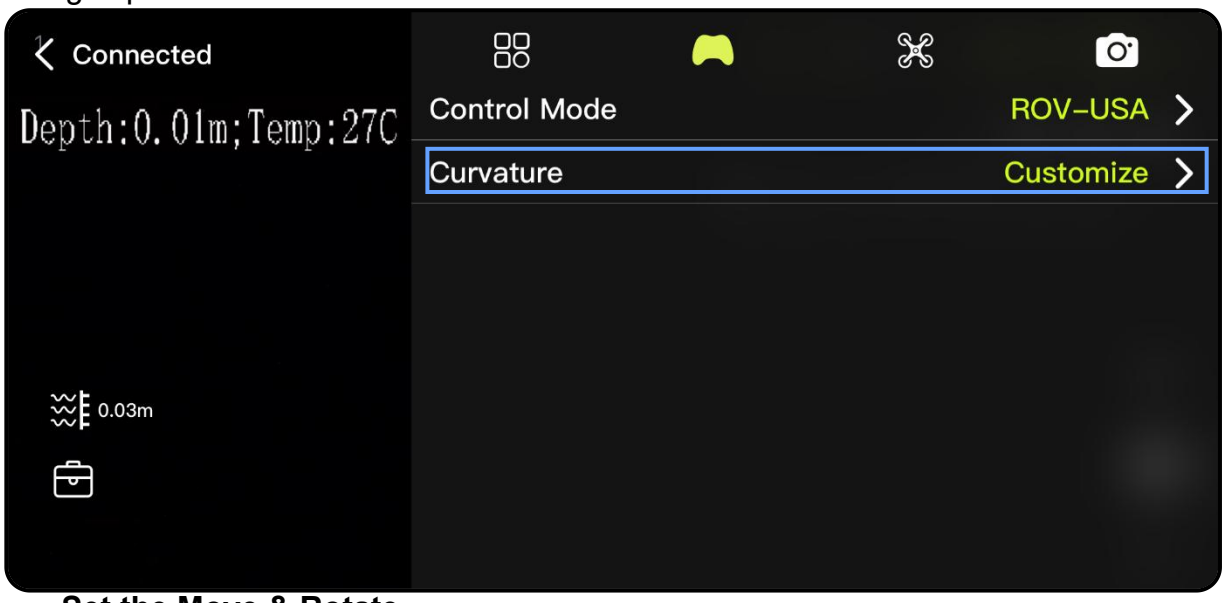




***As for advance level pilot seek for customized setting demo. Please check FIFISH authorized local Dealer or Service Center for more details and training programs.*

