



Survey Camera

Survey3

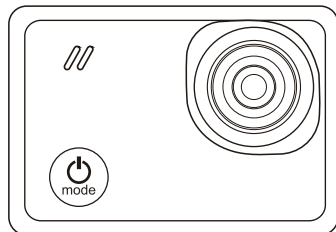


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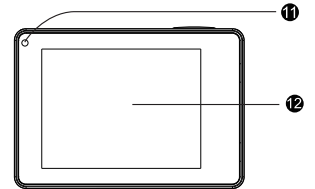
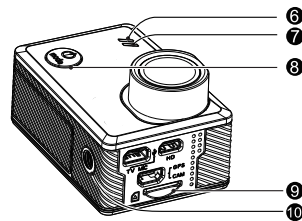
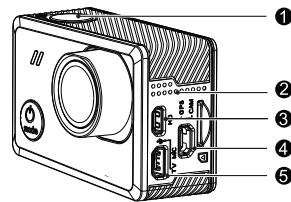
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Camera Overview



- | | |
|--|------------------------|
| 1. Shutter Button | 7. Front LED 2 |
| 2. Cooling Hole | 8. Power / Mode Button |
| 3. HDMI Port (supports PWM trigger cable, not included) | 9. MicroSD Card Slot |
| 4. Mini-USB Port (supports included external GPS module) | 10. Tripod Mount |
| 5. Mini-USB Port (supports composite A/V cable, 3.5mm mic adapter, not included) | 11. Back LED |
| 6. Front LED 1 | 12. Touch Display |

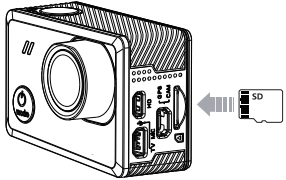
■ Inserting / Removing the Battery

1. Open the battery cover and insert the battery (normally a battery is already installed).
3. Charging the battery by connecting the camera to a computer or other USB charging adapter using the included USB cable. The camera status light turns on during charging.

Note: Using wall chargers marked: output 5V 1A. If you don't know the voltage and current of your charger, use the included USB cable to charge the camera from your computer or a power bank.

■ Inserting / Removing Memory Cards

To Insert the microSD Card:

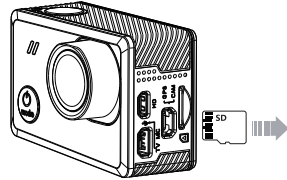


Slide the memory card into the card slot with the label facing the back of the camera.

When fully inserted, the card clicks into place.

Note: The microSD card is sold separately. The microSD card must have a Class-10 or UHS-I rating and the capacity up to 128GB.

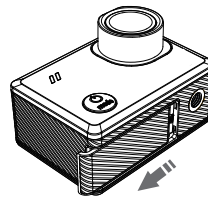
To Remove the microSD Card:



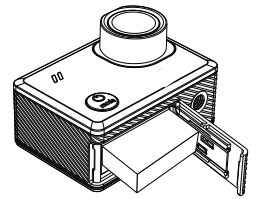
Place your fingernail against the edge of the memory card and lightly press it further into the camera.

The card springs out far enough to be removed.

■ Charging the Battery



Press to unlock the battery cover, then push it out.



Rechargeable battery

■ Status LEDs

There are 4 LEDs on the camera, the default status is showed as below, and also user can turn on or off LED in the menu.

Status	LED Activity			
	Front LED 1	Front LED 2	Top LED	Back LED
The camera is powered on and in standby mode	Solid Red	/	Solid Red	Solid Red
The camera is recording	Flashing Red	/	Flashing Red	Flashing Red
In photo mode	/	Solid Green	Solid Red	Solid Red
A photo taken	/	Flashing Green Once	Solid Red	Solid Red
Battery charging	Solid Red	/	Flashing Red	Flashing Red
Battery charging completed	/	Solid Green	/	/
Firmware upgrading	/	Flashing Green	Flashing Red	Flashing Red

Powering Camera On and Off

To Power on: Hold the Power button for 3 seconds.
To Power off: Hold the Power button for 4 seconds.

