

**airpixel.cz**

**AIR Commander**  
***ENTIRE***

Entire r3 Combo - Camera control

# USER'S MANUAL

Before using this product, carefully read all product documentation and retain it for future reference.

## Safety

AIR Commander Entire has been designed with the highest concern for safety and easy handling. However, any electrical device, if used improperly, has the potential for causing fire, electrical shock or personal injury. To help ensure accident-free operation, follow these guidelines:

- Observe all warnings, precautions and instructions.
- Regularly inspect the DC power cords for damage before each usage.
- Stop use, unplug the DC power cord from the electrical outlet or battery and disconnect any other cables immediately if the device functions in an abnormal manner, produces unusual sounds or smells or becomes too hot to touch.

## Use and handling

AIR Commander Entire has been created for easiest handling possible, but as any other control device, can divert your attention from your drone. Please follow these guidelines for safe operation:

- Do not allow liquid, small particles or other foreign objects to get into the system or accessories.
- Do not expose the system or accessories to high temperatures, high humidity or direct sunlight.
- Keep the system and accessories, including cable ties and fasteners, out of the reach of small children.
- Follow instructions about input voltage on every part of system. Do not exceed maximum of 5V input!
- Never disassemble or modify the system or accessories.
- If the system is brought directly from a cold location to a warm one, moisture may condense inside the system. If this occur, the system may not operate properly. In this case, unplug all power cables immediately and leave device on dry place for several hours.
- Check this document every time you are going to change wiring / connection of the Entire.
- Positive and Negative poles on all ports are interconnected. Please note this in designing of your connection!

## Basic parameters

- **INPUT VOLTAGE 5V!**
- WiFi 2.4 GHz
- 3 UART ports (UNI A, UNI B, UNI C)
- Maximum current consumption 500 mA (up to 1.5A when camera charging)
- 3D printed case
- Dimensions 45 x 27 x 9.5mm.



## Connection

AIR Commander is a standalone system which has no communication with your drone system. System is connected only into your camera via IR transmitter and optionally via Smart plug. Only external connection is necessary for powering up each device of the system. There is a lot of options on how to power AIR Commander. You can use a wide variety of power sources like 12V P-TAP connector (using power adaptor), internal power of your gimbal (if accessible), internal USB connector of your RC transmitter / gimbal. USB power bank is not suggested. Next steps will show the most frequent option for power up your AIR Commander system.

### Power UP

Power cable to PWR connector, another end to the 5V power source.

### LED blinking

When Device is powered up, LED goes RED as signalization of system startup process.

During the startup, LED will blink white few times as sign of proper system load.

Startup process takes approx. 20s. Then blue color appears and Entire is ready for camera connection



### WARNING!

All input and output pins of 5V and Ground are interconnected. Input power is interconnected to Port A/B/C, EXT, USBMULTI. Make sure that external device can handle 5V input. If you are not sure, contact us at [info@airpixel.cz](mailto:info@airpixel.cz) or disconnect the power pin by removing from cable connector.

## Device setup

AIR Commander Entire, has own Wi-Fi hotspot. For the setup you need any device with Wi-Fi connection and web browser (Mobile phone, Tablet, Laptop, PC).

Connect your Phone to Wi-Fi network named "Entire\_####" (#### is unique identification).

Once connected, open your browser and type URL address:

**<http://entire>**

## Configuration page

Once the URL <http://entire> is entered, your browser will load the Entire's overview page.