# Chapter 6 FIFISH App
*Control Setting*

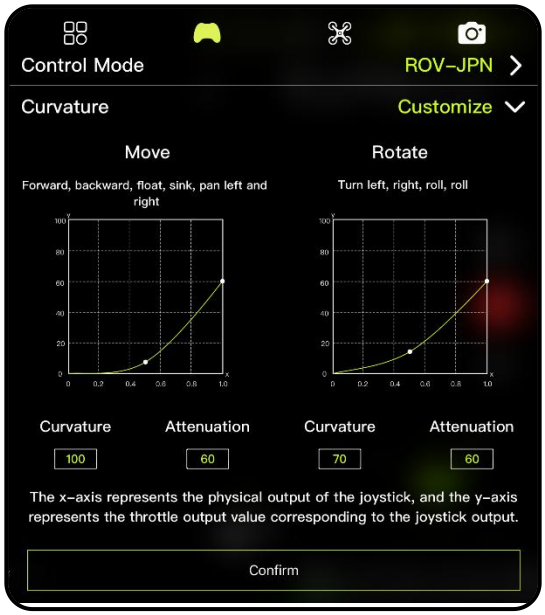
### Control Curvature

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




**Set the Move & Rotate**

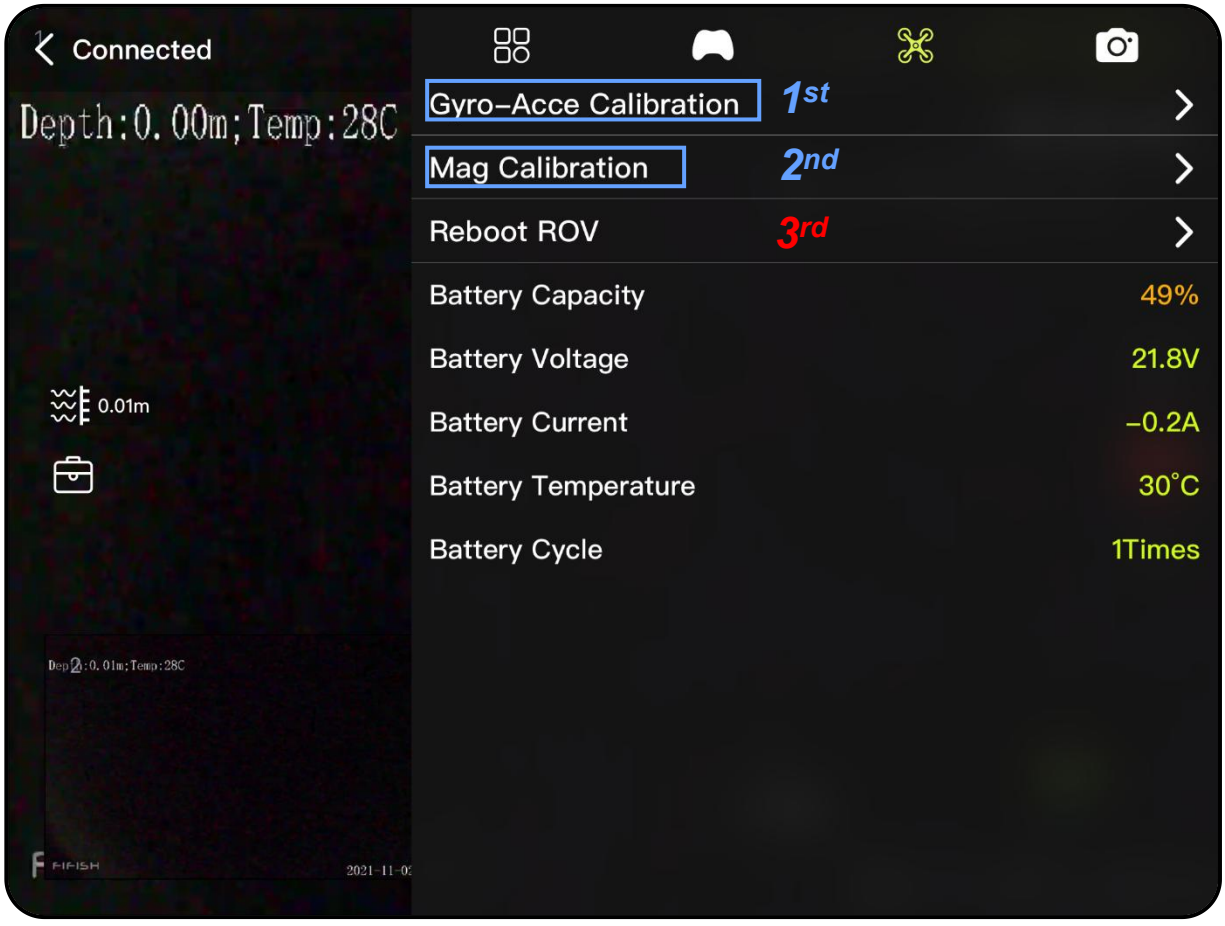
- Adjusting the curvature (set the center sector output sensitivity)
- Adjusting the attenuation (set the maximum output)




***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.*

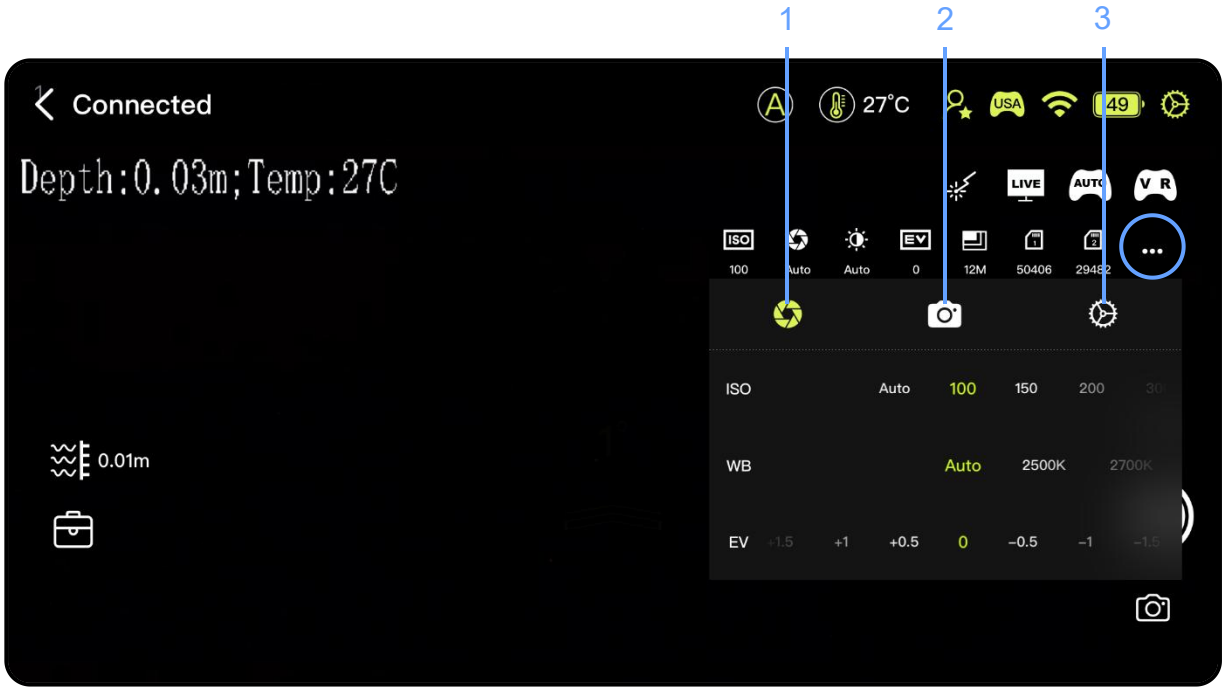
## Sensor Calibration

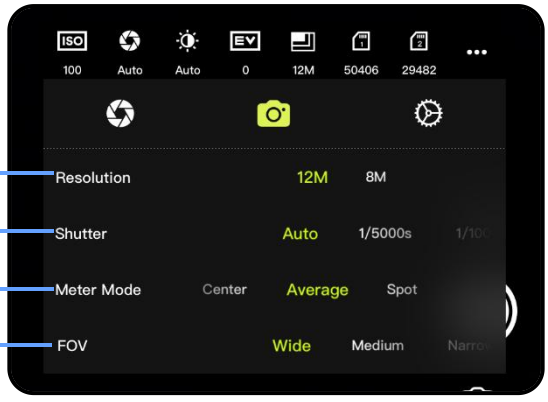
Select the **Sensor Icon** in 3rd column