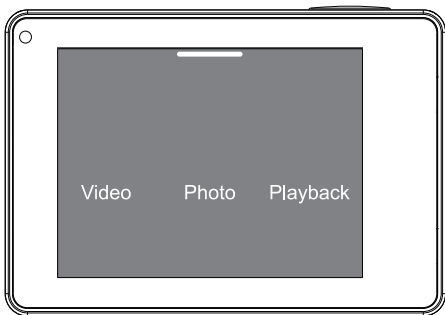
Note:

1. To prevent loss of data, always turn off the camera before removing the battery or memory card.
2. The camera will automatically turn off after removing the memory card or battery.

Change Camera Mode

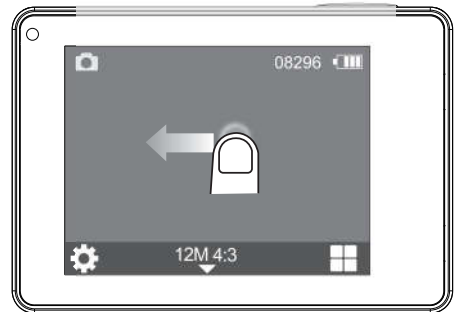
There are three camera modes, Video, Photo and Playback. You can choose the camera mode in the main menu, press mode button or swipe left to change the capture mode.

- Touch [📷] to enter main menu and choose the camera mode.



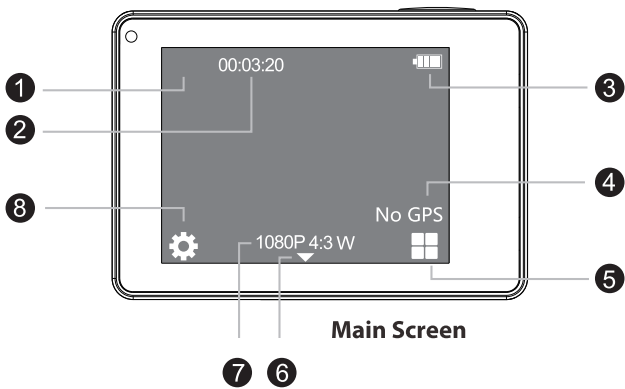
Main Menu

- Swipe left on the main screen to change the capture mode.



- Press mode button [📷] to change the capture mode.

Touch Display Overview

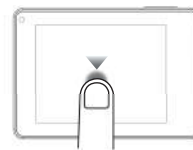


The touch display provides information for current modes and settings.

1	Display the camera mode
2	Left recording time / Elapsed time
3	Battery indicator
4	GPS status
5	Go to video / photo settings
6	Select to open the main menu
7	Display the resolution
8	Go to the system settings

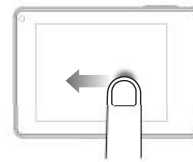
Touch Display Gestures

Use these gestures to navigate the touch display. When swiping, swipe from the edge of the screen.



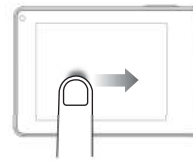
Tap

Enter the main menu, system settings and Video/Photo settings.



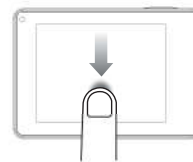
Swipe Left

Change capture mode.



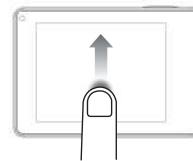
Swipe Right

Change the view for main and slave camera.



Swipe Down

Swipe down to open the quick settings, enable or disable Wi-Fi, bluetooth, etc. From setting menu, select an item, swipe down to choose an option. Otherwise, swipe down to return to the main screen.



Swipe Up

From setting menu, select an item, swipe up to choose an option. Otherwise, swipe up to return to the main screen.

Quick Settings

From the main screen, swipe down to enter the quick settings.



In Quick settings, you can find the frequently used settings.

Wi-Fi: Turn On / Off Wi-Fi.

Bluetooth: Turn On / Off Bluetooth.

Lock: Turn off the touch display instantly to save battery life.

EV Lock: Lock the Exposure Value.

Gyro: Turn On / Off Gyro stabilization. It helps the footage stay clear and stable in situations where the camera is subject to knocks and bumps. The options for this setting are On and Off (Default).

Auto Off: Powers off your camera instantly.

Photos

■ Taking a photo

Photo captures either Single, Sequence or Continuous photo. In quick capture mode, while the camera is powered off, hold down the shutter button to power on the camera and release until the camera start to take photos in Time Lapse mode. All photos are captured at 12MP or 8MP.

