HADES-3Z/4Z

Inspection Robot
User Guide

June 26, 2023

The Hades-3Z/4Z robot is designed
to go under different types of crawlspaces and
to send a live view to the controller with the ability to
take snapshots and video recordings. This document outlines
instructions on how to operate and look after your Hades inspection robot.

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SAFETY AND CARE

- Some environments may cause a malfunction of the Hades robot
  - Do not immerse it in water
  - Do not expose it to open flame or keep it under direct sunlight for prolonged periods
- Do not open Hades – this should only be done by Techmatics or under their instruction
- When turning on Hades
  - Do not touch the joysticks on the controller until Hades has finished booting up
  - Do not store Hades with the batteries flat (as it will damage the cells in the battery)
- All charging of Hades should be done in a clean and dry area away from any liquids

- If there is smoke or fire coming from Hades, power it off immediately.
- Make sure the antennas are connected correctly

- Always keep Hades in the case provided while traveling
- Check the battery percentage after every use
- Hades can be plugged in to charge and left on for a few months at a time
- Charge Hades after every use

HERELINK CONTROLLER

1 **Left Joystick**
Sideways: Manual focus
Up/Down: Vertical camera tilt

2 **Right Joystick**
Forward/backward movement and turning

3 **Home Button**
Tap to exit apps and go to the home screen

4 **Power Button**
Hold down to power-on the controller (or show the power menu when it is on)

5 **Top Right Button**
Short press: Switches on/off white light

6 **A Button**
Change zoom mode (min, medium, max)

7 **B Button**
Switches on/off the infrared filter

8 **C Button**
4Z model: Change camera view (normal, split screen, thermal)

9 **Wheel**
Turn and hold: Changes camera focus

10 **Device Mount**
For attaching a lanyard

11 **Micro USB Port**
For charging and transferring files

12 **Micro SD Card Slot**
For transferring files or extra storage

Zoom: Min   Battery: 73%

HADES ROBOT

1 **Rugged Design**
With a tough body and custom tyres for travelling on different surfaces

2 **HD Camera With Optical Zoom**
Provides a clear view from the front of the robot

3 **4Z Model: Thermal Camera**
Allows heat signatures to be identified

4 **Tilting Camera Bracket**
Both cameras are able to be rotated (approximately ±340°)

5 **Infrared and White Lights**
Allows the robot to be used both day and night

- The battery capacity of Hades will be displayed at the top of the screen on the Herelink controller (Figure 1)

- To turn on Hades, push in the button at the back of the robot (Figure 2). To turn off Hades, push the button again.

- To charge Hades, connect the power supply provided to the charging port at the rear (Figure 2). A flashing green light indicates Hades is charging. When it stops flashing green it means the battery is fully charged.

Battery: 73%

Zoom: Min   Battery: 73%

Figure 1

Power button   **Charging port**
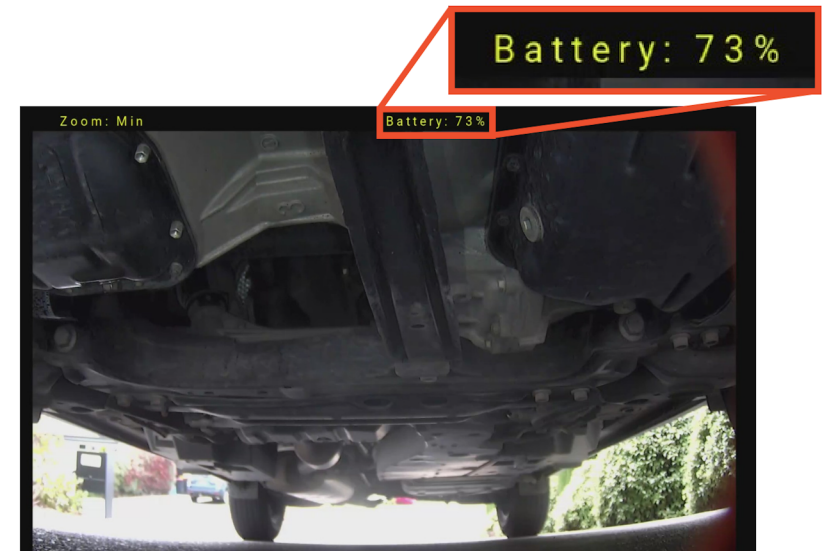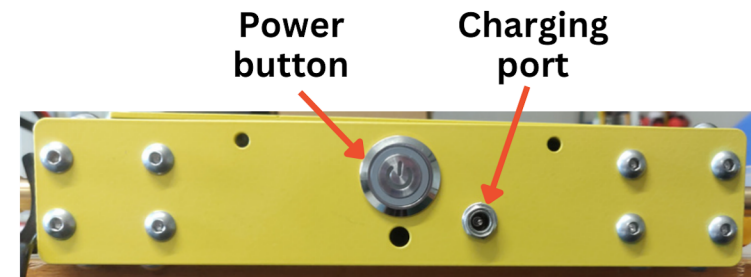
Figure 2

DISPLAYING CAMERA VIEWS

1. Power on the Herelink controller and Hades

2. On the controller open the HereLinkVideo app (Figure 1)

3. A video feed will display

   a. Note that the screen will not show the status bar until Hades has finished booting up (approximately 90s)

   b. Press A to cycle through the zoom modes (Figure 2)

      i. Min

      ii. Medium

      iii. Max

   c. Press B to enable/disable the infrared filter (Figure 2)

   d. **4Z model:** Press C to cycle through the video modes

      i. Normal camera (Figure 3)

      ii. Thermal camera (Figure 4)

      iii. Split screen (Figure 5)

Figure 1

Figure 2

4Z Model: Thermal Camera

- Only the hottest object in the frame will be highlighted as white-hot (Figure 4)

- For example, if you point the camera at a person standing in front of a cold wall, they will be strongly highlighted as white-hot. However, suppose you position the camera to include a hotter object in the frame, such as a hot radiator. In that case, the radiator will be strongly highlighted white-hot and the person will be faintly highlighted as they are no longer the hottest object in the frame.

- For optimal results endeavor to only capture the object of interest in the frame

Infrared Cut Filter

- This filters out infrared (IR) light (Figure 2). For example, if you are out in the sun (which emits a lot of IR light) the filter will remove these frequencies to show a more accurate image.

Figure 3

Figure 4

Figure 5

Restarting the HereLinkVideo App

If the camera views do not load or update after opening the app a restart may be required.

1. Tap the multitasking button (Figure 6)

2. Locate the **HereLinkVideo** app. This may require swiping up or down to locate it.

3. Swipe the app window to the left or right and release (the app should disappear from the list)

4. Press the Home button to return to the apps screen

5. Reopen the **HereLinkVideo** app
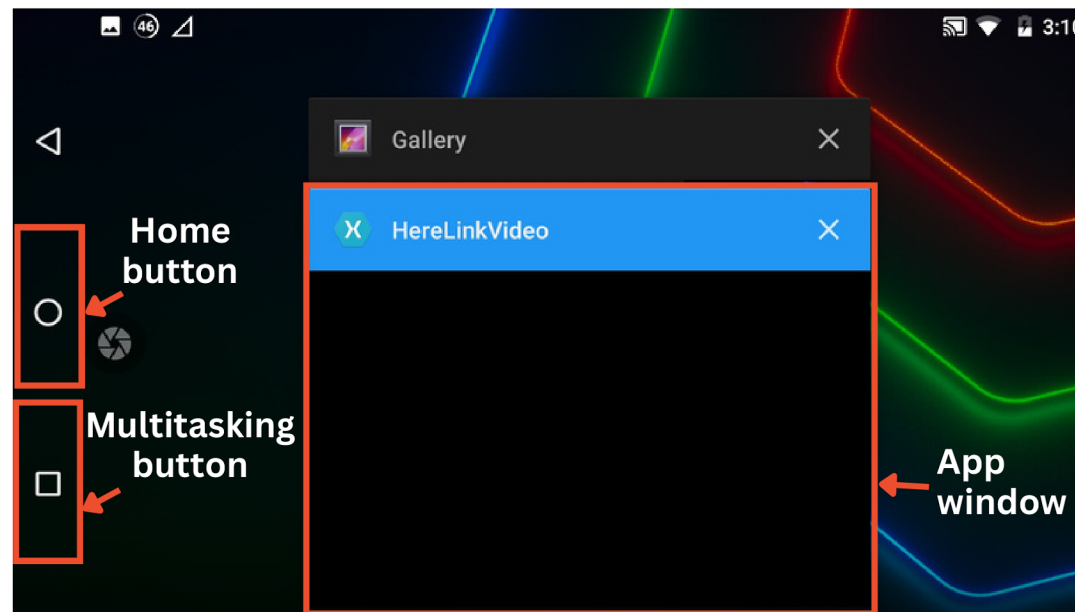
Figure 6

Automatically Opening the HereLinkVideo App When the Herelink is Powered on (Optional)