- 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
*Camera Setting*



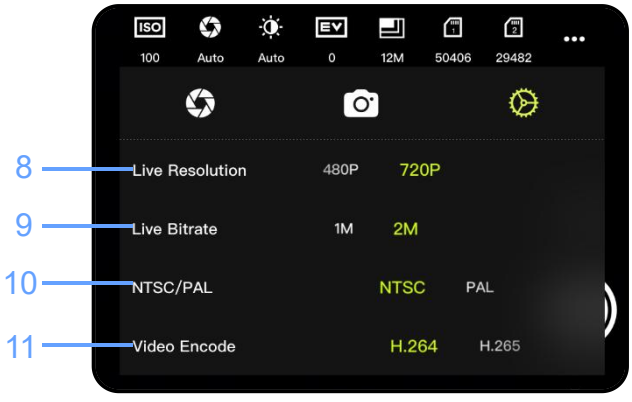




**Image Settings**

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**

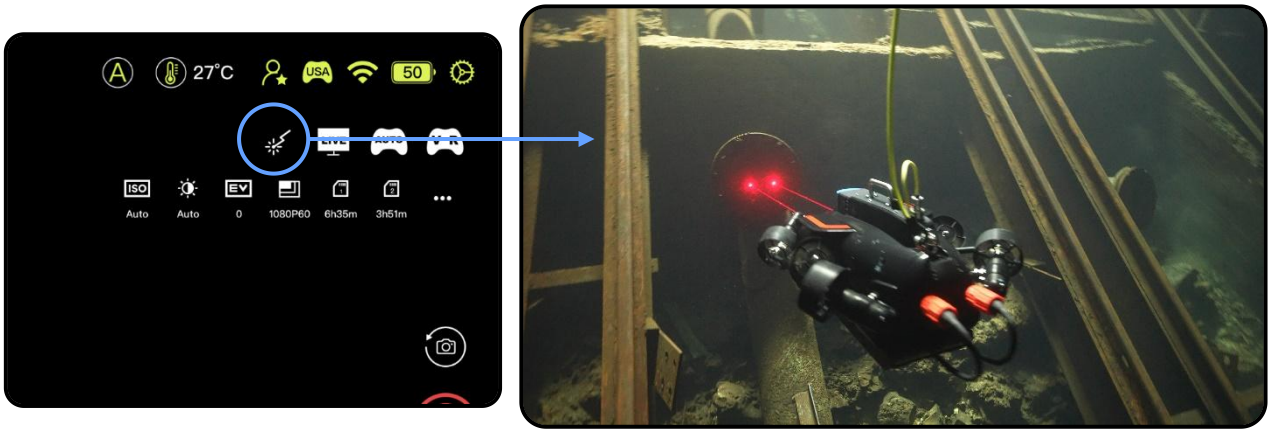
7. Live Resolution on FPV
8. Live Bitrate on FPV
9. Color Encoding
10. Video Format

**NOTE:**

1. *Main Camera and Secondary camera settings are synchronized*
2. *Shortcut camera setting will have the same results.*

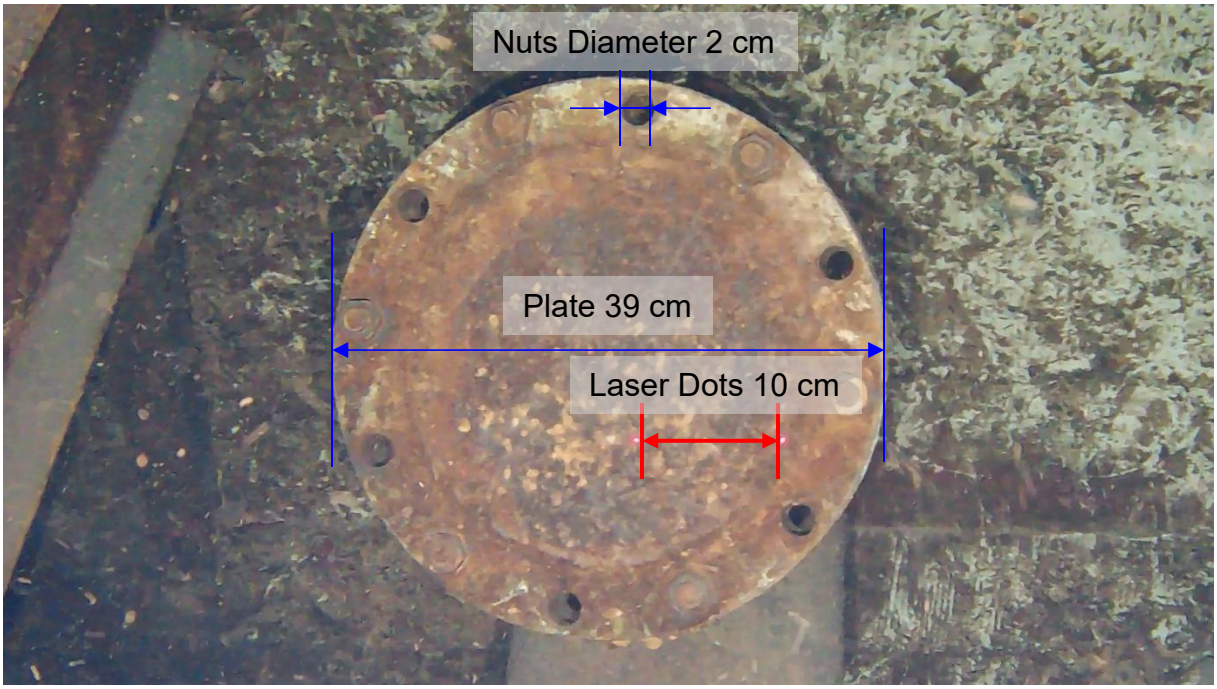
**Laser Scaler**
The Laser Dots could be the reference dots.

