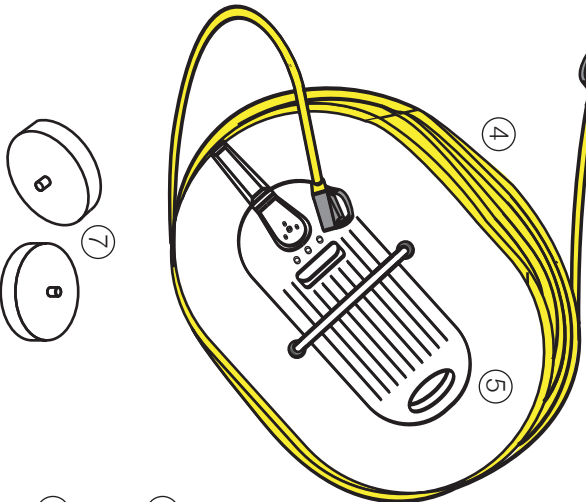
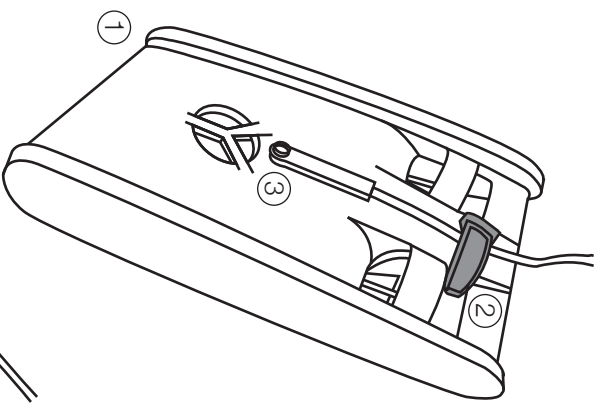


# In the box:

- 1 Trident Underwater Drone.
- 2 Tail strap - Improves tether integrity when handling Trident via tether.
- 3 Tether & charger connection point - Connection point must be dry before connecting tether or charger.
- 4 25m tether - Kevlar-reinforced data cable that sends video and control data from the topside to Trident. It has the same D-ring connector on each side.
- 5 Topside - Sends video and control data to and from Trident to the controller via WiFi hotspot.



- 6 Trident wall charger - All connection points must be dry before charging. Attach D-ring connector to Trident only.
- 7 Trim weights - Not needed in freshwater. To maintain neutral buoyancy in saltwater, attach to the underside of Trident. This location is indicated by a weight symbol.

**TRIDENT®**

**OPENROV®**

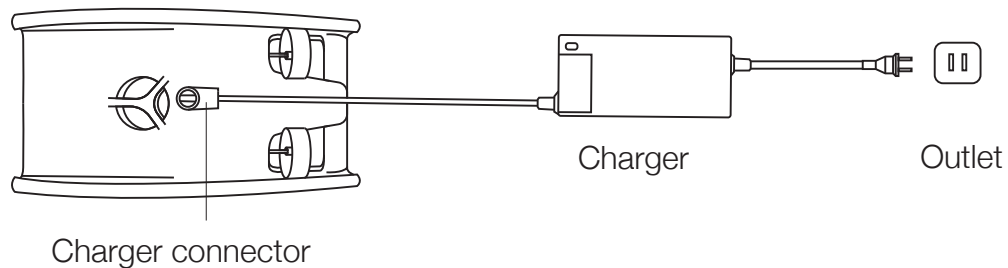
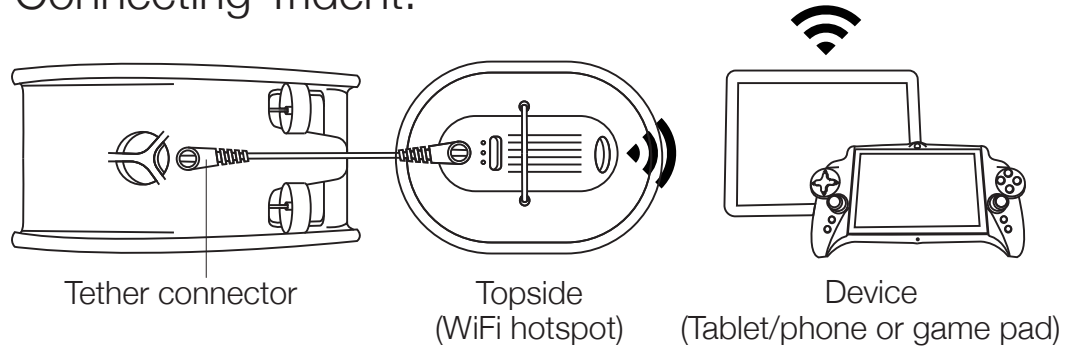
# Operations Manual

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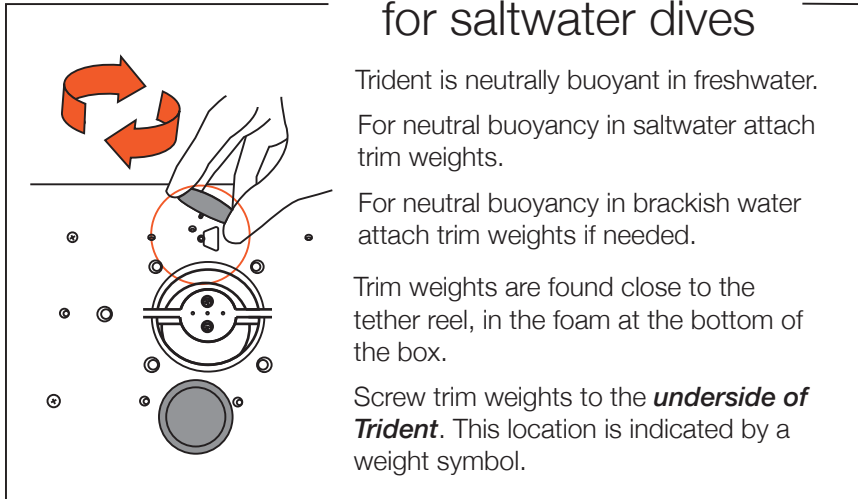
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# Quick-start

## Connecting Trident:



## Attach trim weights for saltwater dives



Trident is neutrally buoyant in freshwater.

For neutral buoyancy in saltwater attach trim weights.

For neutral buoyancy in brackish water attach trim weights if needed.

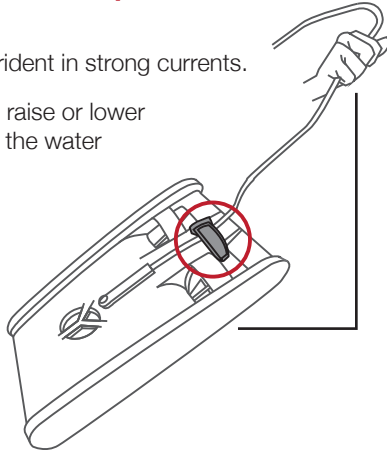
Trim weights are found close to the tether reel, in the foam at the bottom of the box.

Screw trim weights to the ***underside of Trident***. This location is indicated by a weight symbol.

# Dive procedures

## Use tail strap when:

- Operating Trident in strong currents.
- You need to raise or lower Trident from the water by tether.



## Before dive:

- It is recommended to update both the OpenROV app and Trident software before you head out to the water. Refer to pages 33 & 34 for more details.
- Unroll a couple meters of tether before diving and as needed throughout the dive.
- Make sure the topside and tether are safely secured. It is important to keep the topside close to you and easily retrievable.
- Both the Trident topside and tether reel are water resistant (splashes okay), but they were not designed to be submerged. Please be careful to keep them safely on the boat or dock when operating Trident.

## During dive:

- If the app freezes or is buggy during a dive, restart the app. Don't disconnect your Trident from the topside (turning off) as this can cause video corruption.
- Avoid areas with lots of WiFi traffic to ensure uninterrupted topside signal quality.
- Don't drive Trident through seaweed or other vegetation as it can get stuck in the propellers.
- Avoid rocks, branches, or other objects that can potentially damage Trident or pose a risk for entanglement.
- Avoid animals, fish, or other sensitive living things like corals which can be easily damaged.
- Only keep the amount of tether you need in the water to avoid entanglement.