■ Photo Settings

From the main screen, touch [▼] to enter the main menu and select the [📷] or swipe left to change to photo mode, then select [⊕] to go to photo settings.



Image Size: Set the capture image size, 12MP (default), 8MP.

Mode: Sets the photo mode: single, continuous or sequence.

- Single: Enables you to take a single photo using automatic exposure.

Adjusting the Interval value will allow for interval photo capture. To stop, press shutter when OSD text is visible.

- Continuous: Captures a series of photos continuously while the shutter button is pressed.
- Burst: Captures a sequence of 3 or 10 photos in one second.

Shutter: Shutter speed adjusts the amount of time that the shutter is open. The higher the X value in 1/X the faster and less light captured.

Interval: Interval determines the amount of time that passes between each single photo. Our website mentions the fastest capture times (based on V90 SD cards), which includes both the interval time and the time it takes to save the image to the memory. Leaving the interval set to the 0.5 seconds will provide the fastest interval capture times.

Self-Timer: Set the timer to delay taking a photo.

Zoom: This option zooms in on the center of the shot, cropping the image/sensor.

Sharpness: Sharpness controls the sharpness of your photos. You can use High option for an ultra-sharp look, the Medium option for moderate sharpness, or the Low option for a softer look.

WB (White Balance): White balance adjusts the overall color tone of photos. The camera can automatically adjust the white balance or you can manually adjust the white balance.

WB Custom: Custom White Balance is for even more accuracy in color balancing. It is a quick, easy, and accurate way to help correcting for scene's color temperature and neutralize the whites, grays, and blacks.

Exposure: Exposure value (EV) affects the level of brightness of your photo. Adjusting this setting can improve image quality when shooting in environments with contrasting lighting conditions.

Metering: The metering mode refers to the way in which the camera determines the exposure. Various metering modes are provided to allow the user to select the most appropriate one for use in a variety of lighting conditions.

ISO: You can set the camera's sensitivity in low-light environments, and creates a balance between brightness and resulting image noise. The camera automatically uses the best ISO level for the lighting conditions, higher ISO values have brighter photo in low light and more visible noise, lower ISO values have darker photo in low light and reduced image noise.

Color: Color allows you to adjust the color profile of your photos.

Contrast: Contrast is the scale of difference between black and white in your photo. The settings from "Low to High". High contrast photos will have bright highlights and dark shadows, bold colours. Low contrast photos will have a narrow range of tones.

Stamp: Add a date stamp to your photo.

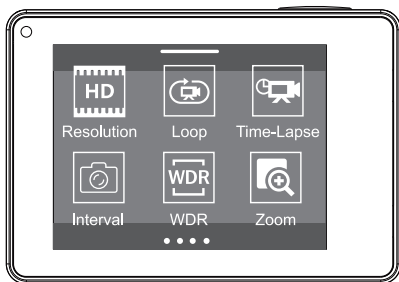
GPS Stamp: Add GPS stamp to your video. The options are All Info, Speed, Coordinates. The GPS information include speed, speed tracking, coordinates, route, distance, elevation gain and time.

RAW: When this setting is turned on, it will take .jpg image for immediate viewing and a RAW photo. RAW format is only available for the single photo capture mode.

Video

Video Settings

Touch [▼] to enter the main menu and select the [📹] or swipe left to change to video mode, then select [⊕] to go to video settings.



Resolution: Set the resolution of the video, resolution refers to the number of horizontal lines in the video.

Use this table to help you determine the best resolution for your activity. The video resolution is the width and height of the video in pixels. The aspect ratio is the ratio of the video width to the video height. Frames per second (FPS) refers to the number of video frames that are captured in each second.

Mode	Video Resolution (pixels)	Aspect Ratio	FPS	FOV
Recording video for main camera only.	2160P (2880 x 2160)	16:9	24	Wide, Zoom
	2160P (2880 x 2160)	4:3	24	Wide, Zoom
	1440P (2560 x 1440)	16:9	30	Wide, Zoom
	1440P (1920 x 1440)	4:3	30	Wide, Zoom
	1296P (2304 x 1296)	16:9	30	Wide, Zoom
	1080P (1920 x 1080)	16:9	60, 30	Wide, Zoom
	1080P (1440 x 1080)	4:3	30	Wide, Zoom
	720P (1280 x 720)	16:9	120, 60, 30	Wide, Zoom
	WVGA (848x 480)	16:9	30	Wide, Zoom
	VGA (640x 480)	4:3	240	Wide, Zoom

Loop: Enable loop recording and set the camera to record in various intervals (2, 3, 5, 10 minutes, etc).

