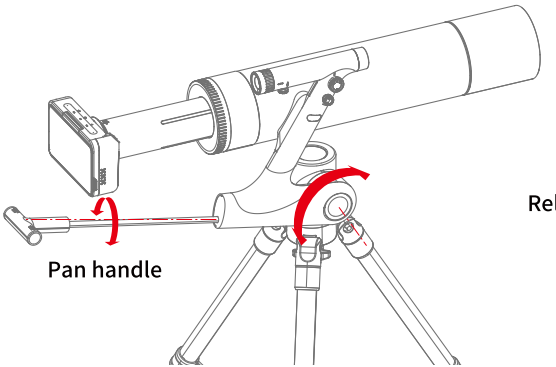
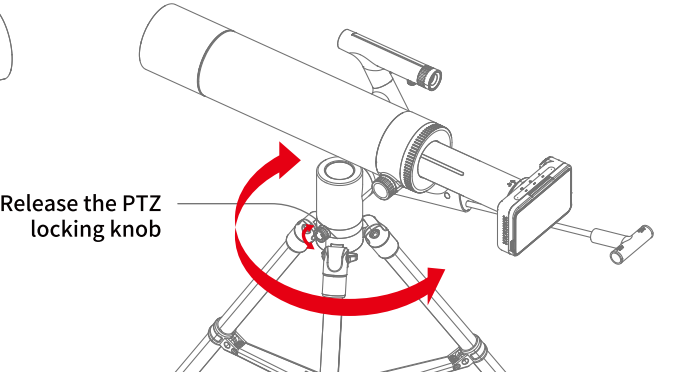
## Pan Tilt Adjustment

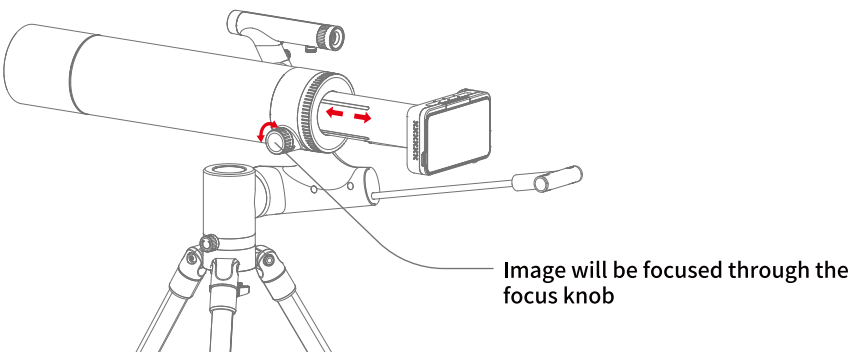



## Horizontal Turning Adjustment




Release the PTZ locking knob and pan handle to confirm the target observed

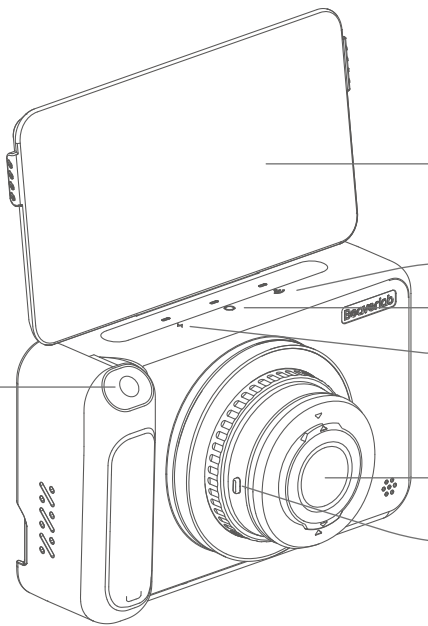
## Focus on the image with the focal length adjustment knob to make the image clearer



## Use of DS1:

The product is equipped with a DS1.
Wireless and wired observations are supported (the user shall be provided with OTG adapter, however wired connection is not supported by Apple system).