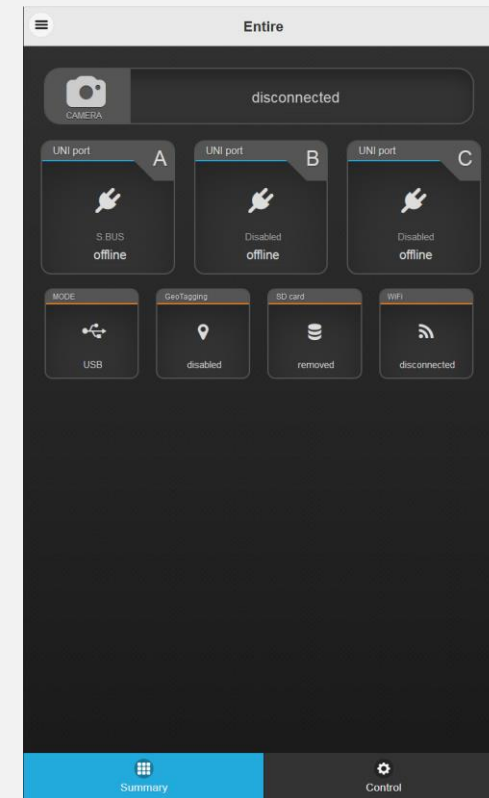
If connection will be unsuccessful, please double check you have filled out the <http://> properly. Alternatively you can type <http://192.168.10.1>

## Overview page

At landing page you will get all important information together in panels. If the Camera or Wi-Fi, SD card or etc. is properly connected, proper block will be highlighted.

At the bottom of page you can switch from overview to Control page, where you can control connected camera from the mobile phone / tablet or etc.

Main MENU is accessible by clicking to the icon in the top left corner.



## Camera USB connection

1. Firstly make sure, you have selected USB as control mode of the Entire

*(See the Mode bar at the overview page or MENU)*

2. Open Camera MENU and select "PC Control" if available
3. Select cable to fit your camera USB:

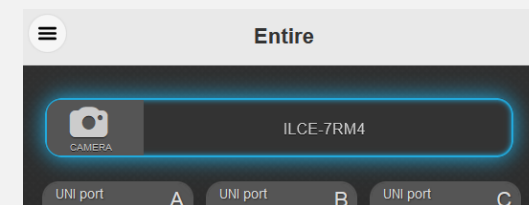
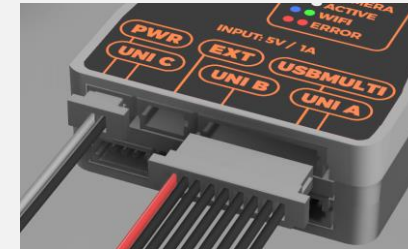
*For SONY ILCE series (A7x, A6xxx, A5xxx)*

- ✓ *Multiport Micro USB cable* (check cable photo at pg.19)

*For the Nikon or Canon cameras*

- ✓ *USB cable* (check cable photo at pg.19)
- ✓ *USB-C cable* (check cable photo at pg.19)

4. Connect USB cable into the Entire's "USBMULTI" connector
5. Connect cable to the Camera connector
6. Turn ON the Camera
7. STATUS LED will come Green if connection was established properly
8. Also the Camera bar on the overview will highlight with camera type



### **WARNING!**

**Input power of the AIR Commander Entire is forwarded to your camera. Exceeding input voltage can possibly harm your camera. Please make sure that you are using a reliable 5V power source.**

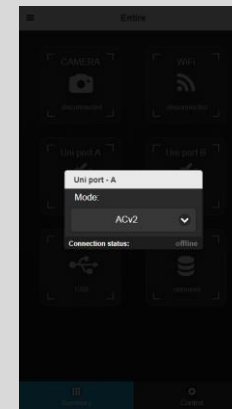
**If you use any other external device with external power (HDMI converter, Dummy battery) your GNG pin of all devices must be THE SAME. If GND loop occurs, your camera and Entire will be harmed.**

## UNI A/B/C connection

AIR Commander Entire has three universal ports (A & B & C).  
Ports can be used as output or input for plenty of external devices.  
Selecting the port operation mode is made in the Entire's MENU.

## AIR Commander Link (or v2) connection

1. Open the Entire's MENU and click to bar of PORT A/B/C status
2. In the popup menu select "Link"



3. Connect "UNI cable" to the selected port A, B or C



4. Connect "UNI cable" to the AIR Commander Link Receiver port DATA

When Link is used for remote commanding of the Entire, please do not use any accessory in the "SMART" or IR. If you would like to use IR commands, attach IR LED to the EXT port of the Entire.