1. On the home screen tap and hold the **HereLinkVideo** app icon (Figure 1) until a menu shows (Figure 6)

2. Tap the **Enable Launch on Boot** option. This causes the app to open when the device is powered on from a completely off state (which is different from when the device is on but the screen is off).
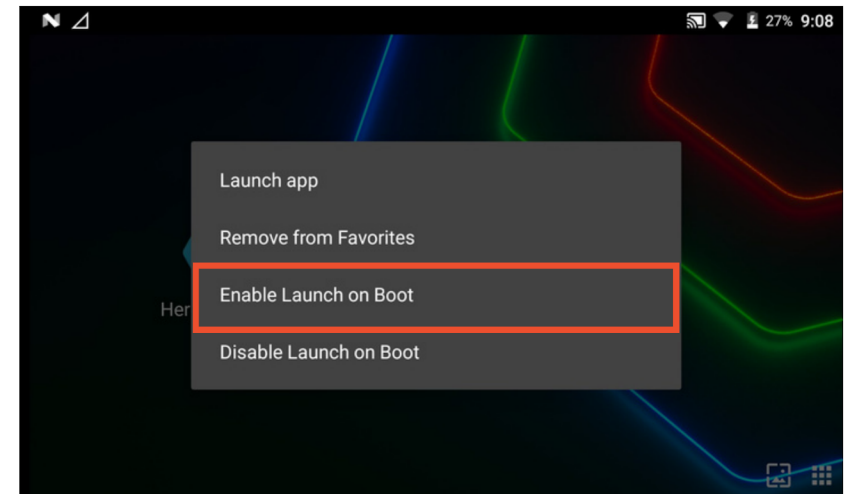
Figure 7

Left Joystick (Camera Tilting)

- Push the joystick forward to move the camera head up
- Pull the joystick back to move the camera head down

Right Joystick (Movement and Turning)

- Use the right joystick to move Hades forwards, backward, or turn on the spot.
- Push the joystick forward to move Hades forward (away from you)
- Pull the joystick back to move Hades back (towards you)
- Push the joystick to the left to turn Hades anticlockwise
- Push the joystick to the right to turn Hades clockwise

Lights

- Press the button on the top right of the controller to switch the white light on and off

1. Double-tap the screenshot button to capture what is on the screen (Figure 1)

2. Or single-tap the screenshot button to immediately crop a screenshot

   a. Drag the rectangle surrounding the image to change its size

   b. When ready, tap the **Save** button at the bottom of the screen.

3. Note that this button can be repositioned on the screen by dragging it

4. To maximize captured detail, take screenshots with a video feed mode that fills the entire screen.

5. Once captured, the screenshot will be available in the gallery app on the controller
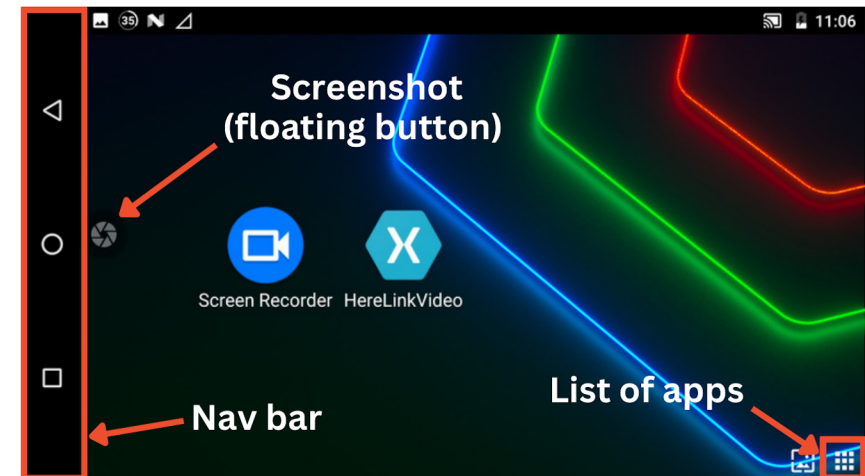
Figure 1

Taking Screenshots That Exclude the Nav Bar (Optional)

1. Open the list of apps (Figure 1)

2. Open the **Screen Master** app (Figure 2)

3. Scroll down (by swiping up) to the **Exclude status bar** menu item and open it (Figure 3)

4. Select the **Exclude nav bar** option (Figure 4)

5. This setting will be saved for all future screenshots
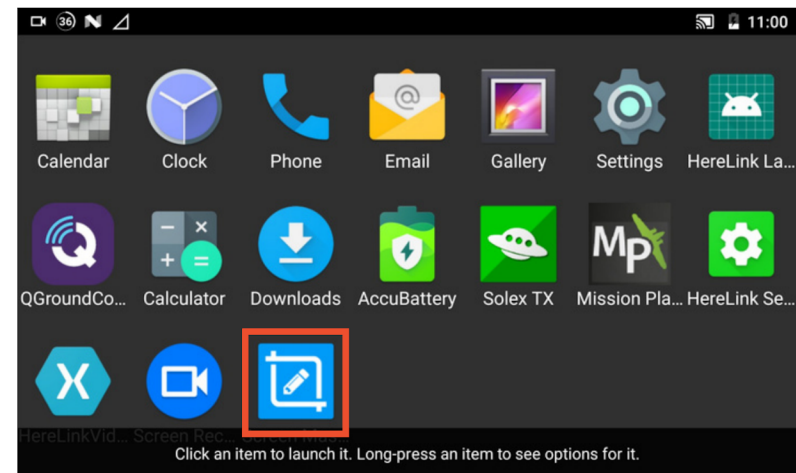
Figure 2
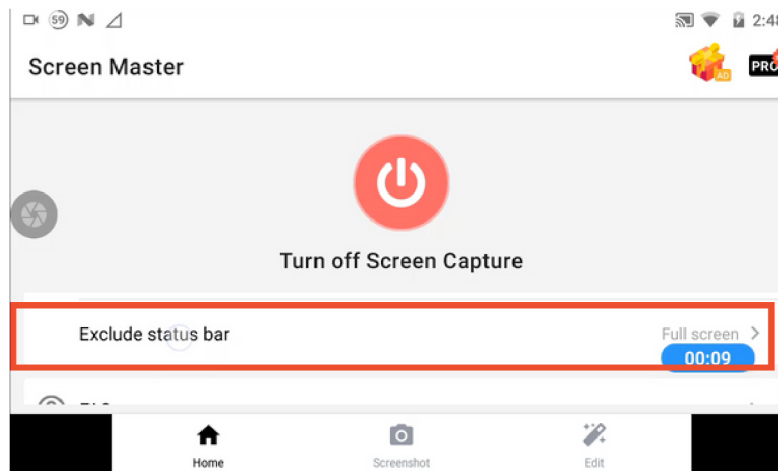
Figure 3
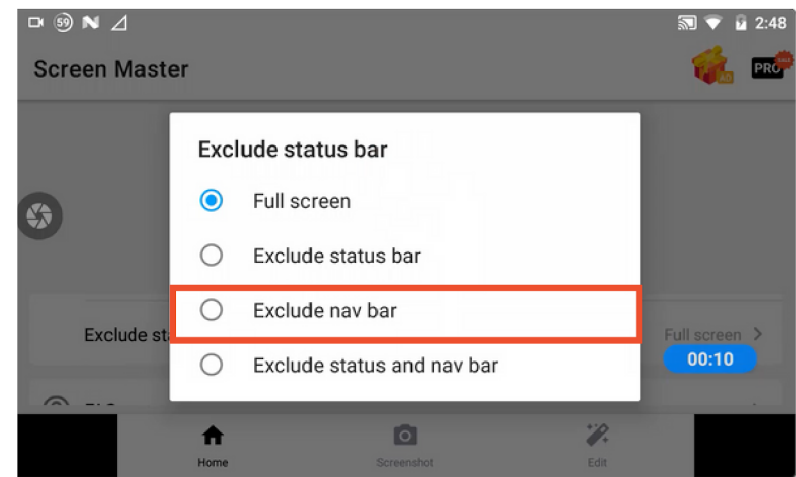
Figure 4

Increasing the Quality of Screenshots (Optional)