## Description of DS1 Composition



HD touch screen

Wireless indicator

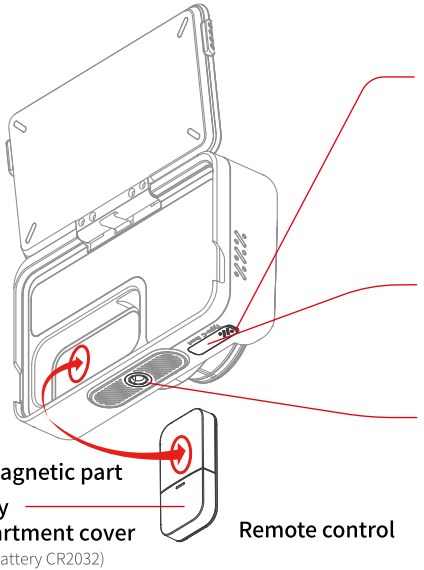
Shutter indicator

Charging indicator

ON/OFF &
Shutter keys
ON/OFF: Press and hold for 2s for ON or OFF.
Shutter: Short press to take photo or video.

Dust cap

TW2 smart astronomical telescope mount




**Type-C interface**

Charging: When the DS1 is at low power, the power indicator flashes. At this point, please connect the adapter through the Type-C charging cable, and the power indicator light is kept ON when fully charged.
Image and video transmission: Connect to computer, and start the software to watch the relevant image and video in real time.

**Reset button**

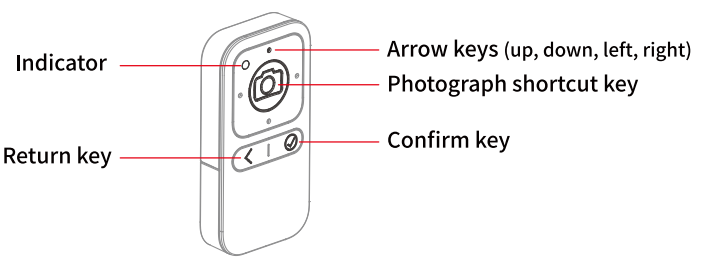
Press and hold the Reset button to reset. After the successful reset, the network enters the pending connection state, and each indicator flashes once.

**1/4in adapter**

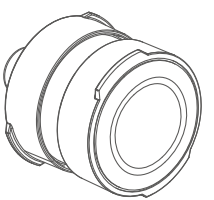
A tripod that can adapt to various 1/4in interfaces

(JB/T8249.2-2016/ISO1222: 2010)

## Remote Control



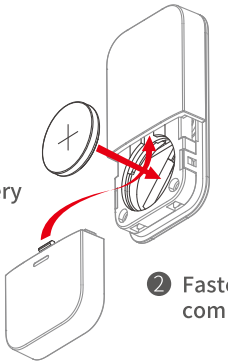

## Magnification Reduction Lens



0.5x Focal Reduce

## Replace the Remote Control Battery

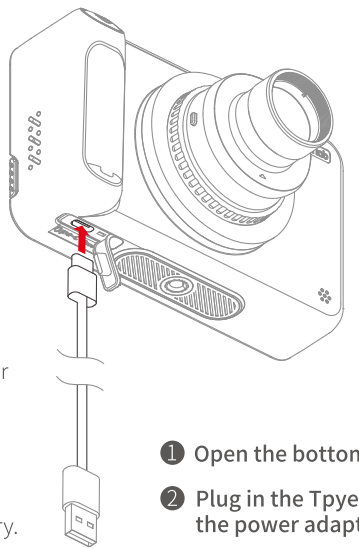
★ **Reminder:** Note the orientation of the positive and negative terminals of the battery, with the positive terminal facing outward.



❶ Install button battery

❷ Fasten the battery compartment cover

## Charging of the DS1



★ Reminder

The DS1 can be charged using a charger adapted for 5V ⎓ 2A.

Do not charge for more than 12 hours to avoid affecting the cycle life of battery.