## After dive:

- Rinse Trident with fresh water after every dive.
- Be sure to keep tether plugged in while rinsing to protect the electrical contacts.
- After rinsing remove tether and dry connector area with cloth or towel.



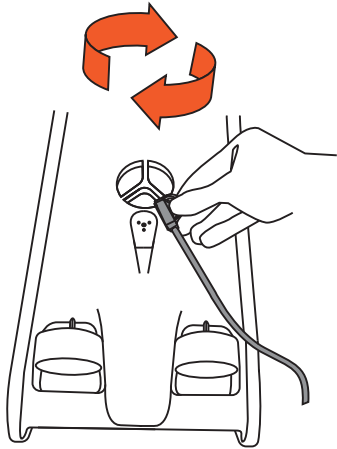
See page 37 for important details regarding maintenance & care.



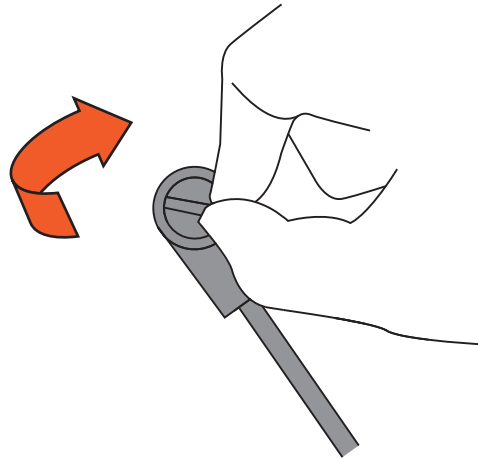
# Quick-start

Refer to “dive procedures” on pgs. 3-4 before diving your Trident.

## ① Charge Trident battery

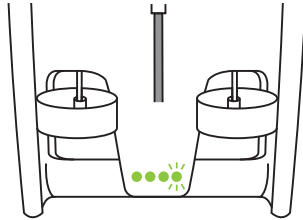


Screw the charger connector to Trident.



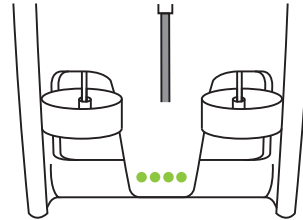
Tighten charger connector snugly to ensure a proper connection.

## Charging



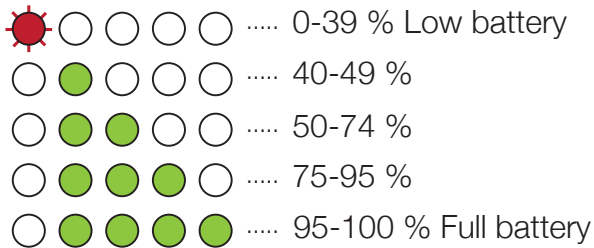
Blinking green LEDs

## Fully charged



4 solid green LEDs

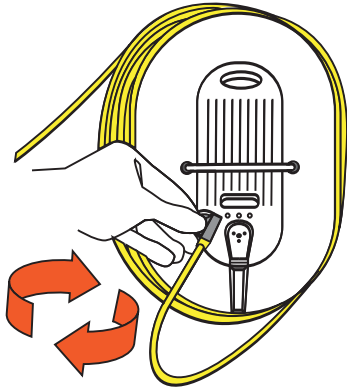
Discharging battery  
level indicators  
( While Trident is in use )



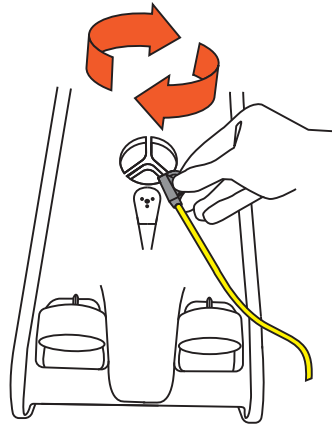
# Quick-start

Refer to “dive procedures” on pgs. 3-4 before diving your Trident.

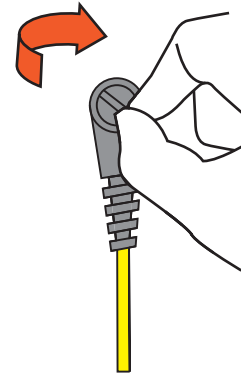
## ② Power Trident on/off



Screw the tether to the topside (ships connected).



To power on, screw the tether to Trident.  
To power off, unscrew the tether from Trident.



Tighten the tether connector snugly on both topside and Trident to ensure a proper connection.

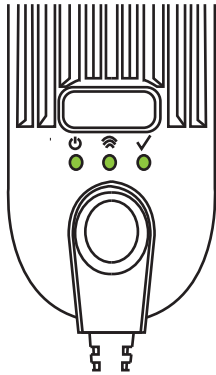


Topside does not need to be charged.

[ Intentionally blank ]

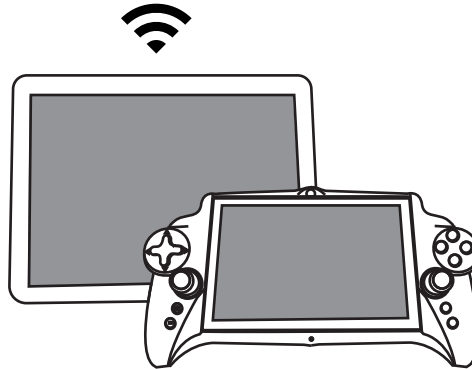
# Quick-start

Refer to “dive procedures” on pgs. 3-4 before diving your Trident.



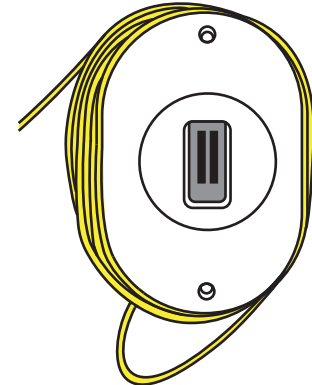
Wait about a minute for all three status lights located on the topside.

## ③ Connect controller device



**\*Turn off Bluetooth and mobile data for best performance.**

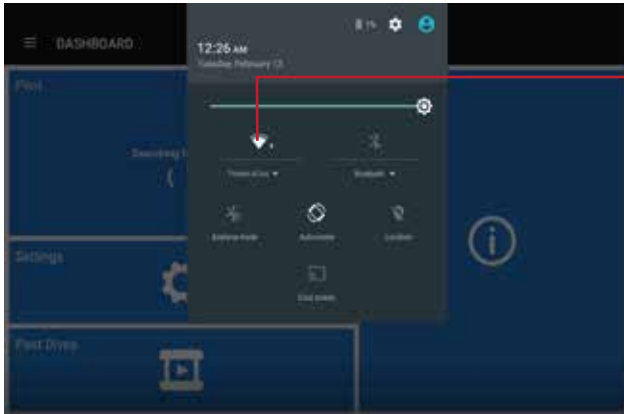
Access WiFi settings on your device and connect to topside.