1. Open the list of apps (Figure 1)

2. Open the **Screen Master** app (Figure 2)

3. Scroll down the list (by swiping up) until you can see the **Image file quality** menu item and open it (Figure 5)

4. Select the **100** option (Figure 6)

5. This setting will be saved for all future screenshots
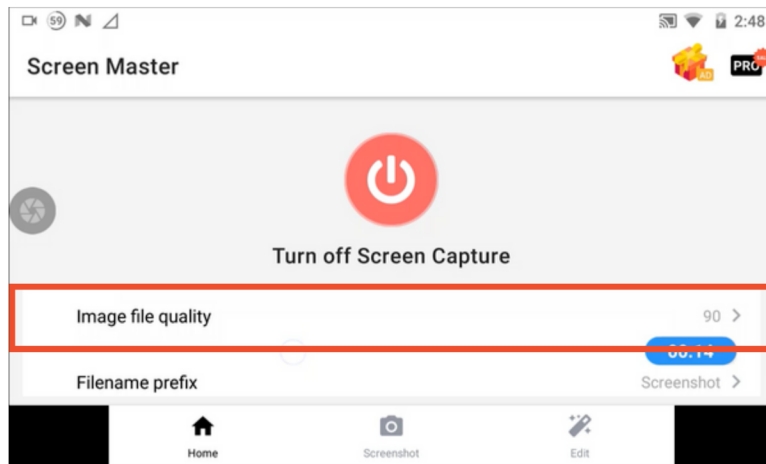
Figure 5
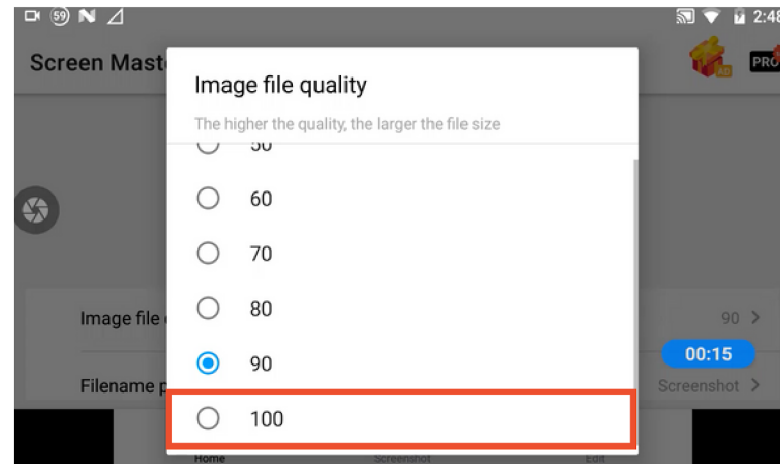
Figure 6

1. Open the **Screen Recorder** app (Figure 1)

2. Once the app has loaded, tap the activate video toolbar button (Figure 2).

3. Drag the toolbar to the top of the screen (press and hold on the white area around the buttons to do this)

4. Optional: To enable/configure the magic button, open settings from the toolbar (Figure 1), tap **Magic Button** in the settings menu (Figure 3), and activate the blue toggle shown in Figure 4. A menu will then show with the magic button configuration. Once set press **OK**.

5. Open the HereLinkVideo app and wait until what you would like to record is showing

6. Press the record video button on the video toolbar. Note that there is a 3-second countdown before the recording starts.

7. To pause, stop or draw on the screen use the magic button. Alternatively, these are available as buttons in the notifications panel accessed by swiping down from the top of the screen (Figure 5).
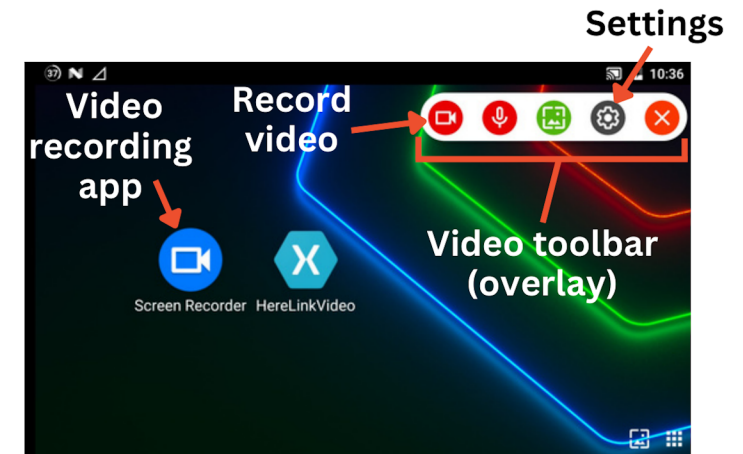
Settings

Video recording app

Record video

Video toolbar (overlay)

Screen Recorder HereLinkVideo

Figure 1

Videos

2022_11_07_03_57_45.mp4
Duration: 00:00:42
Resolution: 1280x720
Size: 18.22 MB

2022_10_19_17_34_54.mp4
Duration: 00:00:00
Resolution: nullxnull
Size: 0.89 MB

2022_10_19_00_53_01.mp4
Duration: 00:00:00

Videos

Activate video toolbar

Figure 2

Figure 3

Figure 4

Notifications panel

Magic button (overlay)
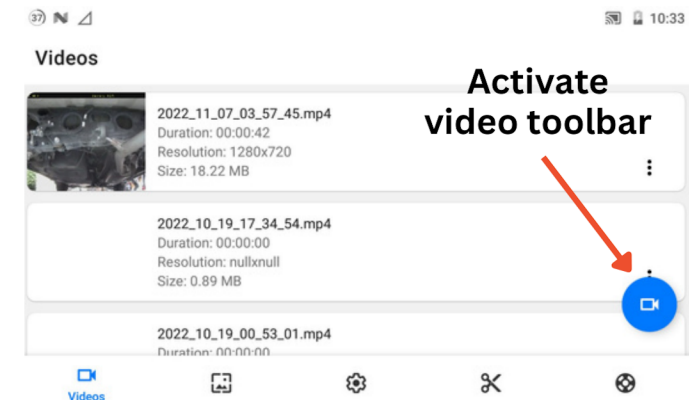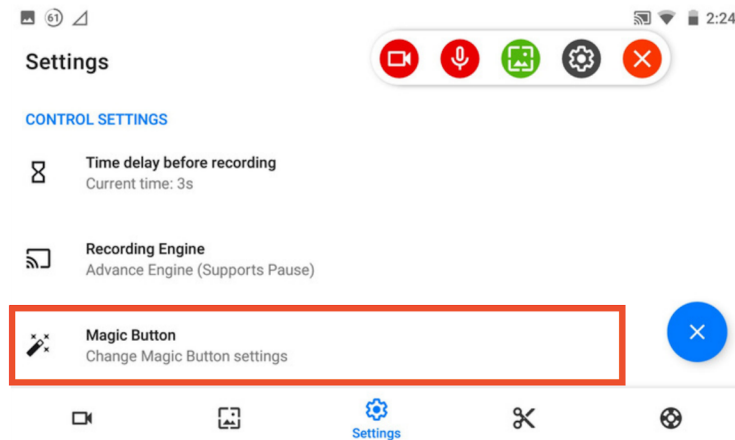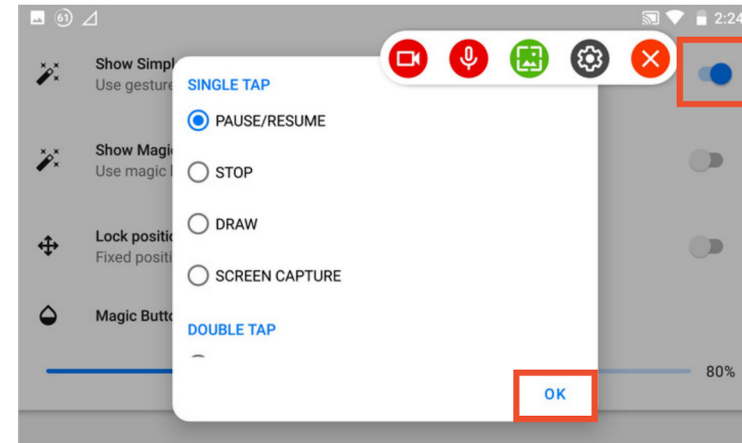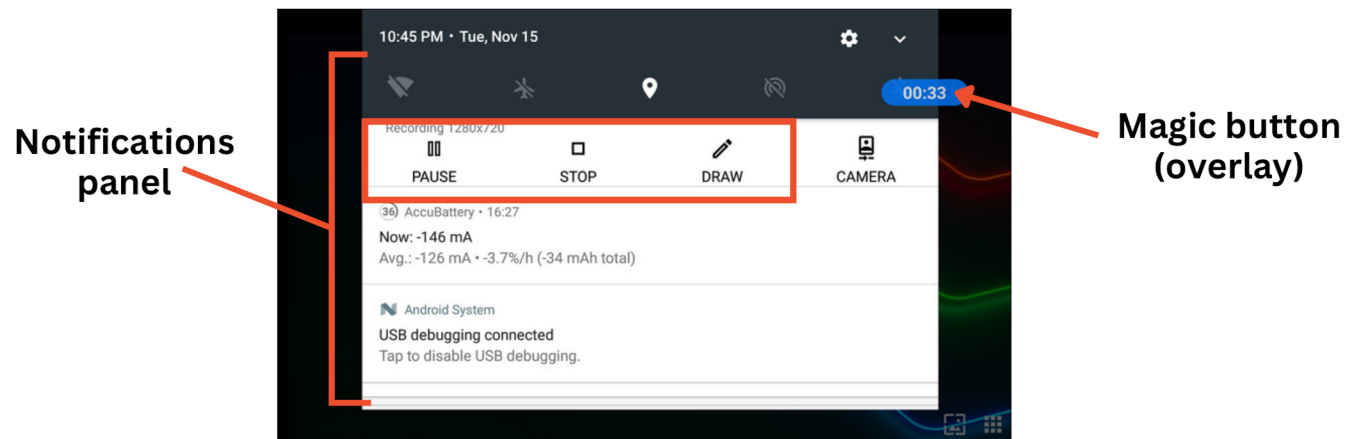
Figure 5