- 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

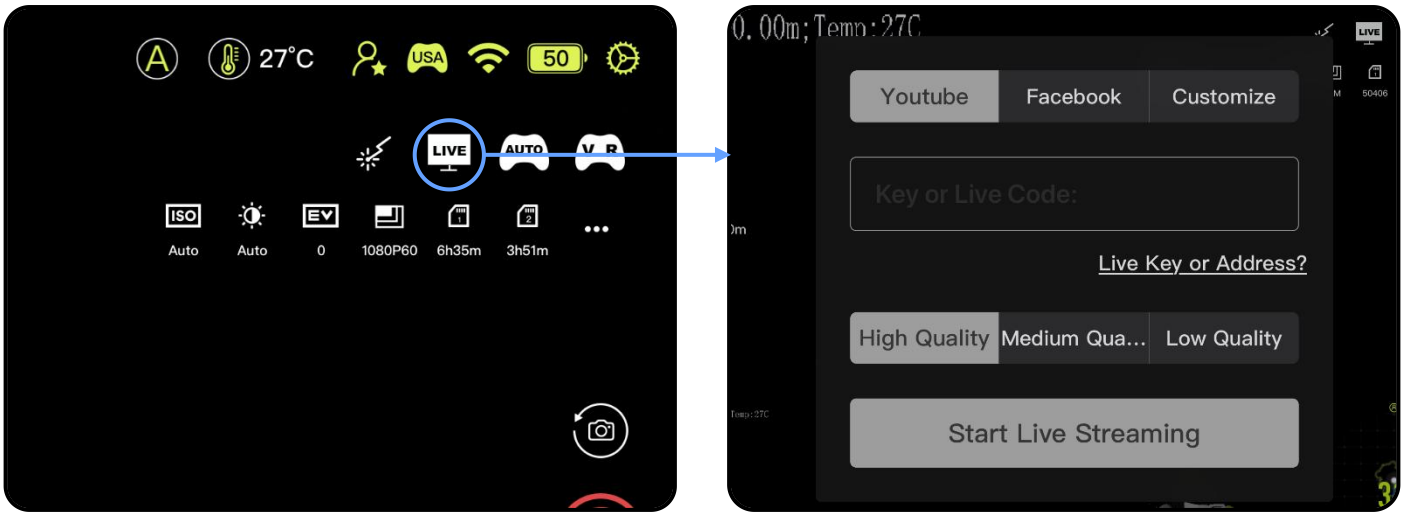
| Object | Image Length | Actual Length |
|---|---|---|
| Scale | 22.0 mm | 10 cm |
| Plate | 86.0 mm | 39 cm |
| Nut Di | 4.5 mm | 2 cm |



# Chapter 6 FIFISH App
*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. 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**"

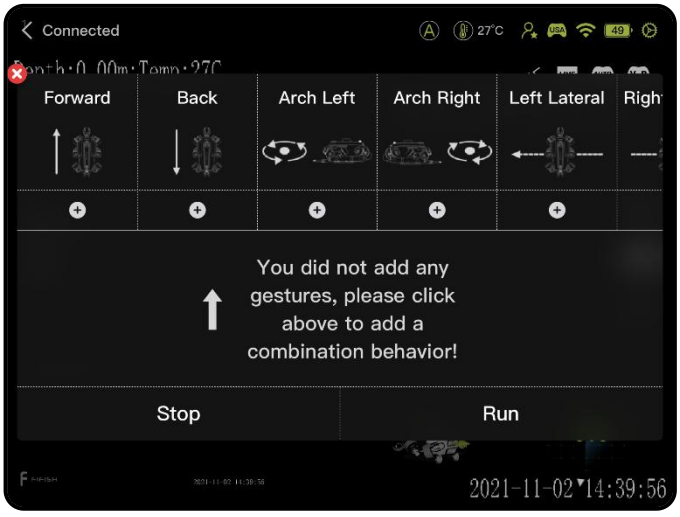
**NOTE:**

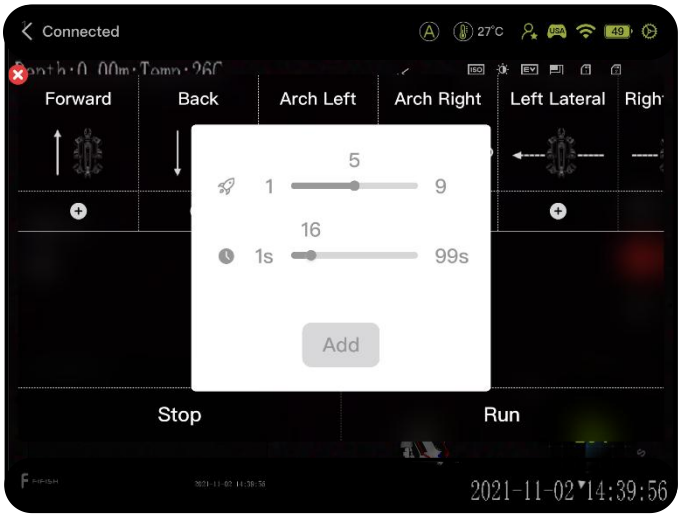
1. This feature will request to use the **iOS devices**. For example, **iPhone** or **iPad** SIM card version.
2. LIVE stream feature will consume your **Cellular Data**, make sure you have enough Cellular Data in your data plan.
3. LIVE stream quality is depending on the local **4G or 5G network speed**.