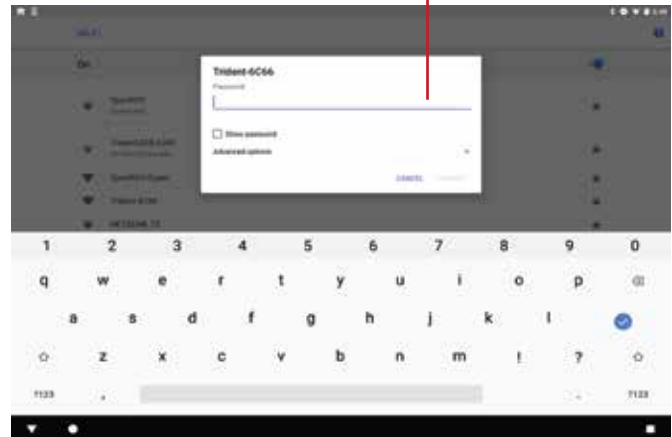
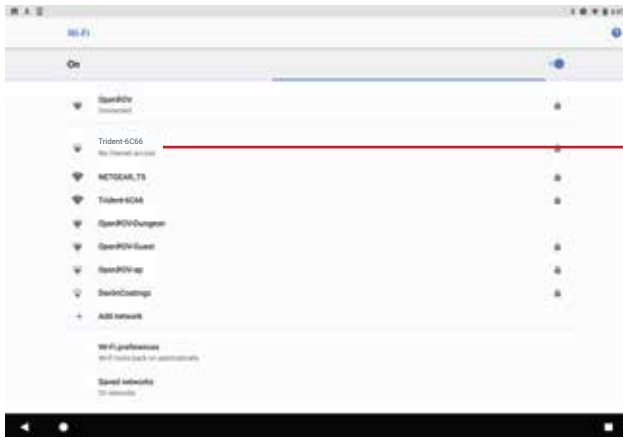
Flip topside / tether reel over to find your:

SSID: Trident-XX-XX  
PASSWORD: XXXXXXXX  
(Case sensitive)

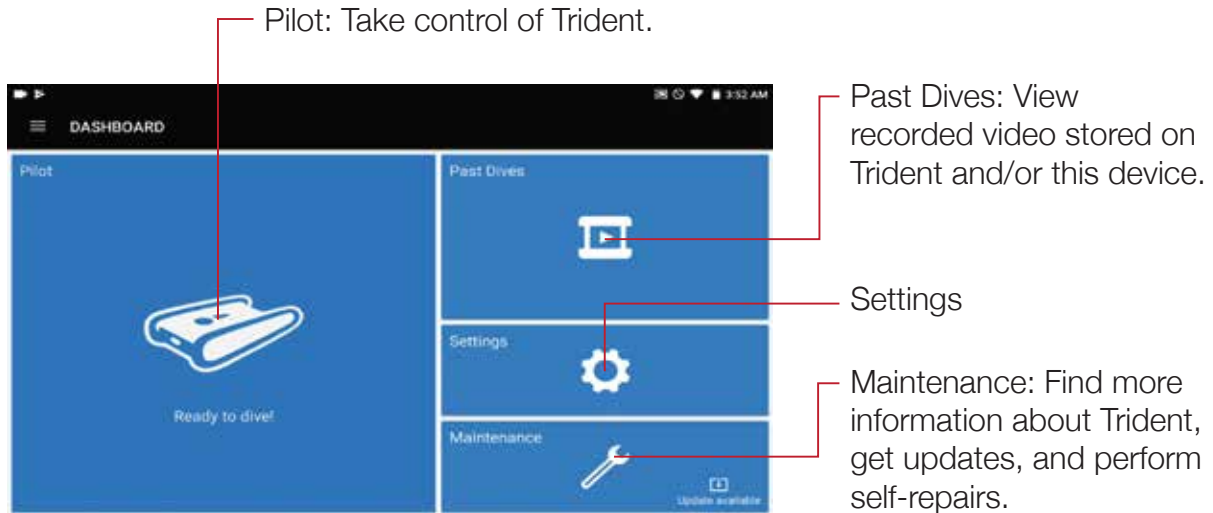
# Connect Controller to Trident



1. Access the Android WiFi settings by swiping down from the top of the screen twice. This might be slightly different depending on the device you are using.
2. From the drop down menu, select the topside SSID ("Trident-XXXX") which can be found on the back of the topside / tether reel.
3. Enter the password located on the back of the topside / tether reel.



# Dashboard screen



# Past dives screen

1080p High-Quality (HQ) videos that are saved on Trident's on-board memory.

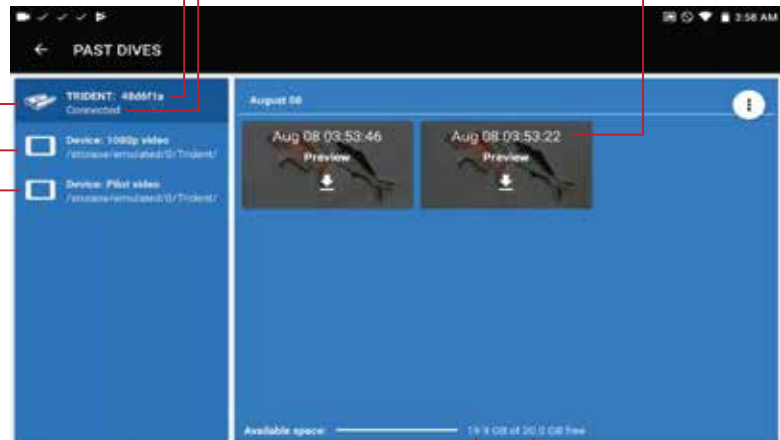
1080p HQ videos that have been downloaded to this device from Trident.

720p pilot videos that are saved directly to this device.

Trident serial number

Trident connection status

Date and time video was created:  
month day hour:min:sec



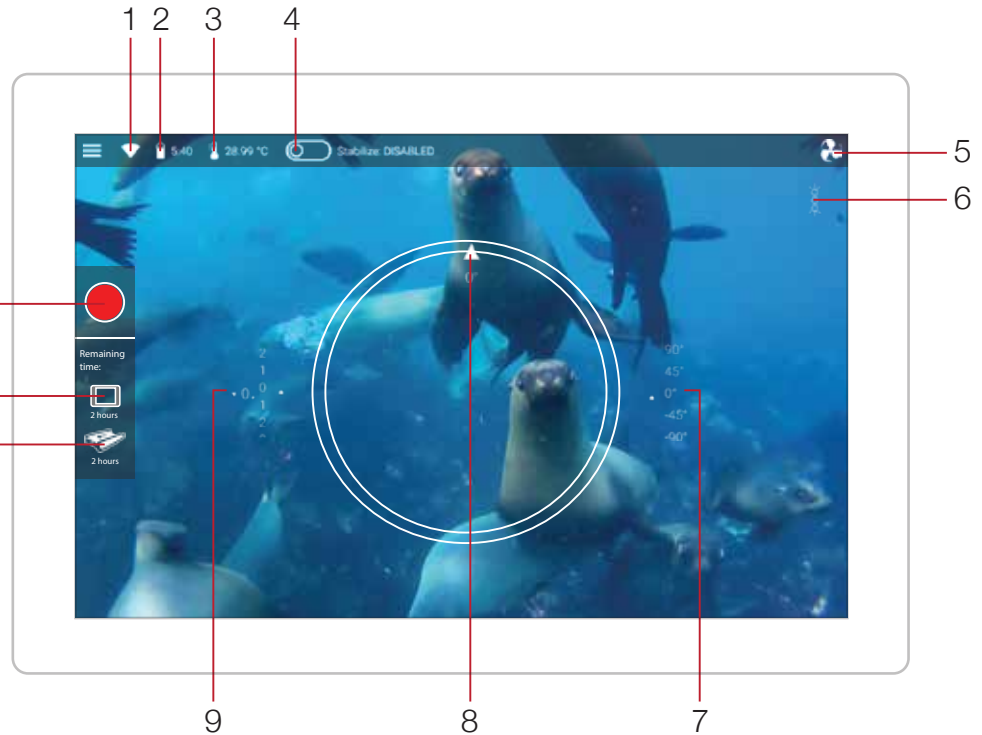
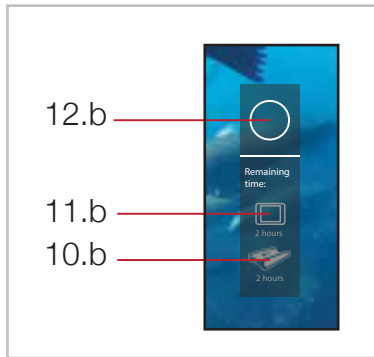
Available Trident storage space.

Trident's storage capacity is 20GB which is about 2.3 hours of 1080p recording space.