Time-lapse: Set the time interval for Time Lapse mode. Time Lapse Video record video from frames captured at specific intervals, creating a Time Lapse movie without the need to stitch all of the photos together. This enables you to capture long-term action that is ready for playback or sharing immediately.

Interval: Take video snapshot at set time intervals while recording.

WDR (Wide Dynamic Range): Dynamic range is the ratio of the brightest portion of the image to the darkest portion of the image. WDR enables the camera to deliver video with near perfect exposure in varying lighting situations.

ZOOM: It zooms in on the center of the shot, good for capturing content at a distance, change the zoom value according to the distance between the camera and object.

Gyro: Turn on video stabilization to reduce shake video. It will produce smoother footage especially for cycling, driving, and walking. The options for this setting are On and Off (Default).

Sharpness: Sharpness controls the sharpness of your video footage . You can use High option for an ultra-sharp look, the Medium option for moderate sharpness, or the Low option for a softer look.

WB (White Balance): White balance adjusts the overall color tone of videos. The camera can automatically adjust the white balance or you can manually adjust the white balance.

WB Custom: Custom White Balance is for even more accuracy in color balancing. It is a quick, easy, and accurate way to help correcting for scene's color temperature and neutralize the whites, grays, and blacks.

Exposure: Exposure value (EV) affects the level of brightness of your video. Adjusting this setting can improve image quality when shooting in environments with contrasting lighting conditions.

Metering: The metering mode refers to the way in which the camera determines the exposure. Various metering modes are provided to allow the user to select the most appropriate one for use in a variety of lighting conditions.

Color: Color allows you to adjust the color profile of your video footage or photos.

Contrast: Contrast is the scale of difference between black and white in your video. The settings from "Low to High". High contrast video will have bright highlights and dark shadows, bold colours. Low contrast video will have a narrow range of tones.

Bitrate: You can set the bitrate for video. High bitrate may improve the quality and smoothness of the video, especially when recording fast motion or high contrast scenes. Using high bitrate mode may decrease the amount of recording time available on your memory card. Using low bitrate will save space and record for longer time.

Microphone: Set the sensitivity of microphone. The settings from "Low to High" determine the sound level.

Motion Det: Enable motion detection mode. When this feature is activated, recording will begin if there is movement in front of the camera. Once the camera does not detect movement for 60 seconds, recording will stop and the device will switch to detect mode. The device will record again if it will detect a new movement in front of the camera.

G-sensor: The G-sensor measures shock forces. The settings from "Low to High" determine the amount for force needed to lock the file from being overwritten. If the file is locked while recording, there will be [▲] on the screen.

Stamp: Add a date stamp to your video.

GPS Stamp: Add GPS stamp to your video. The GPS information include speed, speed tracking, coordinates, route, distance, elevation gain and time. The options for this setting are All Info, Speed, Coordinates.

Playback

From the main screen, touch [⏮] to enter the main menu and select the [▶], then you will get into the playback screen.

You can play back your content on the camera's touch display, your computer, TV, or smartphone/tablet.

You can also play back content by inserting the microSD card directly into a device, such as a computer or compatible TV. With this method, playback resolution depends on the resolution of the device and its ability to play back that resolution.

Viewing Videos and Photos on Your Camera

1. From the main menu, select Playback.
2. Select a video or photo to play.
3. Select an option:
 - a) To view the previous or next items, select [◀] or [▶].
 - b) To play or pause a video, select [▶] or [⏸].
 - c) To delete the photo or video, select [🗑].

Viewing Videos and Photos on a HDTV

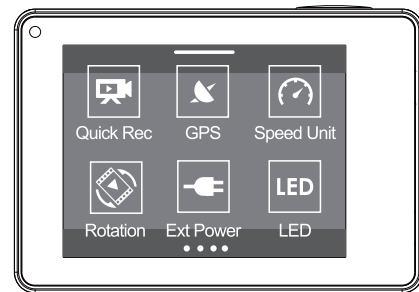
Playing back videos and photos on your HDTV let you directly view the content in your camera on a large screen.