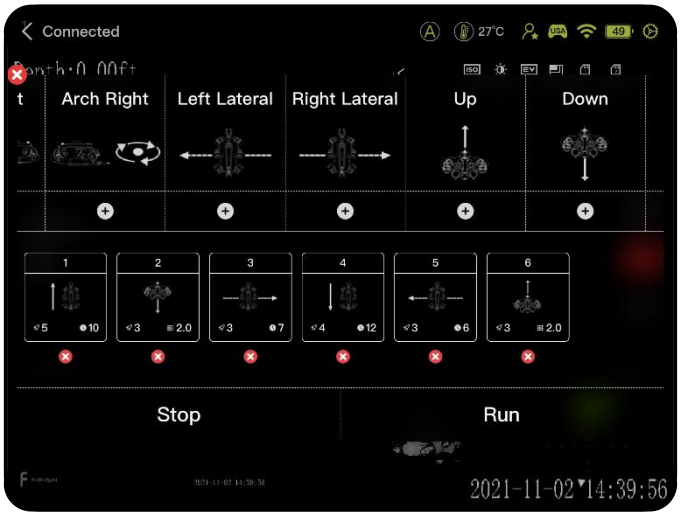
**Auto Pilot 2nd Gen**

The Auto Pilot 2nd Gen is able programable auto moving commands.