# Pilot screen

Recording off:

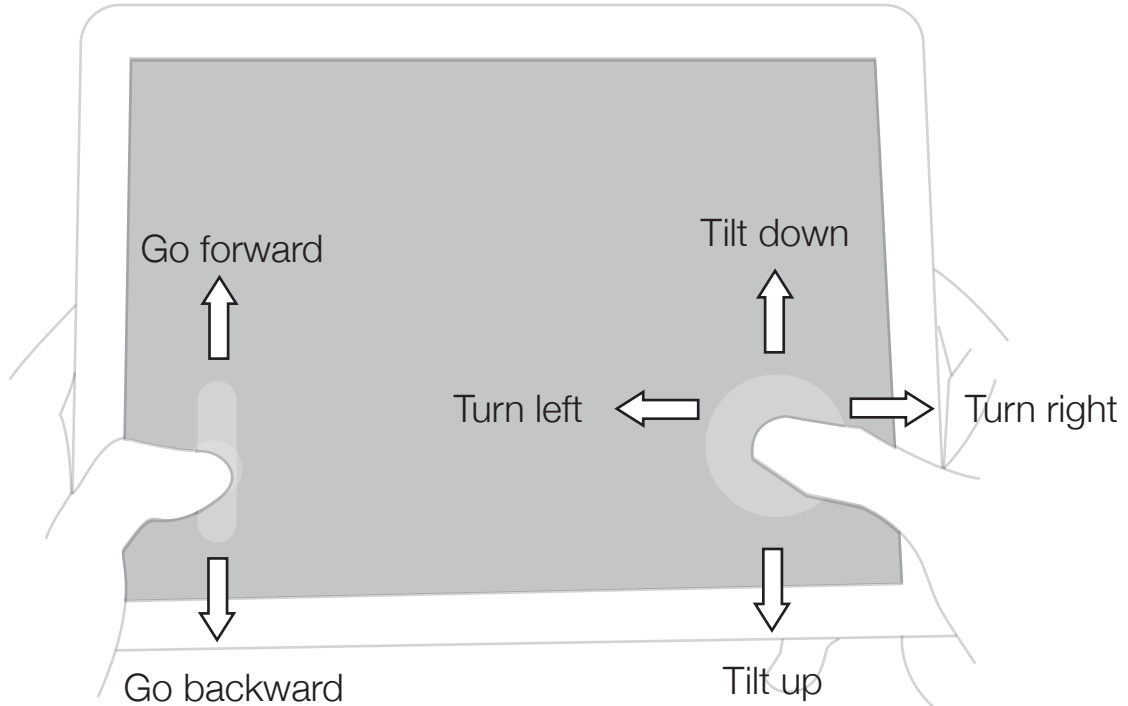


13.

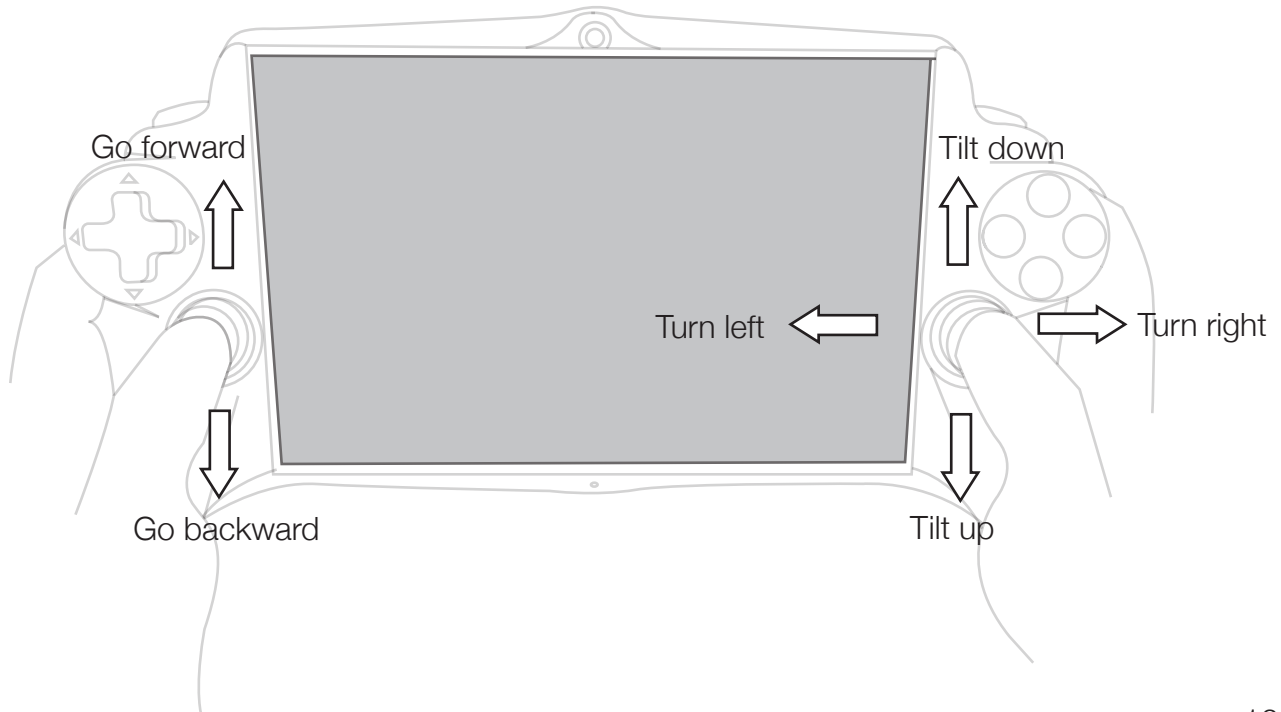
1. WiFi connection: Controller/topside connection status.
2. Trident battery level: hr:min (Switch to % in settings).
3. Water temperature in Celsius (Switch to Fahrenheit in settings).
4. Stabilization: Maintains heading and depth when no control inputs are being made. This system is automatically deactivated at depths shallower than 0.3 meters to prevent the motors from spinning when the vehicle is out of water.
5. Motor speed:  Slow  Medium  Fast
6. Lights:  Off  On
7. Vertical pitch angle
8. Compass heading
9. Depth in meters (switch to feet in settings).
10. 1080p video storage remaining on Trident while recording.
- 10b. Grey icon and text indicate that you are not recording 1080p video to Trident.
11. 720p video storage remaining on your device while recording.
- 11b. Gray icon and text indicates that you are not recording 720p video to your device.
12. Red icon indicates recording mode has been started.
- 12b. Clear icon indicates not currently recording.

# Tablet/phone controls

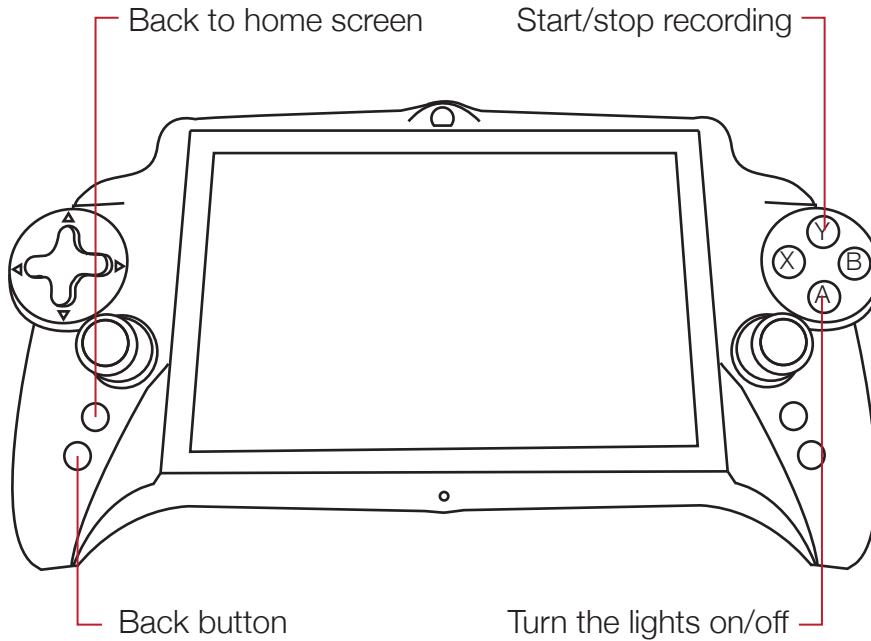
Hold the tablet/phone in landscape mode.  
Put your thumbs anywhere on the screen to make the joysticks appear.