You can output HDMI Video or composite video on your HDTV. For outputting HDMI video, you must have a micro HDMI cable, for outputting composite video, you must also have a RCA composite video cable.

The camera support outputting video while recording.

System Settings

From the main screen, select [⚙] to get into system settings.



Quick Rec: With Quick Rec, you can quickly turn your camera on and begin capturing video or Time Lapse photos. The options for this setting are On (Default) and Off.

GPS: Enable the camera to receive GPS satellite signals, the camera records GPS position data at all times when GPS is on, the data is collected by external GPS module. The options for this setting are On (Default) and Off.

Speed Unit: You can set the unit of speed. The options for this setting are MPH and KM/H.

Rotation: If you mount your camera upside down, you might have to rotate the files during editing. This setting eliminates the need to flip your video or photos after recording. The options for this setting are Both Off (Default), Both On, Front On, Rear On.

Ext Power (External Power): Set the camera to go to the Charge, Power On or Recording mode while the external charger connected.

LED: Set which status lights blink. The options are All LED On (default), All LED Off, Front LED On, Front LED Off and Back LED On.

OSD: The OSD (on-screen display) info setting determines whether the recording icons and file information on video and on the viewing screen appear during playback. The options for this setting are On (default), Record Dot (only show the recording indicator icon) and Off.

Beep: Set the camera to beep or not while pressing a button.

Lock: Turns off the touch display after a period of inactivity to save battery life. The options are 15 Seconds, 1 Minute (default), 3 Minutes, 5 Minutes, and Off. To turn on the touch display again, press any of the button on the camera.

Auto Off: Powers off your camera after a period of inactivity to save battery life. The options are 1 Minute, 3 Minutes (default), 5 Minutes, 10 Minutes, 15 Minutes, 30 Minutes, 60 Minutes, and Off.

TV Mode: TV Mode setting is mainly for watching the video on TV/HDTV to control the video frame rate of the recording.

NTSC: Watch the video on the area of North America.

PAL: Watch the video on the PAL/HDTV (apply to the most of TV except the area of North America).

Frequency: This setting allows you to set the light frequency to avoid flickering issue of videos.

Note: 60Hz in US and Canada and 50Hz in other countries.

Language: Set the on-screen text language.

Set Time: Set the date and time for your camera. The date and time are automatically updated when you connect your camera with GPS module and GPS feature enabled.

Zone: Set the time zone. The time zone affects the date format and time stamp.

Date Format: Set the camera to show dates in a YY/MM/DD, or DD/MM/YY, or MM/DD/YY format.

Format: To keep your microSD card in good condition, format it on a regular basis.

Note: Formatting erases all of your content, so be sure to offload your photos and videos first.

Reset: This option resets all of your camera settings to the defaults.

Version: Displays the firmware information.

FCC Warning:

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.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

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.

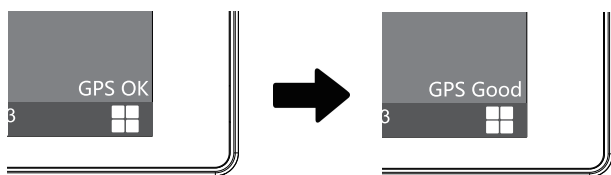
The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

Using the GPS Module

With the GPS module connected, it will enable you to capture the location where your videos and photos were taken. The ultra-fast 10X GPS processor allows you to update GPS data quickly, recording your latitude and longitude data precisely.

Note: You can download the Dashcam Viewer (<https://dashcamviewer.com/>) to playback the GPS data.

When you first plug the GPS unit in, and you are on the default Photo Mode screen, you will see red colored text saying "GPS OK" in the bottom right of the screen:



During this time the GPS is acquiring a better lock status. Once the GPS has good lock there will be an audible tone sequence (6 beeps) and the text will turn green and read "GPS Good".

Wireless

Wi-Fi Remote Control

The GitUp app allows you to control your camera remotely using a smartphone or tablet. Features include full camera control, live preview, playback and video / photo download.

1. Enable the Wi-Fi:

a) From the main screen, swipe down to enable the Wi-Fi features. When Wi-Fi is on, a Wi-Fi status icon appears on the camera main screen. **Note:** When Wi-Fi is on, only the swipe down gesture is available and you can only set your camera with your phone.