1. If the **Gallery** app is not on the main screen (Figure 1), open the list of apps by pressing the icon in the bottom right corner (Figure 1)

2. Open the **Gallery** app (Figure 2)

3. You are on the **Albums** screen. Select Screen Recorder for videos or Screen Master for pictures (Figure 3).

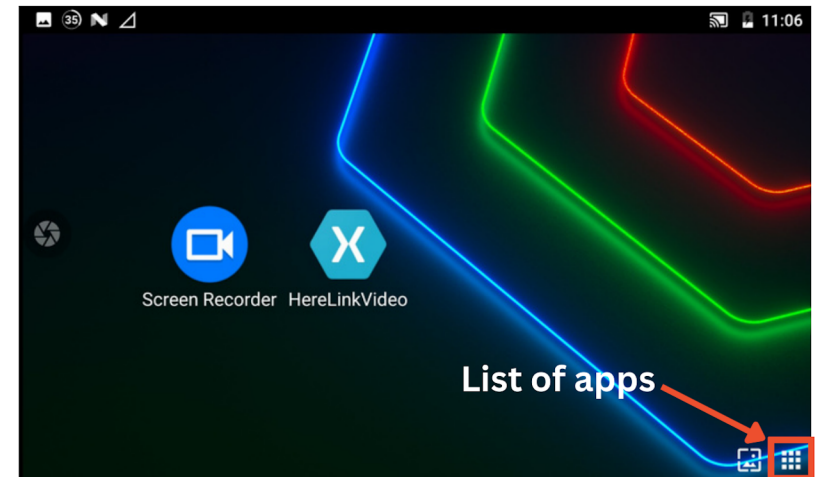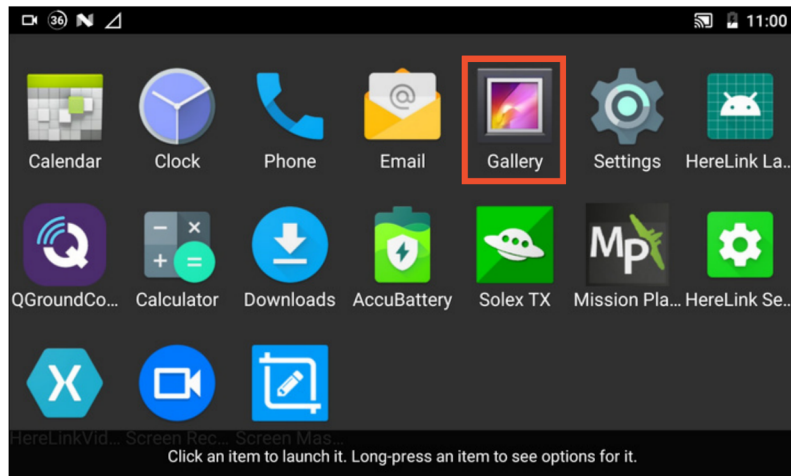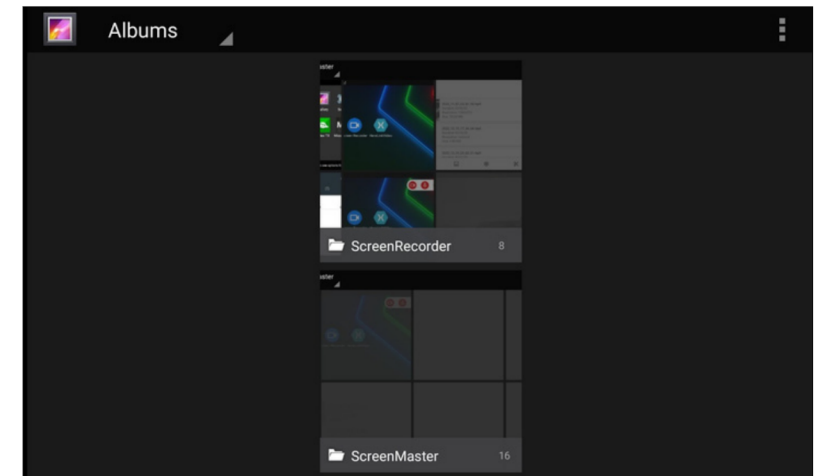4. Here you will be able to navigate and view saved videos or pictures

List of apps

Figure 1

Figure 2

Figure 3

Adding the Gallery app to the Home Screen (Optional)

1. Open the list of apps by tapping the icon in the bottom

   right corner (Figure 1)

2. Tap and hold the **Gallery** app (Figure 2) until a menu

   shows (Figure 4)

3. Tap **Add to Favourites**. This makes the Gallery app

   visible on the home screen (Figure 5).
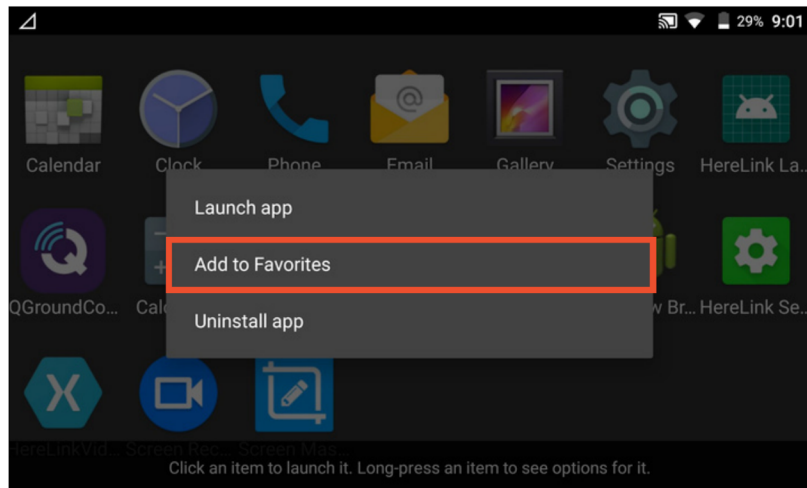
Figure 4
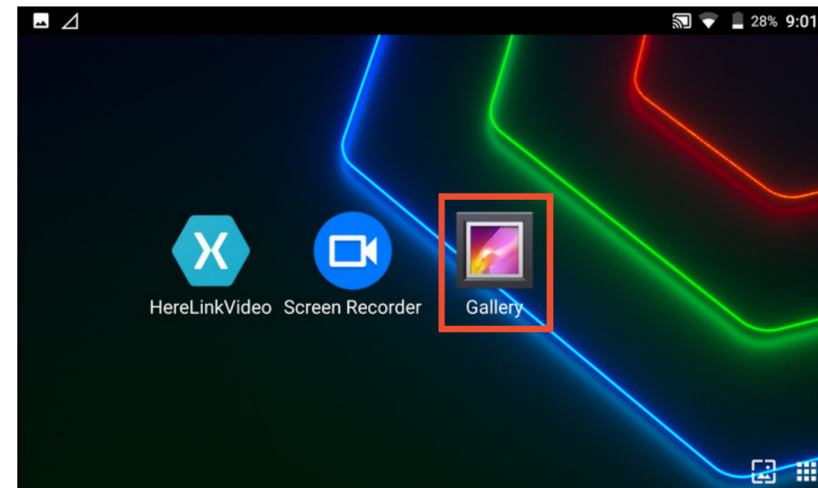
Figure 5

Via USB

1. Connect the USB cable from the Herelink controller to a computer

2. On the Herelink controller, swipe down from the top of the screen to open notifications and find the line with **USB charging this device** (Figure 1).

3. Select this notification

4. Change from **Charge this device** to **Transfer files** (Figure 2). If this doesn't work try the **Transfer photos** option which works in a similar way.