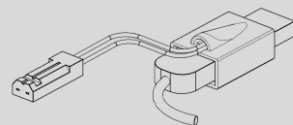


5. In few seconds' should selected port turn to "Online"



6. Power up the AIR Commander Link Transmitter

You can use both connectors of the Transmitter to power it up. Selected port depends only on your needs. Optionally you can use our USB splitter to power the Transmitter from DJI Transmitter's USB port.





7. Any press of button on the AIR Commander Link Transmitter
  - Will make STATUS LED blink white (active)
  - Activates assigned function in the Entire. Function activated by particular button can be customized in the menu of the Entire (see page 11).

*AIR Commander v2 system must be updated to FWv1.10 / v1.11*

## Mounting Link RX antenna

Position of antenna is most important for best range of AIR Commander Link.




Best position for receiving is **under your gimbal**, in place of your camera mount, or Gimbal horizontal motor. Place should be chosen in order of non-interrupted visual contact with AIR Commander Link Transmitter. Antenna should not be mounted directly on solid metal surfaces. Especially DJI Light-Bridge users should be careful about antenna mount. It's necessary to find a place, where AIR Commanders antenna will have „wireless shadow“ from Light-Bridge transmitting antennas. AIR Commander can perfectly coexistent with other 2.4GHz systems, anyway 2.4GHz signals transmitted on drone itself can decrease AIR Commanders range.

## Pairing of Link RX & TX

AIR Commander was designed for simple everyday work. There is no necessity to wirelessly bind Receiver & Transmitter. Each AIR Commander Link Transmitter accepts one or more receivers which are at the time without active pairing. If you are using only one AIR Commander Link system at once, you don't need to take care about this behavior. If you wish to use more than one AIR Commander System at on place, follow these steps:

- Turn on first AIR Commander Link Transmitter.
- Turn on receiver (or receivers) which should be paired with this Transmitter.
- Wait for pairing confirmation – short blinking of CONN LED on transmitter
- Turn OFF first Transmitter and keep ON paired receiver
- Turn ON second AIR Commander Link Transmitter
- Turn on receiver (or receivers) which should be paired with this Transmitter.
- Wait for pairing confirmation – short blinking of CONN LED on second transmitter.
- Turn back ON first Transmitter.
- Pairing is done.

**AIR Commander Link Receiver STATUS LED**

- Short blink green with long delay (after power up) 
  - Receiver is running properly and waiting for the Transmitter signal (pairing)
- Continuous green 
  - Receiver is properly bound with the Transmitter and entered the "radio silent mode".
- Blinking green (shortly interrupted continuous green) 
  - Receiver accepted command from the Transmitter

**AIR Commander Link Transmitter STATUS LEDs**

- PWR LED is always RED once successfully powered ON
- STAT LED
  - is continuously GREEN, when system is idle and out of the Time-Lapse mode
  - blinking quickly when Time-Lapse mode is enabled
- CONN LED
  - Is continuously OFF when system is idle
  - quickly blinks when data Transmit or Receive is active
  - in Time-Lapse mode CONN diode shows actual interval after pressing of the TL button

## Infra-Red diode installation

Some cameras has Infra commanding capability. Especially SONY has wide variety of commands available only via IR.

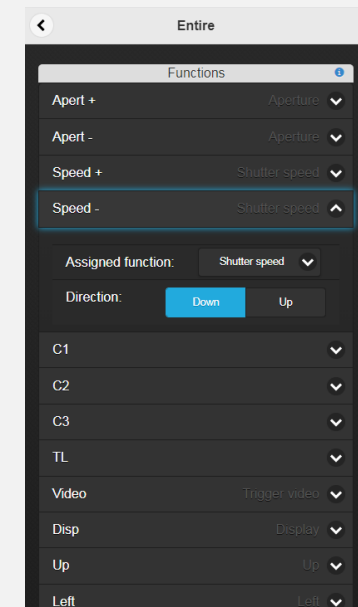
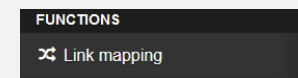
If your camera supports IR commanding, please plug included Infra Led cable into EXT port of the Entire.

If you are using AIR Commander Link for remote controlling of the Entire, do not install IR diode of AIR Commander Receiver.