1. Press the "AUTO" to turn ON the Auto Pilot
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 Auto Pilot 2nd Gen

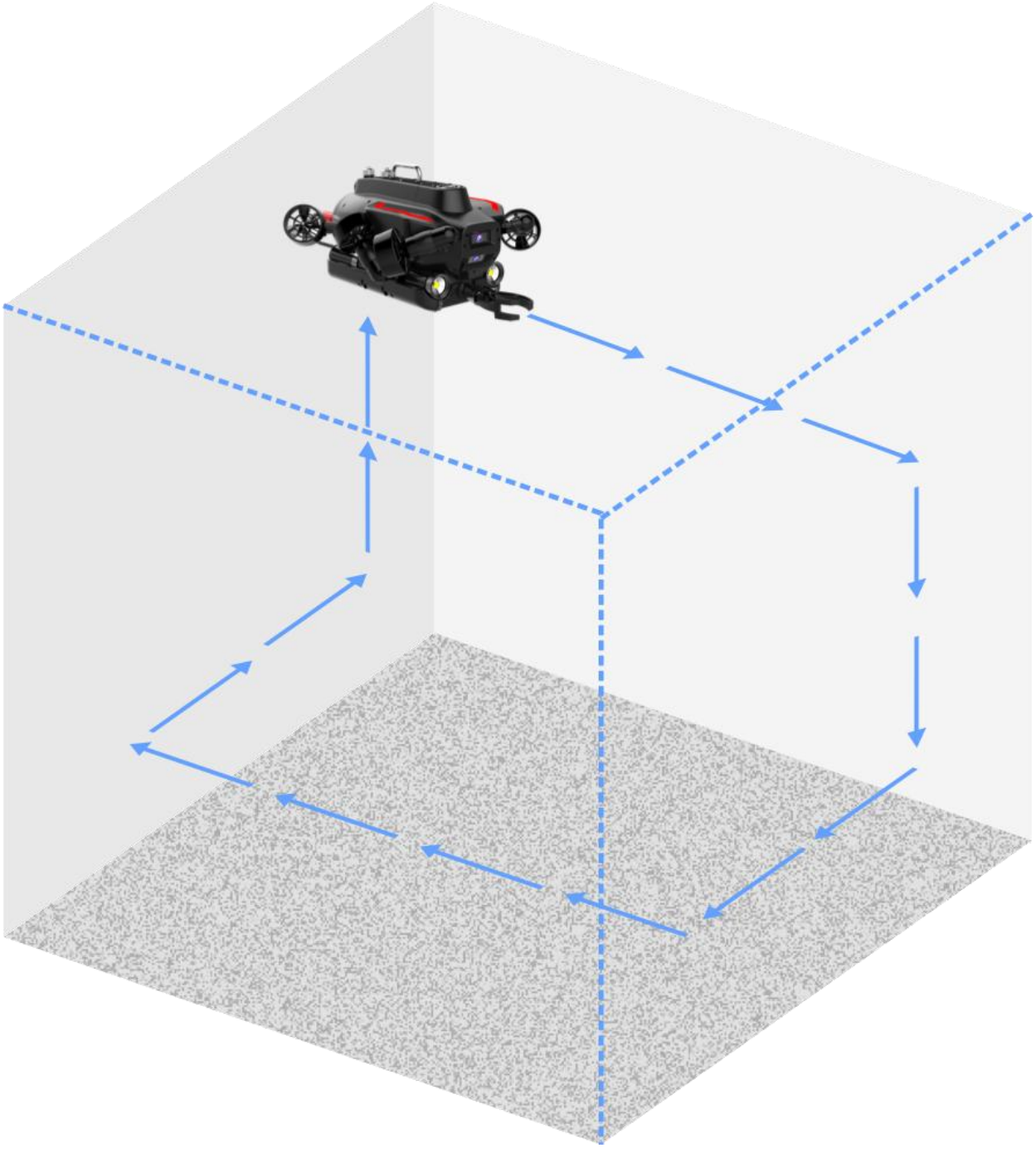



# Chapter 6 FIFISH App
*Auto Pilot*

**Auto Pilot 2nd Gen**

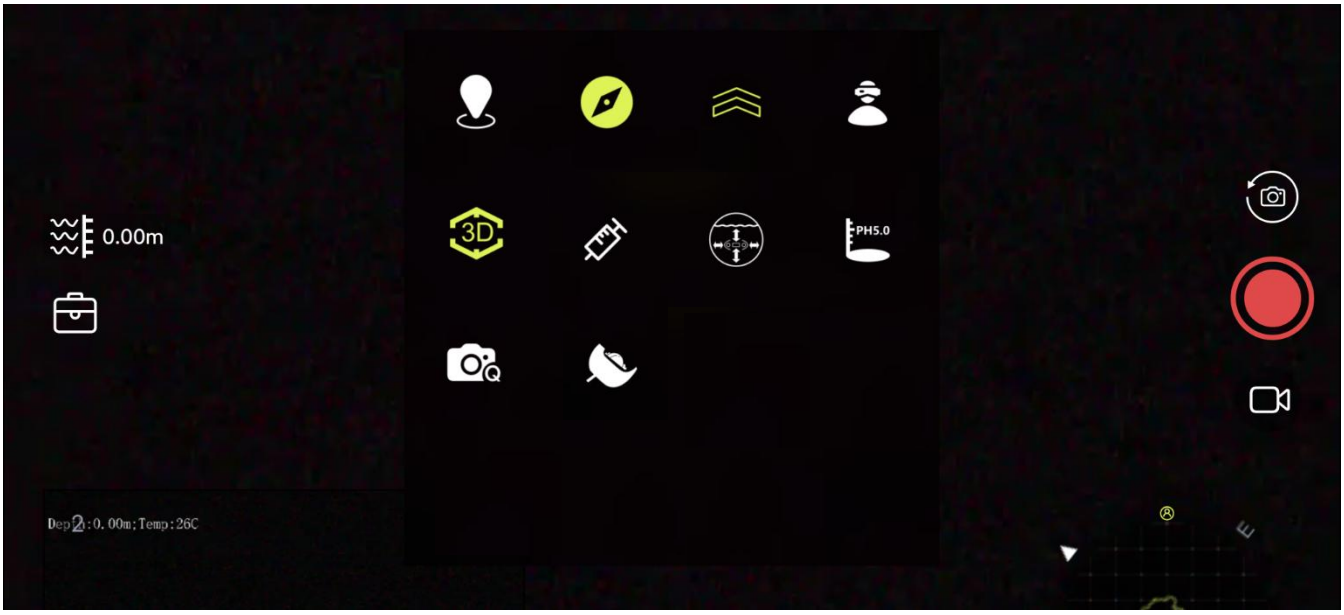
The Auto Pilot 2nd Gen is able programable auto moving commands.



### HDMI Box 2.0, Download to Flash Drive

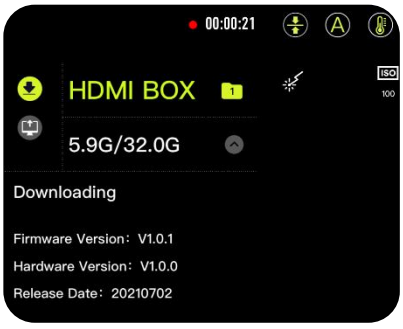
- HDMI Box 2.0 also capable to download the original resolution video from ROV while recording.[1]
- HDMI Box 2.0 will enable to display on a HDTV or transmitter for TV shows.

1. Connect HDMI Box, and Insert a flash drive [1, 2]
2. Click the **HDMI** icon 


3. The default is Download Mode, the new video will automatically download to flash/portable drive






**NOTE:**

1. *Download and Display mode **CANNOT** work at same time, more information check the HMDI Box instructions*
2. *Format in **FAT32** or **exFAT**, read and write speed **100 MB/s** or higher, **USB 3.0***
3. *Flash drive storage **128 / 256 / 512 GB**, portable drive **1 / 2 TB***

# Chapter 6 FIFISH App
*Tool-Box, HMDI BOX*

**HDMI Box 2.0, HDMI Output**

- HDMI Box 2.0 will enable to stream to a HDTV or transmitter for TV shows. [1]

1. Connect to the HDMI Display or stream transmitter broadcasting devices
2. Click the icon  to active **Display Mode** 



**NOTE:**

1. *Download and Display mode **CANNOT** work at same time, more information check the HMDI Box instructions*
2. *The default resolution is **1080P 60fps** when HDMI Box is on. (PLEASE DO NOT CHANGE THE RESOLUTION ON FIFISH APP)*
3. *The HDMI Output latency is about 500 ms*

## Submersible

| | | | |
|---|---|---|---|
| Dimension | | 700 mm × 469 mm × 297 mm | 27 $^{1}/_{2}$ in × 18 $^{1}/_{2}$ in × 11 $^{5}/_{8}$ in |
| Weight | | 20.5 kg | 45 $^{1}/_{8}$ lbs |
| Depth Rating | | 350 meters | ~ 1148 feet |
| Speed | | 4.0 Knots (2.0 m/s), max speed in still water | |
| Loadings | | 5 ports in Q-interface | |
| Thrusters Designs | | 6 × Vector | 3rd gen Q-Motor × 6 |
| Maneuverability 6 DoF (Degree of Freedom) | Moving | Sway | Left / Right |
| | | Surge | Forward / Backward |
| | | Heave | Up / Down |
| | 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 |
| Battery | | Type 6S6P | Panasonic 18650 Li-ion |
| | | Rated Capacity | 18,000 mAh 21.6 V / 388.8 Wh |
| | | Run time | 1.5 hours against 3 knots current |
| | | | 6.0 hours in still water |
| | | Recharge | 1 Hour Quick Charge (70%) |
| | | Weight 3.94 kg | ~ 8 lbs 11 oz |