5. To access the files on your computer, you find the instructions for Windows and Mac, respectively, on the following pages.
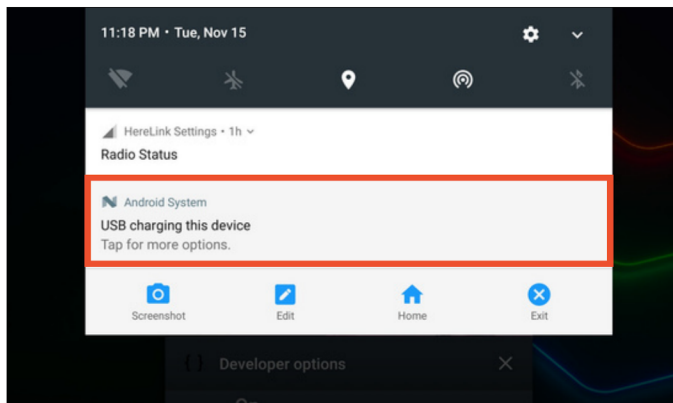
Figure 1
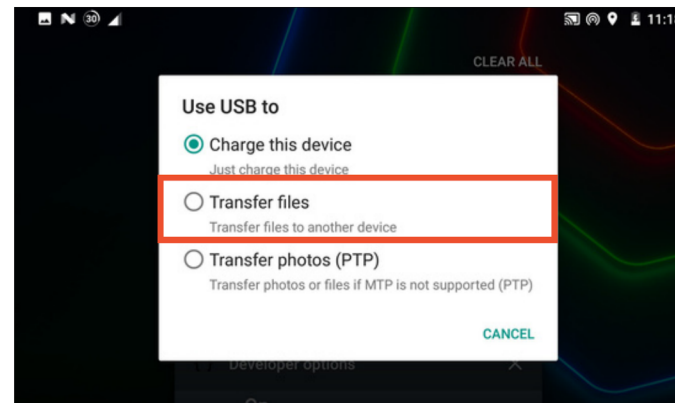
Figure 2

Via USB - Windows

1. Open File Explorer

2. Find the devices connected to your computer by navigating to **This PC** (Figure 3)

3. Note that the Herelink device appears as Optimus (Figure 3)

4. Open Optimus. Then open the folder **Internal Shared Storage**. From here you can either open **Screen Recorder** for videos or **Screen Master** for pictures.

5. You can now copy these files to your computer
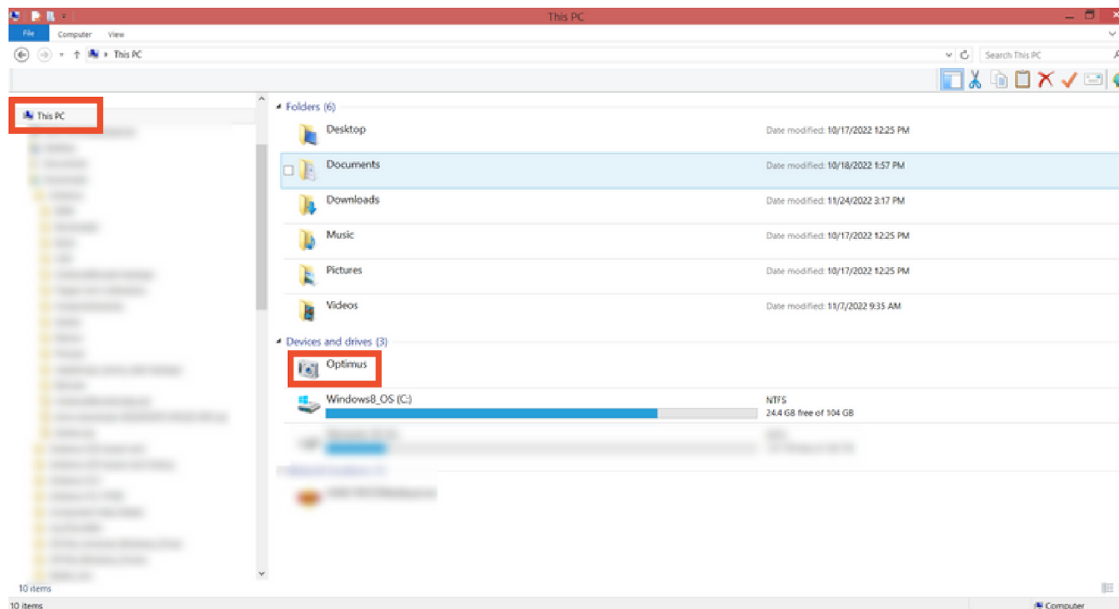
Figure 3

Via USB - Mac

1. Download and install a free piece of software called <u>Android File Transfer</u>.

2. Open Android File Transfer. This may automatically open when you connect your device.

3. Once opened, you will be able to access the filesystem on the Herelink controller (Figure 4)

4. In the **Screen Recorder** folder are videos and in the **Screen Master** folder are pictures.

5. To copy files to your computer, select the files of interest and drag them to a folder on your computer.
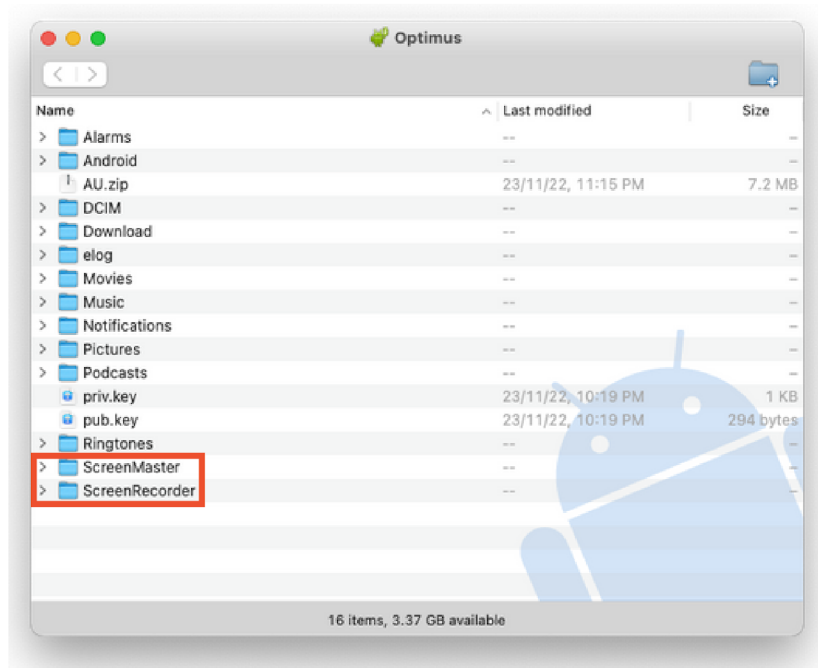
Figure 4

Via SD Card - Formatting Instructions

To use an SD card with the Herelink controller, the SD Card must be formatted to be used for images and videos. You also need to set up Screen Master and Screen Recorder to save images and videos onto the SD card rather than internal storage. The following are instructions explain on how to do this:

1. Put a micro SD card in the SD card slot on Herelink controller (with the metal contacts facing upwards).

2. Swipe down from the top to open the notification screen

3. Navigate to the notification with an SD Card icon. Click on the icon (Figure 5). This will now open the SD card File browser.

4. Click on the highlighted icon in Figure 6. Click **Storage Settings** (Figure 7).

5. Select **Format** on the new screen (Figure 8).

6. A screen (Figure 9) will show a warning that formatting the SD Card will erase any data on the card. **Select Erase & Format**.

7. Navigate back to the SD card File browser. This time click on the highlighted icon in Figure 6 and click **New Folder** (Figure 7). Give the Folder a name. You now have a place to put videos and images.
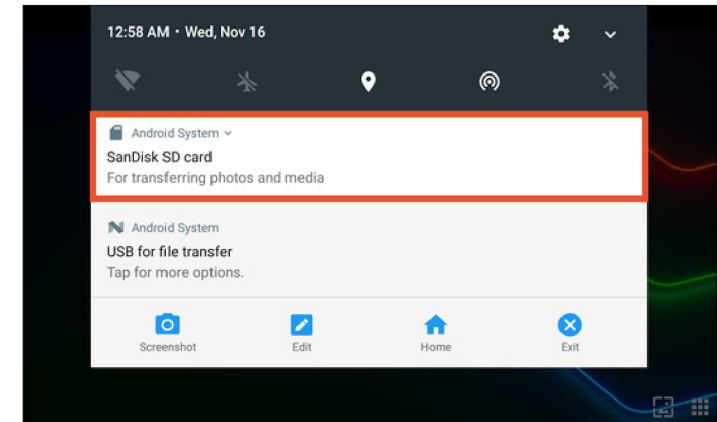
Figure 5
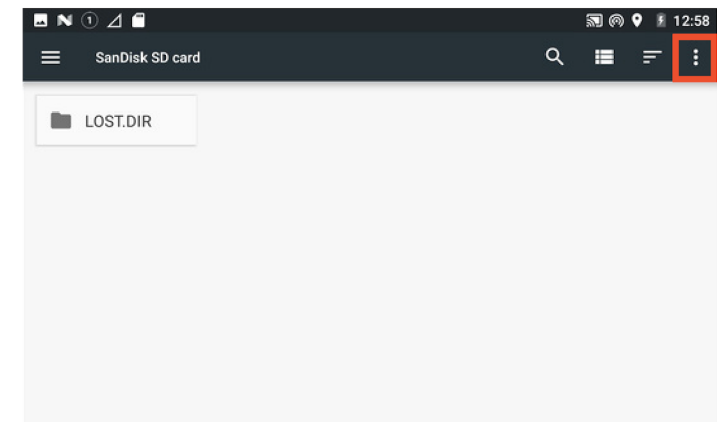
Figure 6
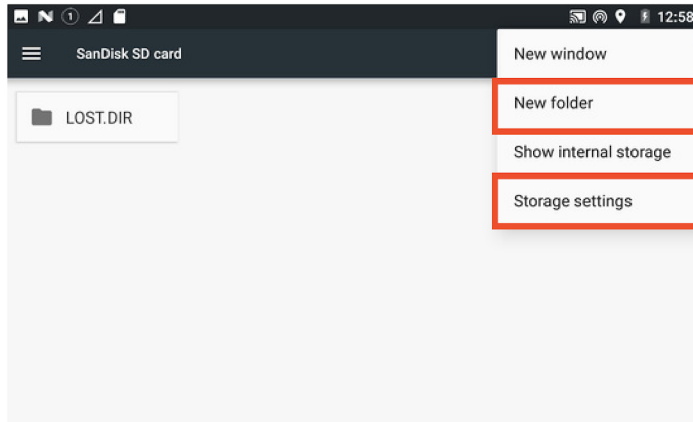
Figure 7