## AIR Commander Link function mapping

Once Entire is connected with AIR Commander Link, each command received by the Receiver is forwarded to the Entire. You have option to assign any function of the Entire to any command (button) of the AIR Commander Link. Some functions may not be available at all types of cameras, so this function gives you chance to replace unused function by other.

1. Connect to the Entire Wi-Fi and setup page.
2. Open the MENU and select Link mapping (or ACv2 mapping)
3. You will see the list of Commands (Buttons) on the left side.
4. Right side of the list contain the preview of currently assigned Entire function.
5. Replacing of any function is available under click to particular list item.



## Wi-Fi Camera control

Compatible cameras can be controlled by the Wi-Fi connection.

Please note, that using Wi-Fi during flight can be very dangerous even Entire's Wi-Fi has very low signal.

We strongly suggest to do a range test after Entire installation.

1. Connect to the Entire Wi-Fi and setup page.
2. Open the MENU and select Control Mode -> Wi-Fi
3. Disconnect the USB cable if connected
4. Turn the camera into Wi-Fi control mode
5. Open the Entire's Menu and select "WiFi connection"
6. Shown list contains Wi-Fi networks available to assign for Entire connection.  
Entire will scan networks periodically and join the first available network from this list.
7. Select empty slot and select your camera network. If desired network is not in the list perform new scan by click to "New Scan". Confirm selection by "Connect".
8. Insert password (press "delete button" on the Camera body to show credentials) and click to "Connect".
9. During the joining process will Wi-Fi hotspot be disconnected and STATUS LED will blink BLUE/GREEN.

### Important:

- a. *Entire does not perform automatic scan while user is connected on the setup page.*
- b. *During scan or joining process the Wi-Fi hotspot will be disabled and Control page will not be available.*

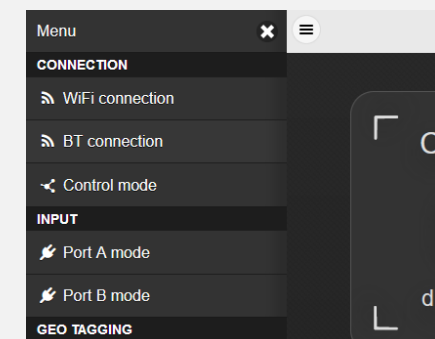
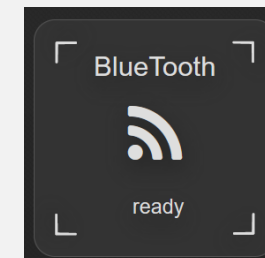
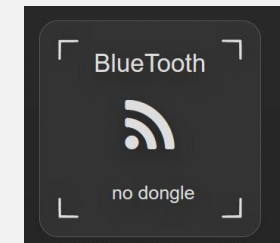
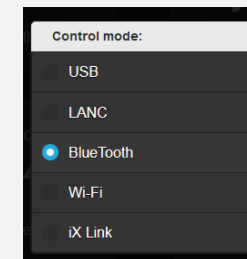
## Bluetooth Camera control

The Entire has no internal Bluetooth capability. BT camera control is done via third-party external USB Bluetooth dongle. Compatible USB cable and Bluetooth dongle is available at our shop. Configuration and first camera connection is also available at our YouTube channel.

[Check the video here.](#)

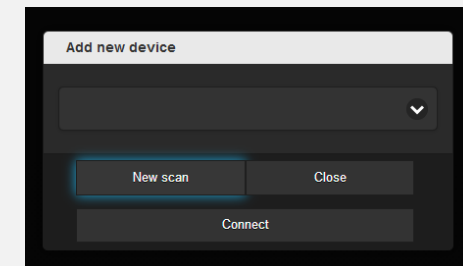
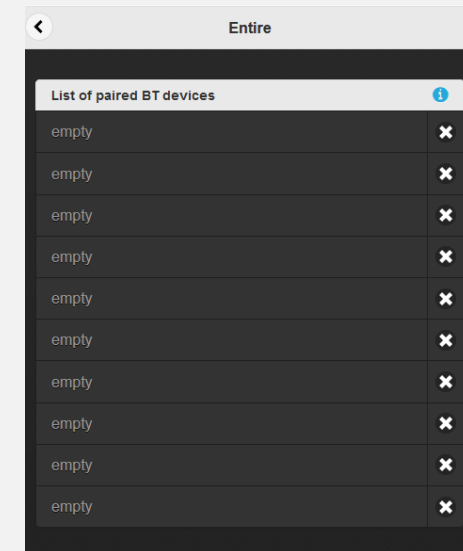
### Configuring the Entire for Bluetooth