2. To connect your camera with GitUp app:

- Download and install the GitUp app to your smartphone/tablet.
- Power on the camera and enable the Wi-Fi.
- Connect to the Wi-Fi connection names MAPIR-xxxxxxx.
- Open the app, click the Connect, the app will automatically search the camera, it will show live preview once connected.

Note: The default Wi-Fi password is 12345678.

Bluetooth Remote Control

With the Bluetooth remote control, you can remotely control the Survey3 camera to start / stop recording, take photos.

From the main screen, swipe down to enable the bluetooth features. When bluetooth is on, the camera will search the bluetooth remote control automatically, normally it will take about 3 to 5 seconds for pairing with remote control.

Connecting External Microphone

An external microphone can provide enhanced audio for your captured video. (sold separately).

Note: The S3 does not support external stereo microphone.

When you enable and connect an external microphone, the camera records audio from both the external microphone and the built-in microphone.

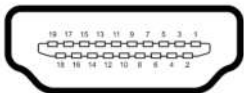
PWM Triggering

The Survey3 camera can receive and act on a couple PWM values when sending a PWM pulse using the optional HDMI PWM trigger cable. Please see the below PWM levels for more details.

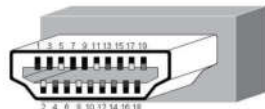
The 1000us neutral value is the default value the camera is always expecting and will not do anything at that pulse width.

To capture a photo, send the camera a momentary 2000us pulse.

To enter media transfer mode, send the camera a momentary 1500us pulse. To exit send a 1500us pulse again.



Camera HDMI Port



HDMI (Micro) Cable

Active HDMI Pins:

PIN 2: PWM Signal

PIN 4: Ground

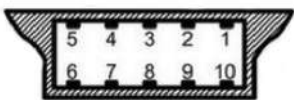
PIN 19: +5volt Power Out (Not Required)

PWM Signal Value:

Level 0: Do Nothing / Neutral = 1000us

Level 1: Enter/Exit USB Transfer = 1500us

Level 2: Photo Capture = 2000us



Camera USB Port

PIN 1: +5V	PIN 6: MIC INPUT
PIN 2: USB-	PIN 7: MIC INPUT
PIN 3: USB+	PIN 8: SD VIDEO-
PIN 4: ID*	PIN 9: SD VIDEO+
PIN 5: GND	PIN 10: AUDIO+

* = Pull PIN4 Low to Ground with Resistor To Activate PIN 6-10

USB Media Management

Survey3 allows you to power on and charge the camera by connecting one end of the USB cable to the USB/FPV port and the other end to your computer.

The microSD card in the camera stores the captured media and typically must be removed and inserted into a computer in order to browse the saved media content. With Survey3 though you have the option to also send the camera a 1500us PWM signal to put the camera into media transfer mode, making media browsing easier.

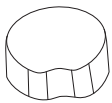
Media transfer mode allows the computer that is connected to the camera to then mount the camera's microSD card and the captured media will show up as a removable disk on the computer. This allows you to browse the contents as well as perform some remote automation.

One common application for media transfer mode is to connect the camera to a companion computer such as a Raspberry Pi on your robot (UAS/drone) and then move the camera's media to the computers own storage media. This allows the content to more easily be removed from your robot if the Survey3 cameras are too difficult to access. You could also perform some processing on the media.

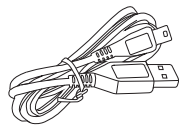
Enabling Media Transfer Mode: Send the camera a 1500us PWM pulse using the optional HDMI PWM trigger cable.

Disabling Media Transfer Mode: Send the camera a 1500us PWM pulse when it is already in media transfer mode.

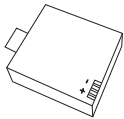
Package Included



Lens Cover



USB Data/Charging Cable

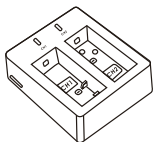


Battery



GPS Module

Optional Accessories



Battery Charger



Trigger Cable



FPV Cable

Customer Support

Please go to www.mapir.camera for more information about our products.

MAPIR® is a brand/dba of Peau Productions, Inc.

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Live Chat is Available On Our Website



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(Manual Updated: October 2017)