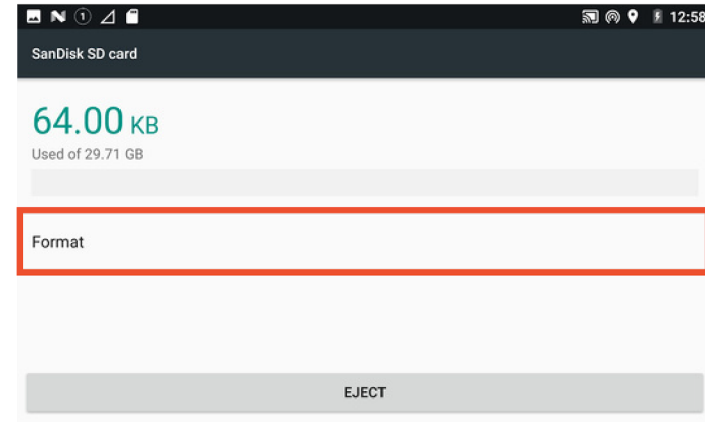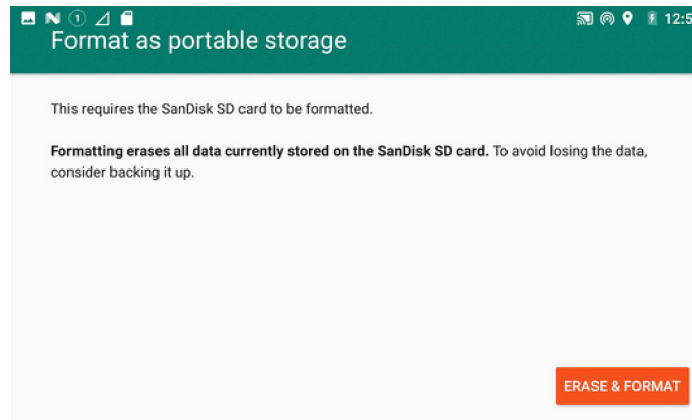**Figure 8**

Figure 9

Transferring via SD Card - Setting up SD Card

The next steps involve changing settings on Screen Master and Screen Recorder.

1. Open the list of apps
2. Open Screen Master and navigate to **More Settings** at the bottom of the list (Figure 10).
3. Open **Save Path** (Figure 11)
4. Select the SD card icon (Figure 12) with text underneath. It should become highlighted in blue.
5. Find the folder you created in the previous section on the SD card and open it
6. Press **OK** and exit the app (Figure 13)
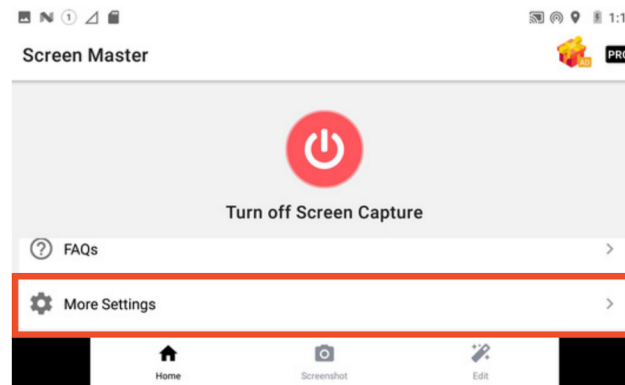
Figure 10
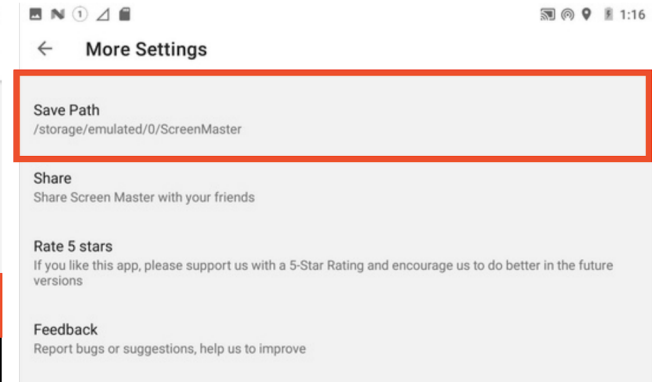
Figure 11
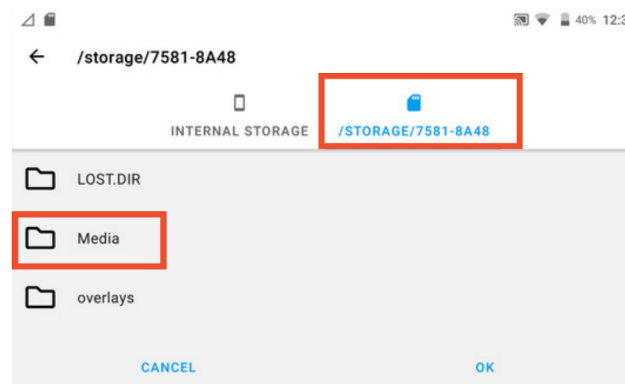
Figure 12
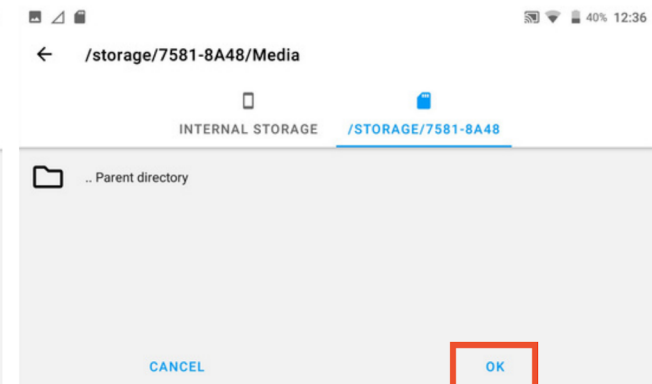
Figure 13