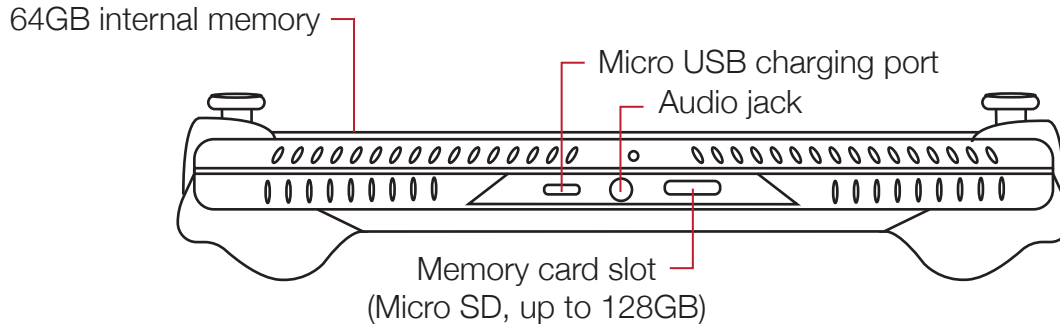
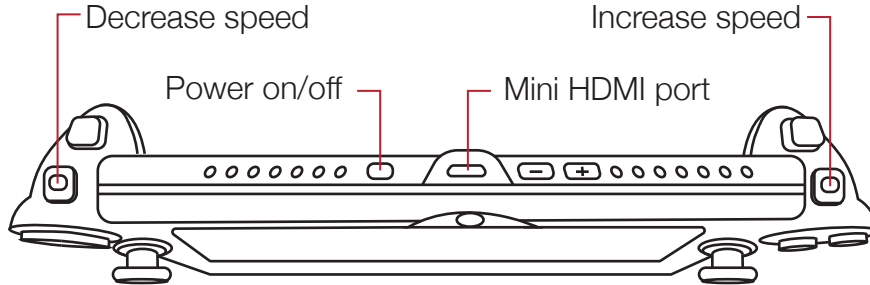
# Game pad controls



# Game pad controls continued



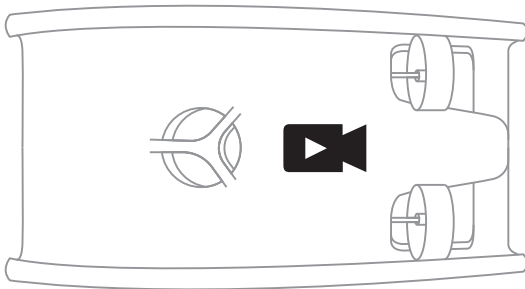
# Game pad controls continued



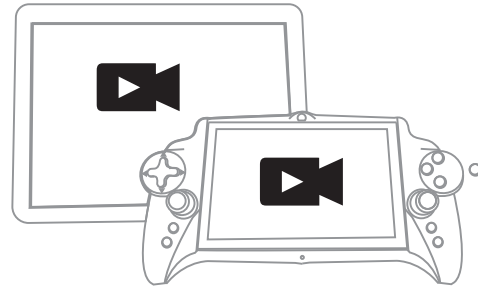
# Record video

(Default)

Recording Mode 1: Both (1080p and 720p)



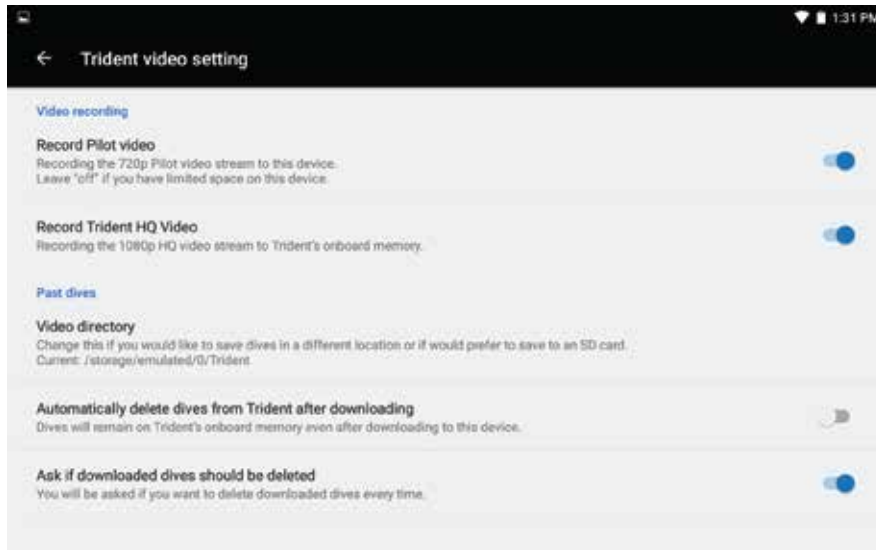
**1080p** video recording  
directly on Trident.



**720p** pilot video recording  
directly on device.

# Recording configurations

(Default) Recording Mode 1: Both (1080p and 720p)



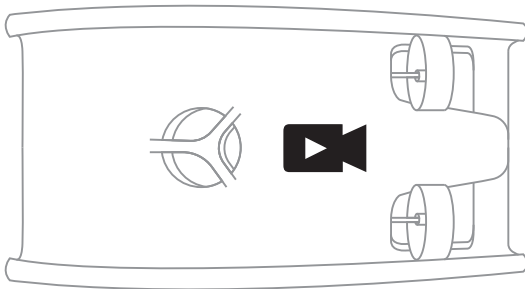
This configuration will record both 1080p “High-Quality (HQ)” video directly to Trident’s on-board memory **and** will record the 720p pilot video to your device simultaneously.

This is useful if you want a backup version of your dive video stored on your device.

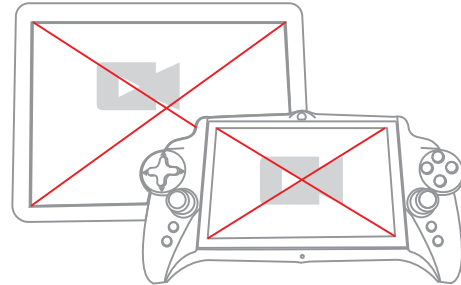


# Record video

## Recording Mode 2: Just Trident (1080p)



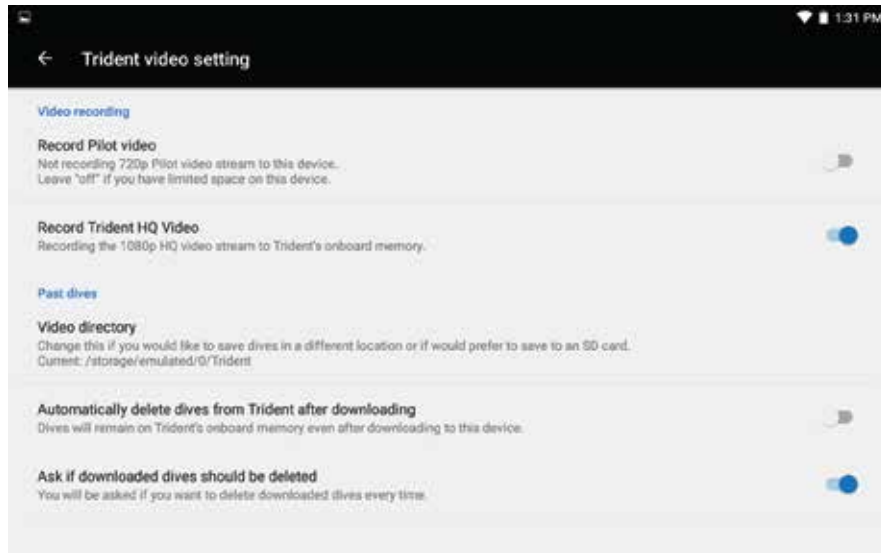
**1080p** video recording  
directly on Trident.



720p pilot video  
not recording directly  
on device.

# Recording configurations

(Default) Recording Mode 2: Just Trident (1080p)

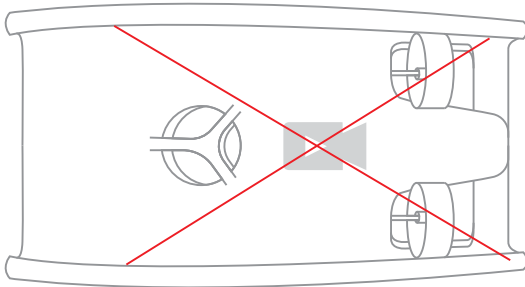


This configuration will record the 1080p “High-Quality (HQ)” video directly to the Trident’s on-board memory. You will view the 720 pilot video on your device but it won’t be saved to it.