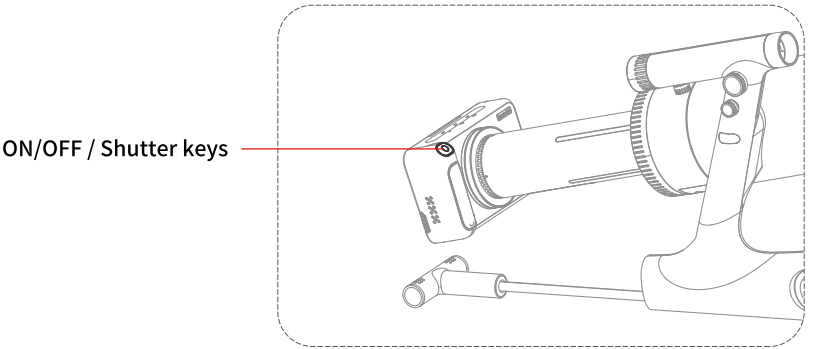
❶ Open the bottom rubber plug.

❷ Plug in the Tpye-C charging cable with the power adapter for charging.

# Use of DS1

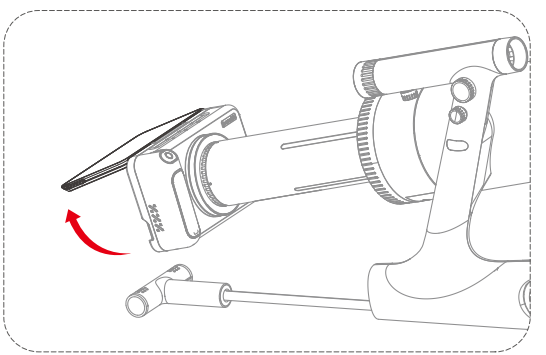
### ON/OFF

Press and hold the power key for 2s for ON/OFF.

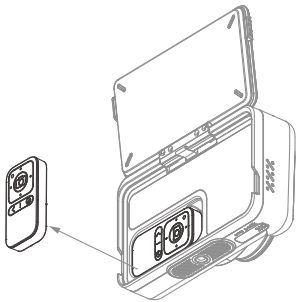



### Shooting

Flip the touch screen at the right viewing angle.

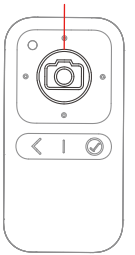


❶ Remove the remote control.



❷ Switch on the remote control: Press and hold the ON/OFF & shutter keys for 2s, the remote control is switched on/off. When the remote control is switched on, it automatically connects the DS1. (*Note that the remote control is close to the Smart Telescope camera)

ON/OFF & Shutter keys



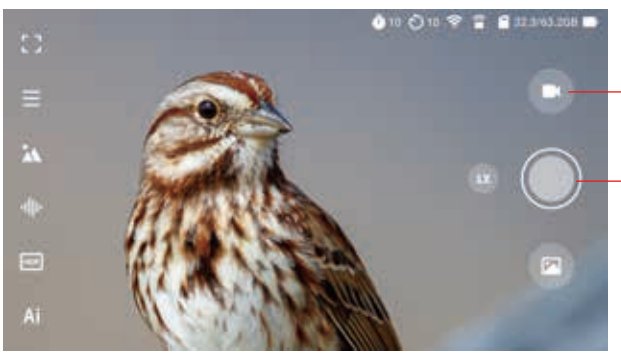
Remote control shooting operation:
After the remote control is automatically and successfully connected to the DS1, click the shutter button to realize the shooting work. The arrow keys can be used to switch between photo and video modes, real-time image zoom operation, enter the photo album view.

- **DS1:**

  Short press the ON/OF and shutter keys for shooting directly.

- **Touch screen operation:**

  Click the shooting and video keys in the screen to achieve the photographing work.