Transferring via SD Card - Setting up SD Card

1. Open the **Screen Recorder** app from the main screen and click on the settings icon (Figure 14)

2. Scroll down the list to the **Select recording folder location** (Figure 15) item and open it

3. Select **SD Card storage** (Figure 16) and then **OK**

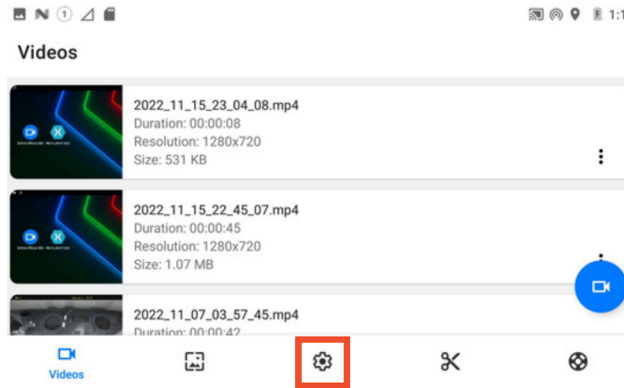4. Navigate into the folder you created on the SD Card. Tap **Select** (Figure 17) and exit the app.
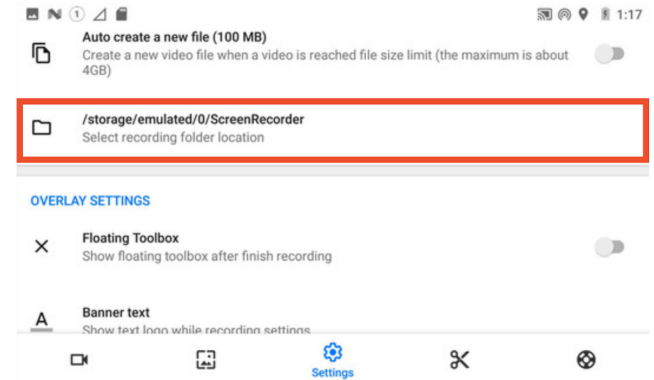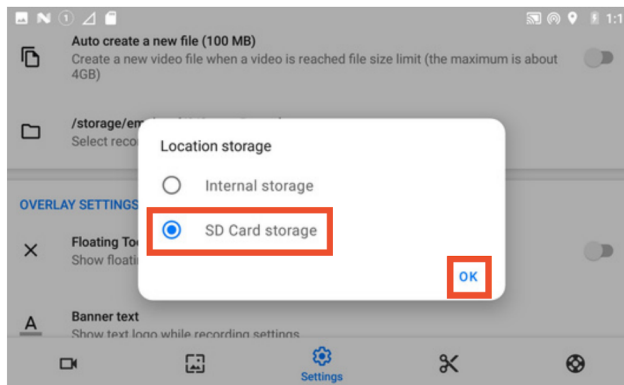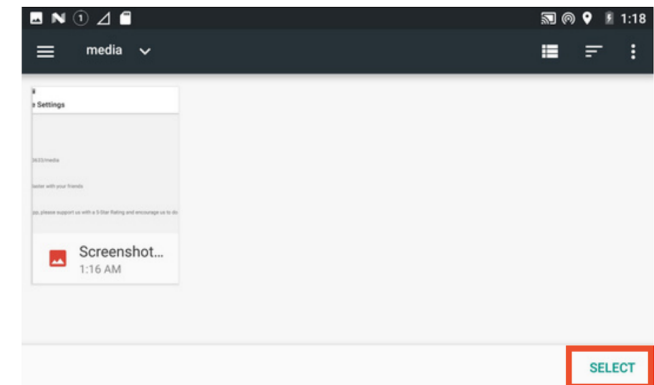
Figure 14

Figure 15

Figure 16

Figure 17

Transferring via SD Card

1. Remove the micro SD card (Figure 18) from the Herelink controller

2. Put the SD card into your computer's SD Card reader using a micro-to-SD adaptor (Figure 19) if necessary

3. On Windows open File Explorer (Figure 20) or on Mac open Finder (Figure 21)

4. You will have a new device that you can open

5. Open the new device. Inside the folder that you created for videos and images will be your files.

6. Copy the files into a folder on your computer
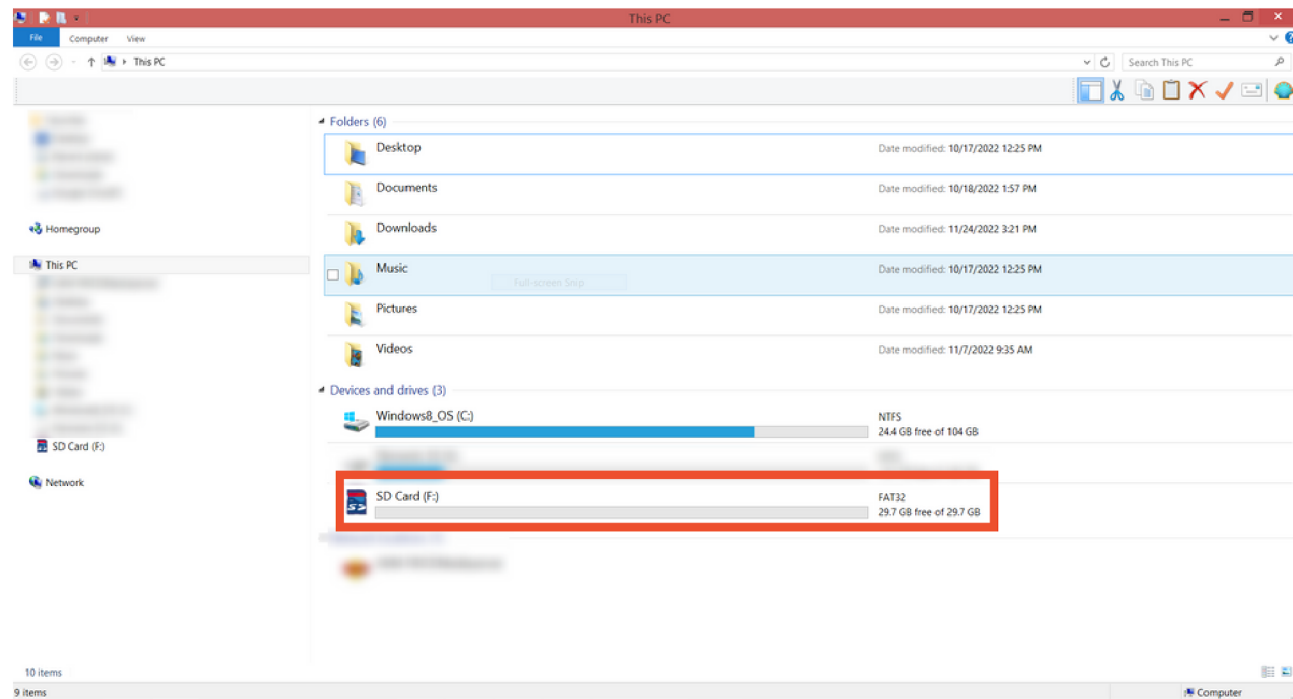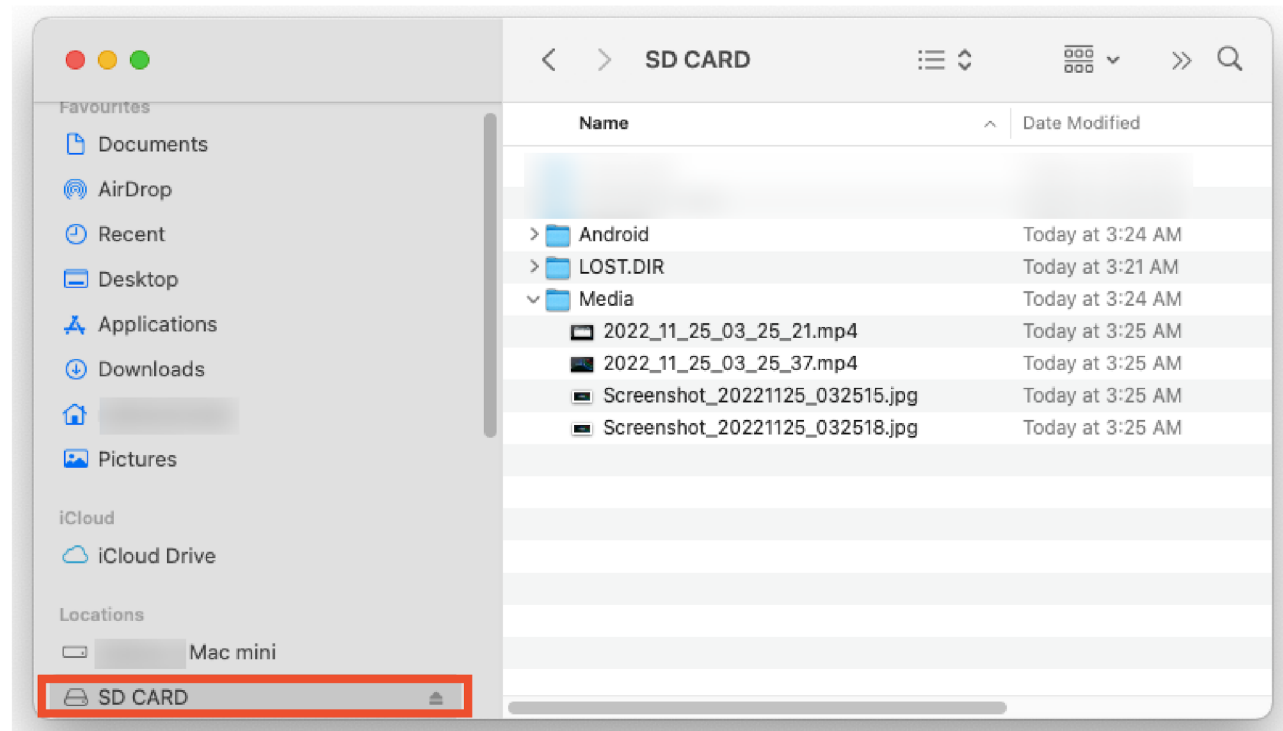

Figure 18

Figure 19

Figure 20

Figure 21

Initial Setup

1. Enable the Hotspot on the Herelink controller (Figure 1)

2. Long press on the Hotspot icon. This opens the Wireless & Networks screen. Select **Tethering & portable hotspot** (Figure 2).