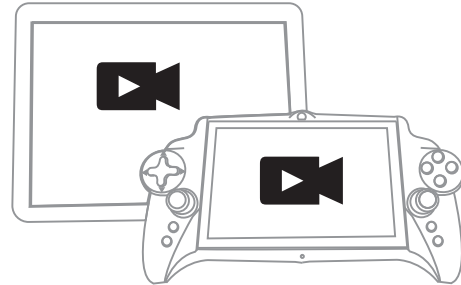
Use this configuration when you want to save space on your device which is especially important if you are using a smart-phone with limited storage.

# Record video

## Recording Mode 3: Just device (720p)



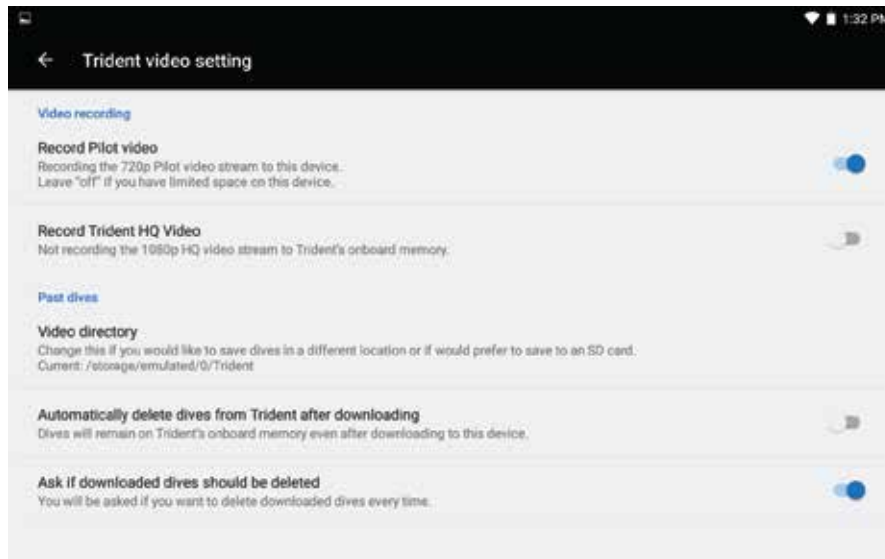
1080p video is not directly recording on Trident.



**720p** pilot video is recording directly on device.

# Recording configurations

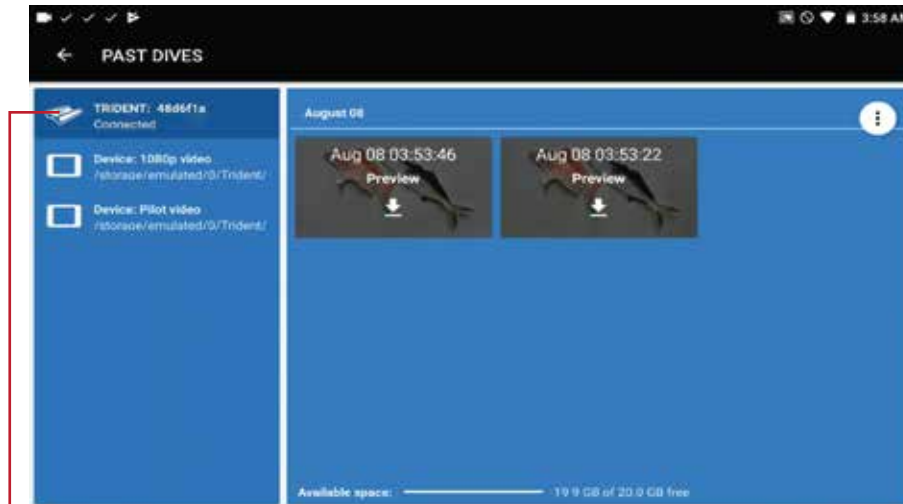
(Default) Recording Mode 3: Just device (720p)



This configuration will record the 720p “pilot” video that you are seeing on your device directly to your device. This is the configuration that all standard Tridents had prior to the 1.5.1 update.

This can be useful if your Trident’s on-board memory is full.

# Preview recorded 1080p video on Trident

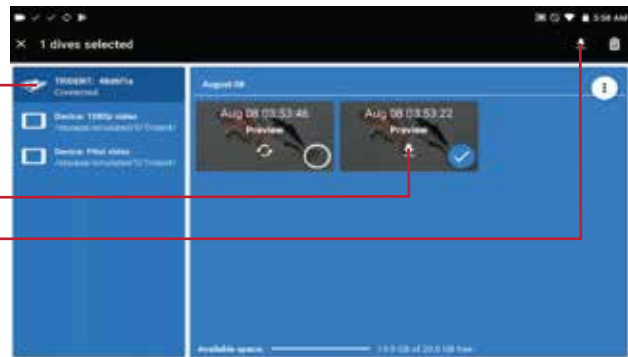


1. Connect Trident to device.
2. Press "Past Dives" from OpenROV "Dashboard" screen.
3. Press the "Trident" icon.
4. To preview a 1080p recording before downloading press anywhere on the video image.

(Download 1080p video to the device for higher quality playback)

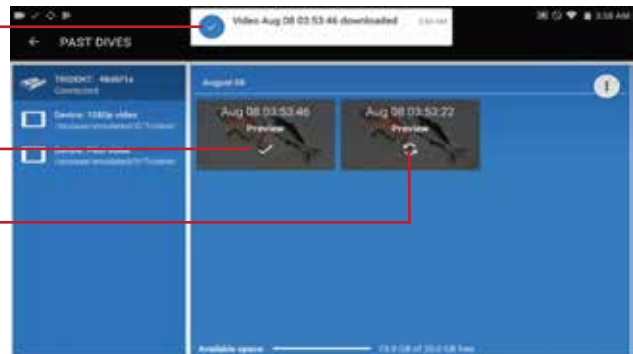
# Download 1080p video to device

1. Connect Trident to device.
2. Press “Past Dives” from OpenROV “Dashboard”.
3. Press the “Trident” icon.
4. Press the download icon on each desired video. You can long press to select multiple videos, the download icon is then in top right corner.

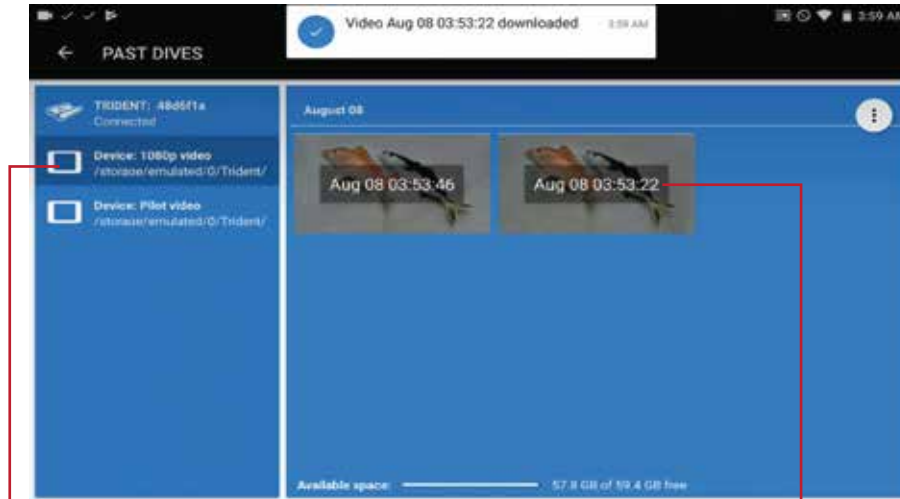


Download complete

Download in progress

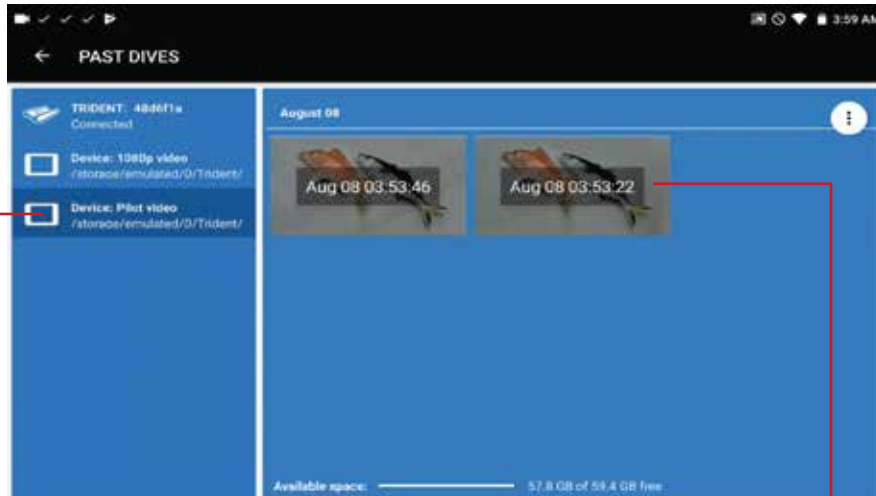


# View downloaded 1080p video on device



1. Press "Past Dives" from OpenROV "Dashboard" screen.
2. Press the Device: 1080p video" icon.
4. To view a 1080p recording press anywhere on the video image.