## Q-Interface

| | |
|---|---|
| Port Number | 5 ports (3 × Type-A, 3 × 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 (2× Type-A, A2 starboard, A3 port) |
| | Ethernet or UART (1 × Type-A, A1, 3 × Type-B) |

## Robotic Arm

| | | |
|---|---|---|
| Claws Opening | 125 mm | ~ 4 $^{1}/_{16}$ in |
| Grip Strength | 20.0 kgf | ~ 55 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 |
| | 0.4 m | Minimum Focusing Distance |
| Shutter Speed | 5 to 1/5000 second | Auto / Manual (Electronic) |
| Burst Shooting | 3 / 5 / 10 / 15 | Frames |
| WB (White Balance) | 2,500 to 8,000 K | Auto / Manual |
| EV (Exposure Compensation) | - 3.0 ~ + 3.0 EV | |
| 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 Format | MPEG4-AVC/H.264, HEVC/H.265 | |
| Stabilization | EIS (Electronic Image Stabilization) | |
| Photo Resolution | 4,000 × 3,000 | |
| Photo Format | JPEG, RAW in 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 |

### Tether and Spool

| | | |
|---|---|---|
| Tether Length | 305 meters (Standard Package) | ~1,000 feet |
| Tether Diameter | 6.0 mm | $^{1}/_{8}$ inch |
| Breaking Force | 200 kgf | 440 lbsf |
| Spool Dimension | 389 mm × 249 mm × 254 mm | 9 $^{3}/_{8}$ inch×8 $^{3}/_{8}$ inch×8 $^{1}/_{16}$ inch |
| Spool Weight | 11.65 kg | ~25 lbs 11 oz |

### Remote Controller (RC)

| | | |
|---|---|---|
| Weight | 0.56 kg | 1 lbs 3 oz |
| Clamp Opening | 20.2 cm | 7.9 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 | |

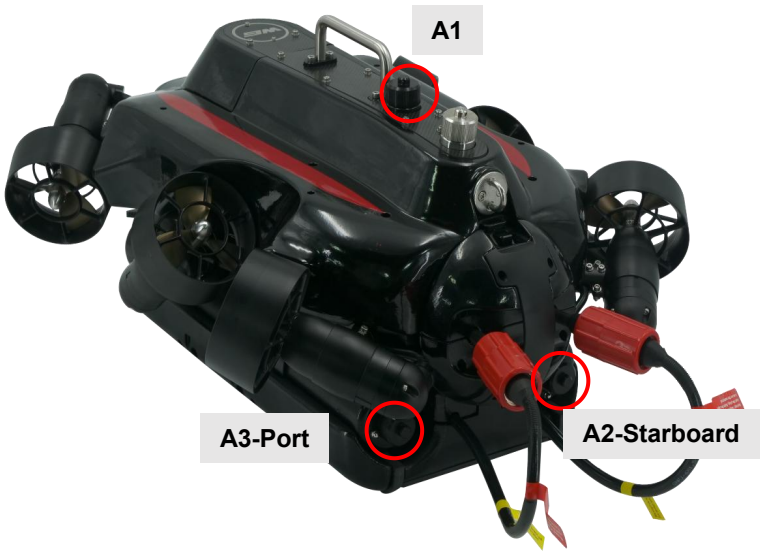
### Charger

| | | |
|---|---|---|
| ROV | Max Input | 100-240 V, 50/60 Hz, 3.0 A × 2 |
| | Output | 25.2 V ⎓ 3.0 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*