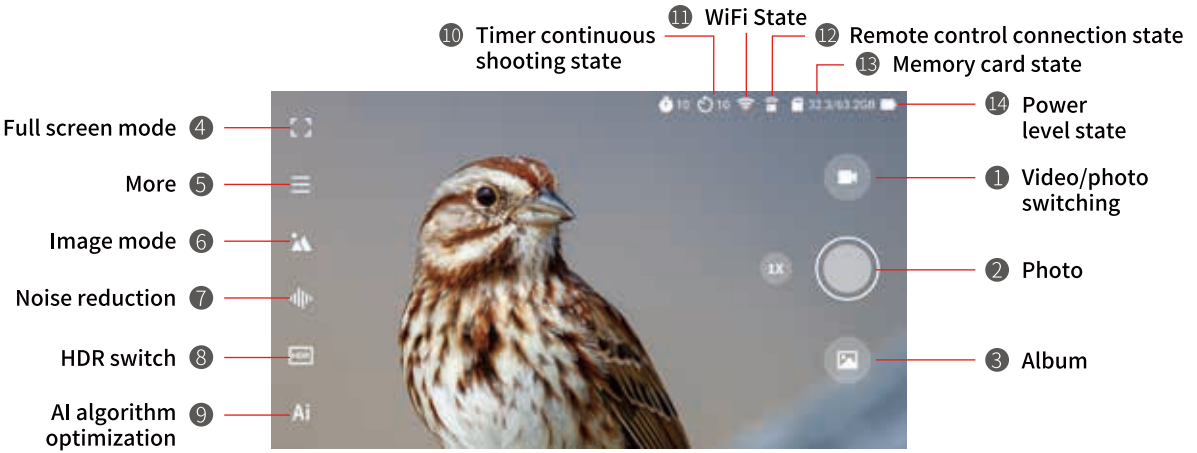



（Touch Screen Interface）

## Auto Shutdown

In the WiFi connection or wired mode connection state, it enters the standby state if there is no operation for 3min. Short press the power key/photo key to wake up the machine. If not woken up for more than 15min, it is automatically switched off.

# Description of Main Functions of the Screen




(Touch Screen Interface)

❶ **Video/photo switching:** Switch the photo/video functions;

❷ **Photo:**Short press to start taking photos or videos, and save the files to the album when finished. When there is not enough memory, it reminds the user that the memory card is full and terminates the taking of photos and videos, and saves the images and videos that have been taken;

❸ **Album:**Picture and video classification, viewing and video preview, and deletion functions;

❹ **Full screen mode:**In full-screen mode, elements that affect observation such as the settings menu bar on the left and the status bar on the top are hidden, and the exit full-screen icon and photo (video) icon are retained in the interface;

❺ More：

**Lens switching:** There are three lens modes switching: wide angle, medium focus, telephoto;

**Grid line:** Three modes totally: Off/ Squre grid/ Cross grid;

**Continuous shooting setting：**To set the number of consecutive shots, simply set the framing frame, press the shutter, and the camera will take consecutive shots at the set number of shots;

**timed photographing：**To set a timer to take a picture, simply set the framing screen, press the shutter, and the camera will automatically take the picture at the end of the selected time countdown;

**WiFi switch：**On the WiFi switch;

❻ **Image mode：**manual, landscape, moon, sports, cloudy, night, starry night mode;

❼ **Noise reduction：**Noise reduction switch is used for fusion elimination of noise;

❽ **HDR switch：**Highly dynamic image mode switch suppresses image over-burst and over-darkness, thus retaining richer image details;

❾ **AI algorithm optimization：**Wide Dynamic Range (WDR), Motion-Compensated Temporal Filtering (MCTF), Defogging (DF);

❿ **Timer continuous shooting state：**Displays the currently selected number of continuous shots;

⓫ **WiFi State：**Displays whether the currently connected WiFi status is normal or disconnected;

⓬ **Remote control connection state：**After the DS1 and the remote control are switched on, they will be automatically connected to the remote control (note the battery level). At this point, the connection status of the remote control can be viewed at the DS1. If the status of the remote control is shown as disconnected, please check the power level of the remote control in time, or the remote control shall be as close as possible to the DS1;

⓭ **Memory card state：**Displays the current used capacity and maximum capacity of the memory card;

# Mobile Phone Wireless Connection

**1. APP Download and installation:**

1. The DS1 should be fully charged before use. If the observation time needs to be extended, it can also be equipped with charging devices such as mobile charging bank to charge in time during the observation.
2. Scan the QR code below to download the APP (search "Beaver Point" in App store or Google Play to download the APP)