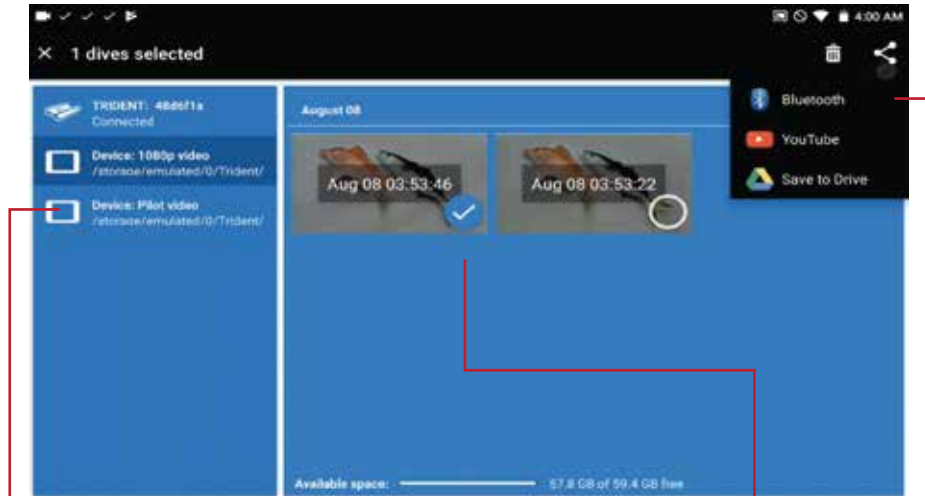
# View recorded 720p pilot video on device



1. Press "Past Dives" from OpenROV "Dashboard" screen.
2. Press the "Device: Pilot video" icon.
3. To view a 720p pilot recording press anywhere on the video image.



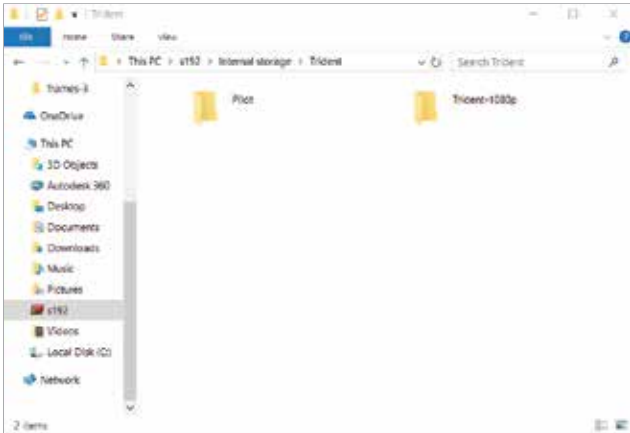
# Share recorded video to cloud storage



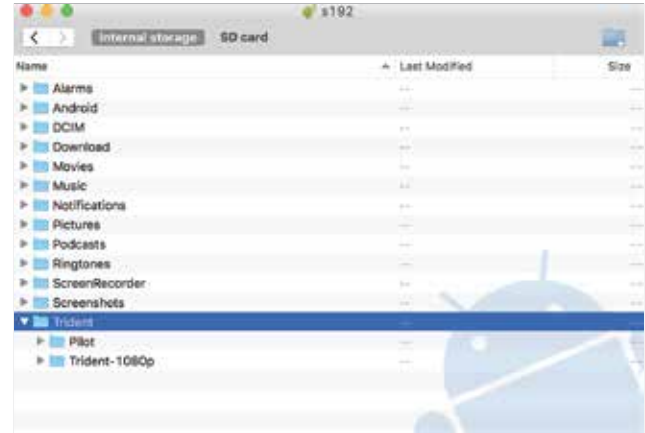
1. Press “Past Dives” from OpenROV “Dashboard”.
2. Press the “Device: 1080p video” icon.
4. Long press the video you would like to share.
5. Press the Share icon in the top right corner.
6. Share via email, Google Drive, etc.

# Export video via computer connection

## Windows



## Mac



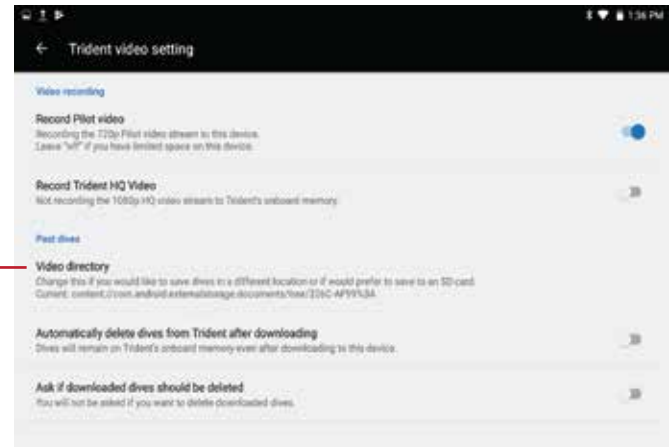
1. Connect Android device via USB cable to Mac or Windows computer. For Mac download the Android File Transfer app to your computer via the Android website.
2. Go to file explorer and drag your videos to desired storage location. Your videos will be located in the path below unless manually changed in the directory.

720p pilot video location: "Device name"> Internal storage > Trident > Pilot

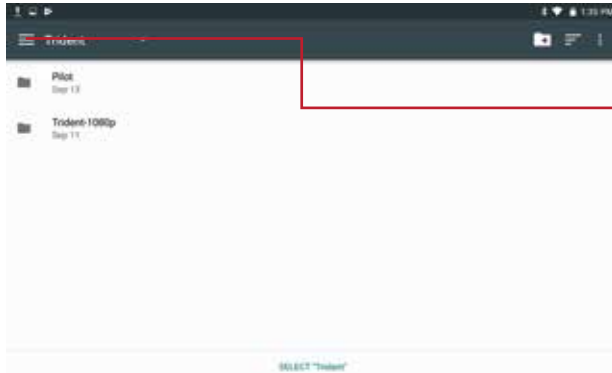
1080p video location: "Device name"> Internal storage > Trident > Trident-1080p

# Record to device (controller) SD card

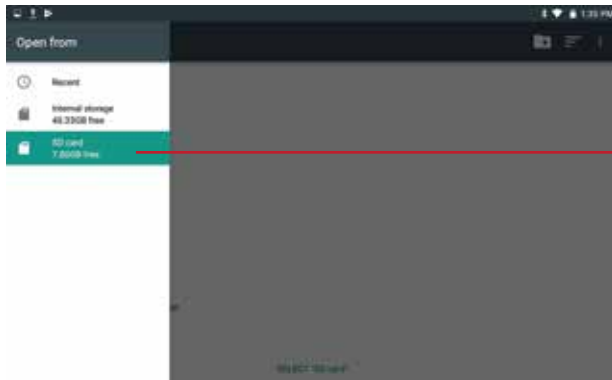
1. Insert SD card to your device before dive.
2. Launch OpenROV app go to:  
Settings > Trident video settings
3. Press video directory