3. Click on **Set up Wi-Fi Hotspot** (Figure 3)

4. From here you can find out the Wi-Fi settings, including the password (Figure 4).

5. Power up the tablet

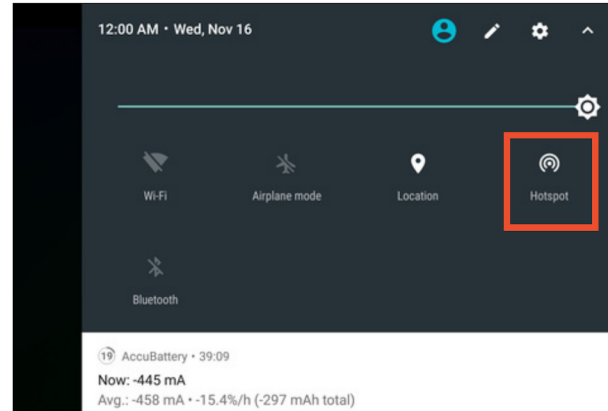6. Using the credentials found in Step 4, connect to the hotspot.
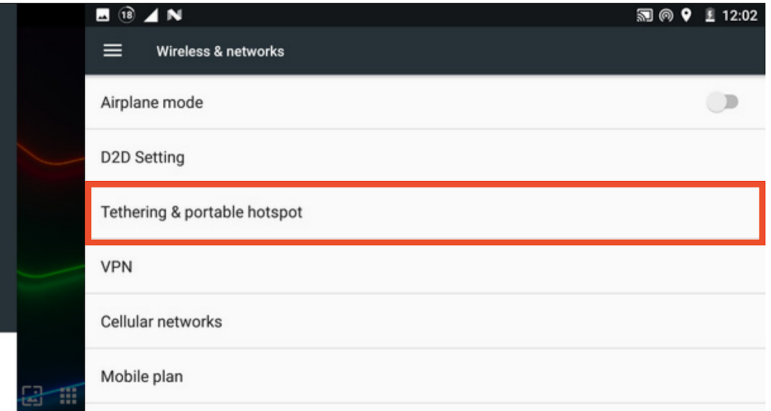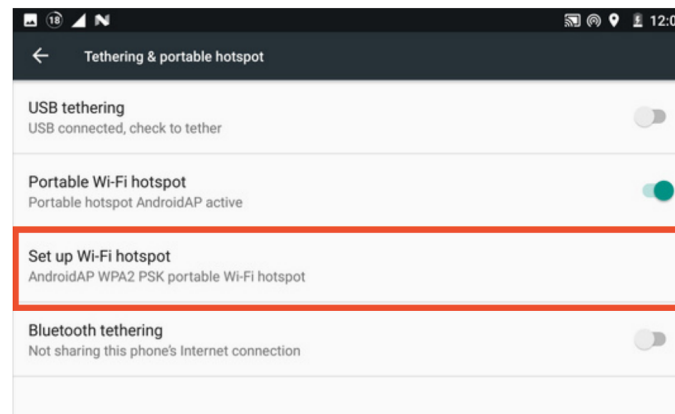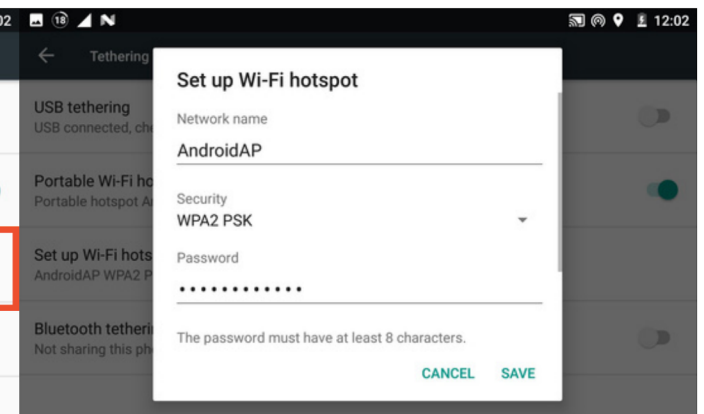
Figure 1

Figure 2

Figure 3

Figure 4

Viewing the Stream

1. Turn on a tablet or phone (Android or iOS)

2. Install VLC player if it is not already on the device

3. Connect to the Wi-Fi hotspot **AndroidAP** (Figure 5)

4. Open **VLC** player (Figure 6)

5. Tap **New Stream** (Figure 7)

6. Type in the following address (Figure 8)

rtsp://192.168.43.1:8554/fpv_stream

Optional: Save this address to a notetaking app for convenience

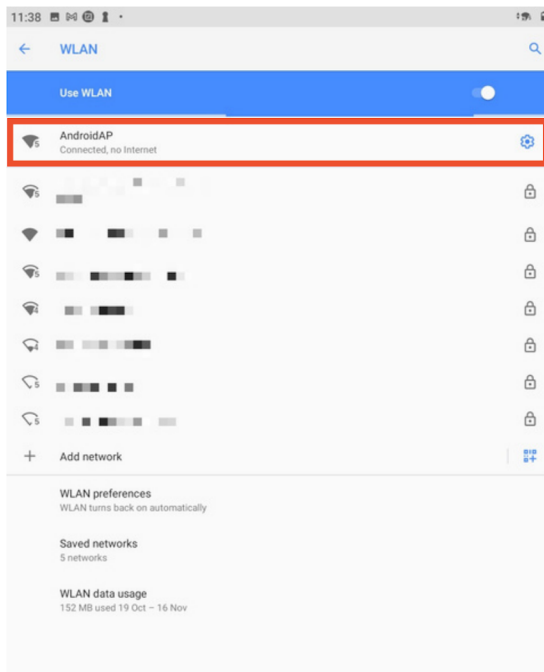7. Press the orange arrow on the right side to connect
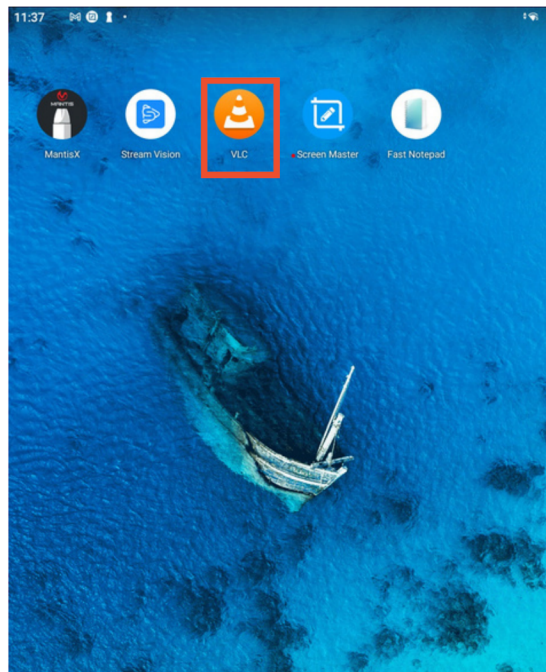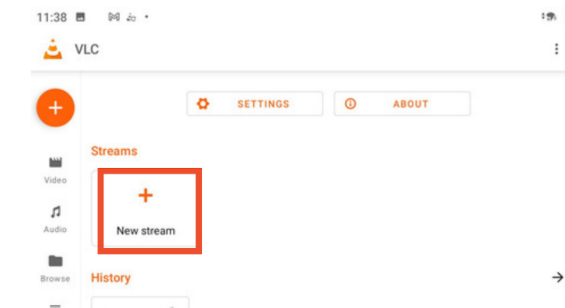

Figure 5

Figure 6

Figure 7

Connect

**Figure 8**

- Before turning on the Herelink controller ensure that the two antennas are attached. Note that it does not matter which antenna you connect to which socket as long as you have both types.
- Line up the BNC connectors on the antennas, gently push down, and twist slightly clockwise to attach them to the Herelink.
- Ensure that the antennas are securely connected so they do not come out

Omni-directional Antenna

Directional Antenna

Antenna connectors
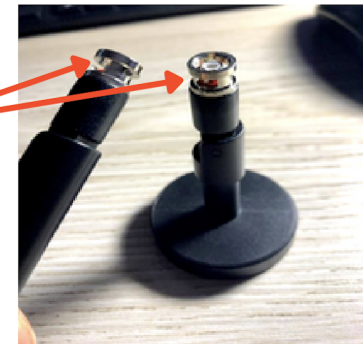
Antenna connector in the Herelink

BEFORE/AFTER OPERATION CHECKLISTS

Before

☐ Ensure that both Hades and the Herelink controller with the cables are provided

☐ Ensure that both Hades and the controller are charged

☐ Ensure that the wheels and hubs are firmly attached

☐ Both antennas are connected to the controller before use

☐ If needed, an SD card is installed and set up on the Herelink controller.

After

☐ Remove debris off the wheels and dry them if they have become wet

☐ Use the USB cable provided or an SD card to transfer the photos and videos to a computer

☐ Charge the device and the controller so they are ready for the next time

☐ Keep Hades in the case provided while traveling