Android

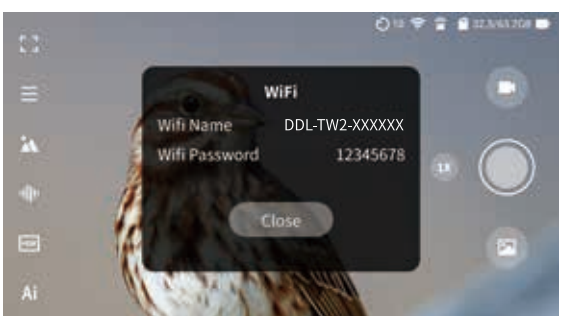
Scan here to download APP

iOS

**2. Equipment connection**

Connect WiFi of Smart Telescope Finder TW2 (More → WiFi Switch →Connect WiFi of Smart Telescope Finder TW2)

WiFi name: DDL-TW2-XXXXXX; Password: 12345678



Start the APP → select the corresponding Smart Telescope Finder TW2 → corresponding WiFi name (e.g. DDL-TW2-XXXXXX) and connect it → click to enter if connected.

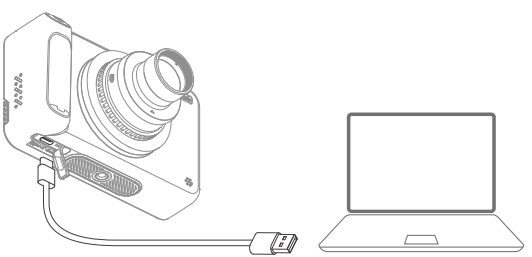
**WiFi name: DDL-TW2-XXXXXX。**
**WiFi password: 12345678**
**Open the home page and click the Start Observation button to enter the interface of real-time transmission.**



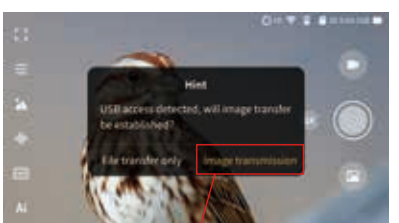
## PC Wired Connection

❶ Connect PC to the DS1 via USB cable.

❷ After the software detects the USB port, click the "Image Transmission" button in the pop-up window.

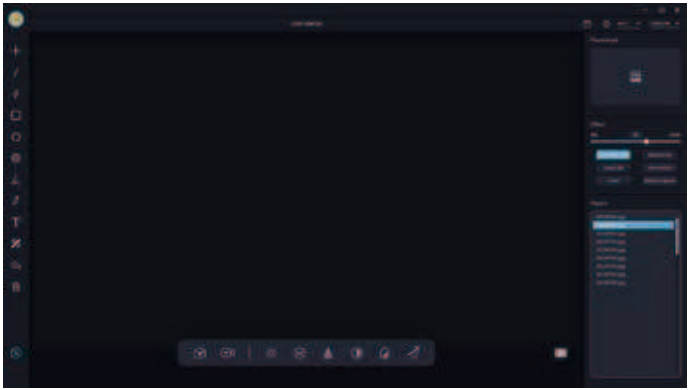


Connect PC Via USB Cable




Click the "Image Transmission" Button

❸ Open the Windows software and select the device to observe.



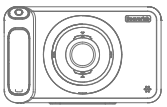
Computer users can download the Windows version of the software to our official website (www.beaverlabtech.com)

## Astronomical Observation

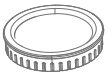
**Moon observation guideline**

1.Connect: On a clear and moonlit night, check the device and ensure that it is fully charged, and connect the device via your mobile phone for real-time image transmission.
2.Search the moon: Turn on the switch knob of the red dot finderscope and locate the red dot, use the finderscope to locate the moon and overlap the red dot with the centre of the moon target by turning the PTZ.
3.Watch the moon: Adjust the focus knob until the image is clear.
If you need to observe other stars, you can find them manually through astrolabe type software or configured star-finding disc.
**The astronomical telescope is equipped with a compass. Combined with the complimentary Planisphere, the current sky chart can be confirmed, and the specific stars or nebulae can be searched to observe with reference to the sky chart.**
For details on how to use it, please refer to the instructions of the Planisphere.