# Recording to device (controller) SD card



4. Press the hamburger menu bar.
5. Press "SD card"
6. Press "SELECT 'SD card'"





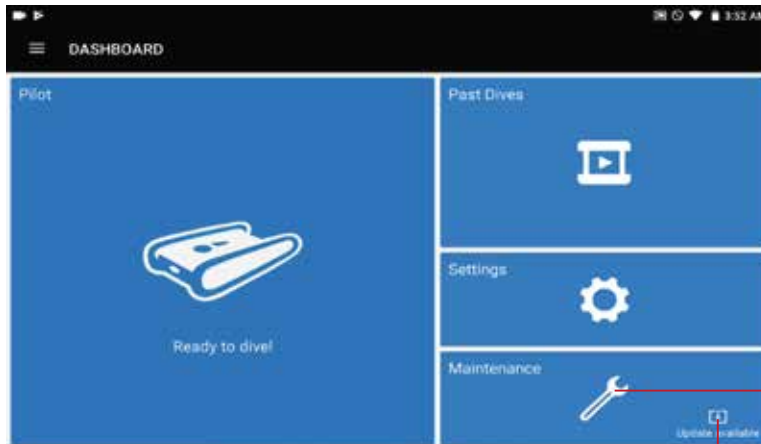
## Check for app updates

New features, bug-fixes, and optimizations are released often. Make sure to keep the OpenROV Cockpit app up-to-date. Remember to regularly connect your device to the internet to check for updates.

If you have enabled auto-updates your device will periodically check when an internet connection is present.

You can check manually by opening Google Play and navigating to the OpenROV Cockpit app page.

## Check for Trident software updates



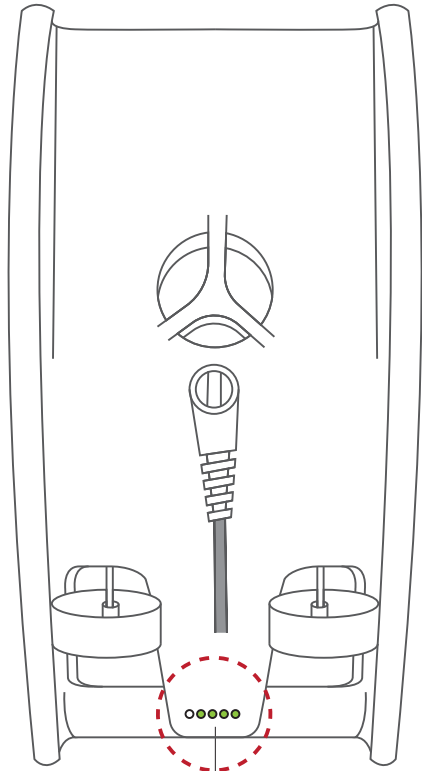
Trident software update available

Trident has on-board software that also needs to be kept up-to-date.

You can do so by going to the "Maintenance" screen in the OpenROV Cockpit app and pressing "Check for updates."

The latest version of the app will be needed for the latest Trident software update.

# Tail board LED indicators



If the charging connector is not tightly screwed into Trident the battery will slowly drain.



Never run Trident until the battery dies as it is hard on the battery and you may corrupt your video files.



Always disconnect the charger from Trident first, then from the wall. Do not unplug the charger from the wall while still connected to Trident, otherwise the battery will slowly drain.

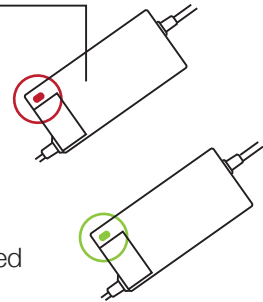


\*After about 3 hours Trident will be fully charged.

Battery charger

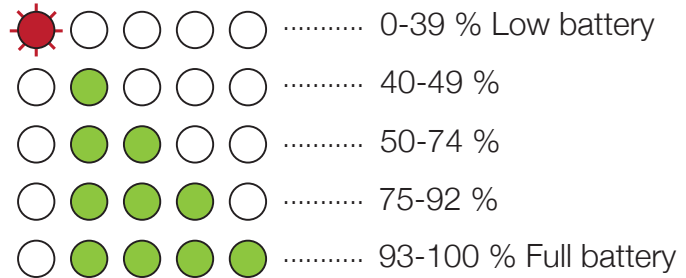
Red charger light = Trident connected

Green charger light = Trident not connected

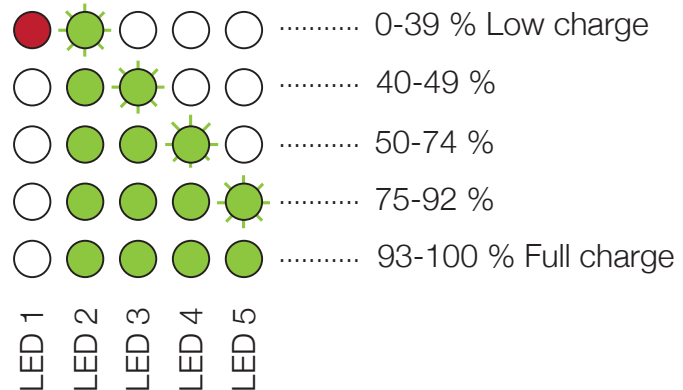


# Tail board LED indicators

## Discharging battery level indicators ( While Trident is in use )



## Charging battery level indicators





# Maintenance & care

**\*The tether connector port should always be dry and clean when the tether is not connected.**

## **After care**

1. Leave the tether connected to protect the contacts for now.
2. Immediately after a dive, thoroughly rinse and/or submerge Trident in freshwater. The tether, tether reel, and topside (with USB cover in place) can all be rinsed in this way.
3. Remove the rear motor covers with a #1 Phillips screwdriver and flush both motors with freshwater. Make sure there is no foreign material in this area such as seaweed or sand.
4. Flush the vertical motor. No cover removal is necessary.
5. Towel dry Trident and remove the tether to turn off Trident and carefully dry the tether connector. Make sure the connector and connector port stay dry and free from sand and grit.
6. Allow any excess water to drain completely by holding Trident vertical with the camera facing up.
7. Make sure Trident is completely dry before storage. If you must travel immediately, make sure to open the carrying case and motor covers as soon as you arrive at your destination to allow everything to dry adequately.

## **General care**

8. To clean the body of Trident use mild detergents (dish soap works) diluted in freshwater and a soft, clean cloth.
9. Dielectric grease can be used to protect the tether connector pins.
10. WD-40 or other hydrophobic spray can be used to remove particles and moisture from inside the moving parts of the motors.

## **Trident contains Li-ion batteries.**

### **WARNING**

**Li-ion batteries are volatile and can be very dangerous if mishandled. Failure to read and follow the below instructions may result in fire, personal injury and damage to property if charged, stored or used improperly.**

### **General safety**

Charge and operate Trident between ambient temperatures of 0 and 40 degrees C (32 and 104 degrees F).

If you suspect damage to Trident, do not use it.

Do not place any conductive or magnetic materials or liquids on or near the tether connector on Trident.

### **Charging**

Allow 30 minutes after operating Trident before placing it on charge.

Always have a fire extinguisher nearby for emergency use.

Always charge Trident in an isolated area, away from other flammable materials such as wooden furniture or carpet.

Use a charger specifically made for Trident.

Never charge Trident unattended.

### **Storage and transport**

Store Trident between 0 and 45 degrees C (32 and 113 degrees F) for best performance and longest life.

Do not expose Trident to direct sunlight or heat for extended periods.

When transporting or temporarily storing Trident, make sure not to exceed the temperature range listed above.

When storing Trident for a long period of time, make sure to charge Trident fully.

### **Flying on an airplane**

Trident's total rated capacity is 95 Wh. The battery packs are UN 38.3 certified.

Always check with your airline prior to flight for the latest rules and regulations.

### **Shipping**

Trident is classified as UN 3481, and for shipping purposes must follow PI967 section II.

If you have any questions, please contact us: [support@openrov.com](mailto:support@openrov.com)

Last Updated: April 5, 2018

# Regulatory information

## **FCC Compliance Notice**

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Trident Contains FCC ID: 2ABCB-RPI32

Topside Contains Transmitter Module FCC ID:Z9W-RMB