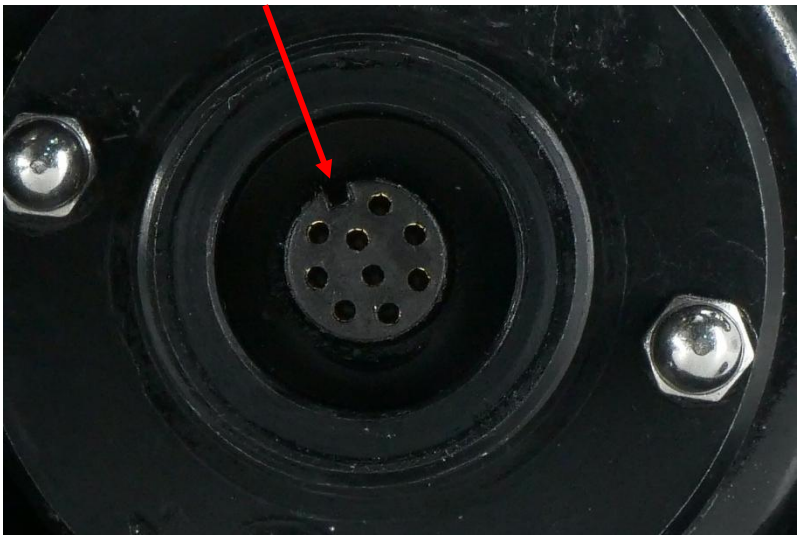

**Q-Interface**

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

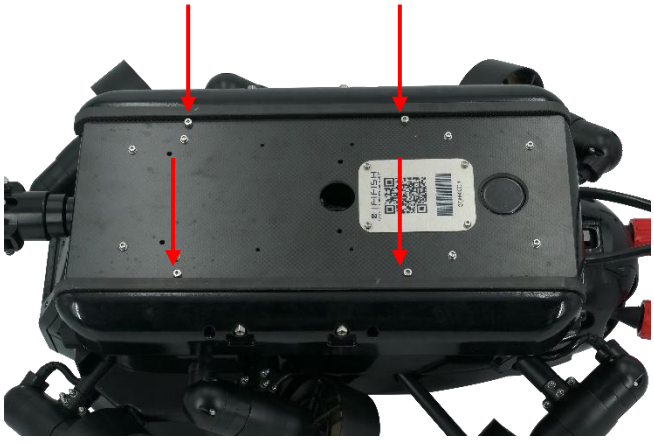
**NOTE：**

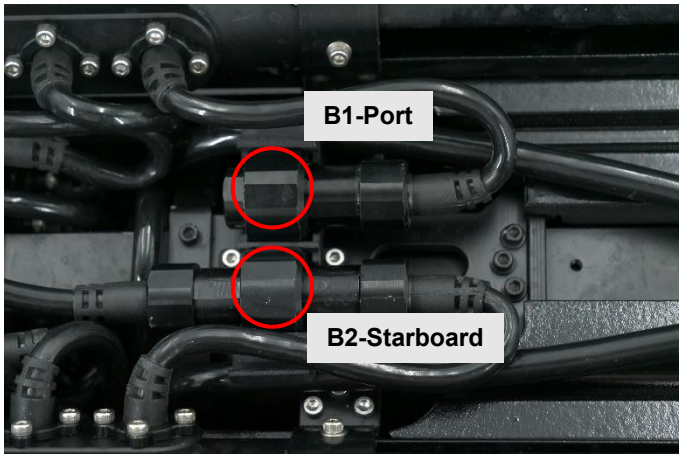
*Align the positioning socket first, when connecting accessory*

There are 3 Q-Interface Type-B, which have been protect with bottom armor and 2D Image Sonar Cabin bow side.
7.2.1. Unfasten 4 nuts with M3 Allen wrench
7.2.2. Open the bottom armor

**NOTE**
*The robotic arm has occupied 1 Type-B*





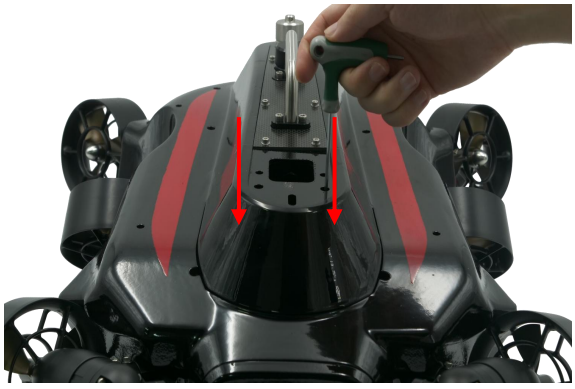
# Chapter 7 Additional Information
## *Q-Interface, Type-B*

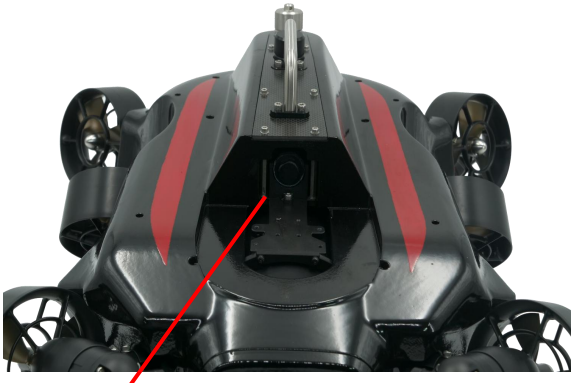
The 3rd Q-Interface Type-B is behind the Image Sonar Cabin.

7.2.3. Unfasten 2 nuts with M2.5 Allen wrench

7.2.4. Unfasten 2 nuts with M2.5 Allen wrench

7.2.5. Open the Image Sonar Cabin Cover





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

# Chapter 7 Additional Information
## *Q-Interface*

| Accessory Name | Q-Interface Connection |
|---|---|
| Oculus M750d Sonar | A ×1, A2 or A3 |
| Station Lock™ | A ×1, A2 or A3 |
| Q-Camera | A ×1, A1 |
| U-QPS | No Need |
| Robotic Arm | B×1, B1 or B2 |
| Water Sampler 500 mL | A ×1, A2 or A3 |
| Water Sampler 100 mL | A ×1, A2 or A3 |
| Multiple Water Quality Sensor 4 in 1 | A ×1, A2 or A3 |
| Mud Sampler | A ×1, A2 or A3 |
| 4D Distance Lock Module AL + DL + SL | A ×2, A2 and A3<br>need both A 2 and A3 at same time |
| 360° Mechanical Sonar | A ×1, A2 or A3 |
| Sidescan Sonar | A ×1, A2 or A3 |

**Definition:**
*A is the Q-Interface Type-A*
*B is the Q-Interface Type-B*

**Example:**
*"*A ×1, A2 or A3*" means, this accessory need 1 type-A Q-interface, and it can be connect either A2 starboard or A3 port.*

**Note:**
*This is the standard Q-Interface connection recommendations, if the ports are interfering when attached multiple accessories. Then file a special request to FIFISH technical department for customized solutions.*