# 05 Accessories and Tools

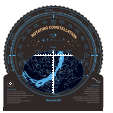


DS1

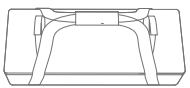


Solar Filter

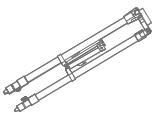
Data Cable



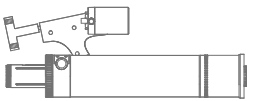
Planisphere



Carry Bag



Tripod



Optical Tube

Finder Scope

Remote Control


Manual

0.5x Focal Reduce

# 06 Faults and Troubleshooting Method

| Problem | Cause | Treatment Methods |
|---|---|---|
| Finderscope red dot is OFF | Low battery power | Replace the battery |
| Failure to charge equipment | 1.Charging port is not plugged firmly.<br>2.Power is not connected<br>3.Device fault. | 1.Re-plug the interface<br>2.Turn on the power. |
| The equipment cannot work normally | 1.Smart Telescope camera Power On Lack of Power.<br>2.The Smart Telescope camera is short-circuited due to water drenching.<br>3.The Smart Telescope camera is subject to system crashed. | 1.Instant charging.<br>2.Need Maintenance.<br>3.Press the Reset button once. |
| Unclear image quality | 1.Fogging of the lens due to radical changes in ambient temperature.<br>2.Image collector lens filter is dirty. | 1.Wait for the temperature to stabilize Do not use it until the mist is removed.<br>2.Wipe the filter with a cotton swab moistened with alcohol. |
| The shell is broken and cracked due to drop and impact | Damage due to external use | Need Maintenance |
| The product cannot be witched off or the button is not working | Device Crash | Press the Reset button once |

The Smart Telescope is a precision optical device with a high degree of specialization. It is recommended to do the following work during normal use to ensure that your telescope is in top condition:

1. When not using this product, please cover the lens cap on the lens to protect the lens and prevent dust, If there is dust on the telescope, it is recommended to use lens brush or use air blower to remove the dust.
2. Whenever possible, do not clean the optical lens, fine dust on the lens has little effect on the overall imaging.
3. Keep the telescope in a cool and ventilated place.
Warning: Do not use chemical lens cleaning solution, which may damage optical parts.

# 7 Trademark and Legal Statements

“Beaverlab” is a trademark applied or registered by Beaverlabtech Limited Liability Company in the worldwide, and used on this product. Without the permission of the trademark owner, no person or organization shall use the above trademark logo on unapproved goods without authorization.
This manual is produced by Beaverlabtech limited liability company and has a copyright. No organization or individual may reproduce or distribute all or any part of this manual without permission.Due to the continuous improvement of product functions, design changes and other reasons, this manual may not match the product you purchased. Please refer to the actual product.

## FCC WARNING

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
NOTE: 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 to correct the interference by one or more of the following measures:
-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and 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.
The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction

### Battery Precautions

1.The product uses rechargeable batteries.
2. Rechargeable batteries must be charged under adult supervision.
3. Please use the recommended charger.
4. Power supply electronics shall not short circuit

## 08 Global Parameters

| Brand | Beaverlab |
|---|---|
| Product Name | Smart Telescope（Finder TW2） |
| Product Model | DDL-TW2 |
| Product Color | Black |
| Aperture | F/6.1 |
| Focal length | 500mm |
| Type | Refracting Telescope |
| **Image collector** | |
| Battery capacity | 6000mAh |
| Charger | DC5V ⎓ 2A |
| Charging port | Type-C |

By scanning you will be able to
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## Smart Telescope

**Product Name:** Smart Telescope（Finder TW2）

**Product Model:** DDL-TW2

**Product Net Weight:** About 3.8kg

**Product Size:** 1300x1140x1030mm

**Input Voltage:** DC5V ⎓ 2A

**Operating Temperature:** -10°C ~45°C

**FCC ID:** 2A6VM-DDL-TW2

**Brand Company:** Beaverlabtech Limited Liability Company

**Website:** www.beaverlabtech.com

**E-mail:** support@beaverlabtech.com

**INS:** https://www.instagram.com/beaverlabtech/

**YouTube:** https://www.youtube.com/channel/UCU-prXLBQS-DdJa-iEJ9Njg

**Twitter:** https://twitter.com/BEAVERLABOS

**Facebook:** https://www.facebook.com/people/BEAVERLAB-Us/100093065594303/