1. Connect to the Entire Wi-Fi hotspot and setup page.
2. Disconnect any cable from PORTMULTI, if inserted.
3. Open the MENU and select Control Mode -> BlueTooth
4. Top right bar at overview page will switch to BlueTooth with "no dongle" status
5. Connect BlueTooth USB extension cable with BlueTooth dongle.
6. Status LED should now start flashing BLUE as sign of initialization of BT dongle
7. In few seconds flashing stops and status bar will turn to "ready"
8. Scanning, adding or removing of BT cameras, is available under MENU->BT connection



### Pairing new camera via BlueTooth

1. Connect to the Entire Wi-Fi hotspot and setup page.
2. Open MENU and select BT connection
3. New window shows list of paired devices, you can pair more than one camera.
4. Make sure, you have enabled Bluetooth in the menu of the camera
5. Click to first empty line, and click to "New Scan" button
6. Once scan will be done, available devices will be shown in the list above the button
7. Select your camera from the list and click to "Connect"
8. In few seconds, you will be requested for the PIN. Open the camera MENU and navigate to Bluetooth configuration. Copy the PIN code from the Camera to the Entire and confirm.
9. Once pairing is successfully done:
  - a. Your camera must will be shown in the list of paired devices
  - b. Camera must show the Entire's address as "Connected"
  - c. If a) or b) is not as described, please restart the Entire and repeat the process.
10. Once camera is successfully paired, the Entire will connect automatically once available.  
(if user is present in at configuration page, automatic searching is disabled)



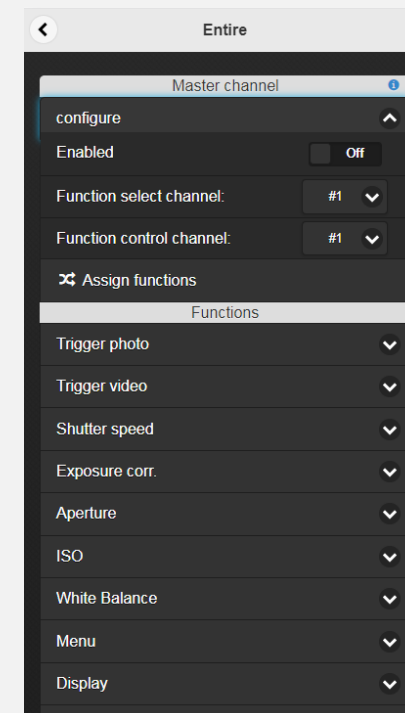
## S-BUS control

Instead of AIR Commander Link system you can use SBUS input for controlling the Entire and Camera. You can use separate RC controller, or use DJI Expansion KIT to implement control under LightBridge2. When DJI Expansion port is used, connect the F-PORTs outputs to PWM/SBUS converter and then connect the SBUS output into UNI A of the Entire.

1. Connect to the Entire Wi-Fi and setup page.
2. Open the MENU and select SBUS mapping
3. You will see the list of Entire's function on the left side.
4. Control channel can be assigned by clicking to the list item

### Master channel

It would be very confusing to have separate channel to each function. Master channel function combine control of multiple function by only two channels. One channel is selecting the function which will be controlled. Second (control) channel then trigger function UP or DOWN. In practice, you can assign Select channel to "Knob" on the DJI Expansion box, and angle will then switch the function to be controlled. Function Control channel is then assigned to the channel of stick controller. By the Knob angle you will choose the function (Aperture/ ISO / etc.) and by the stick you can trigger function UP or DOWN.





## MavLink control

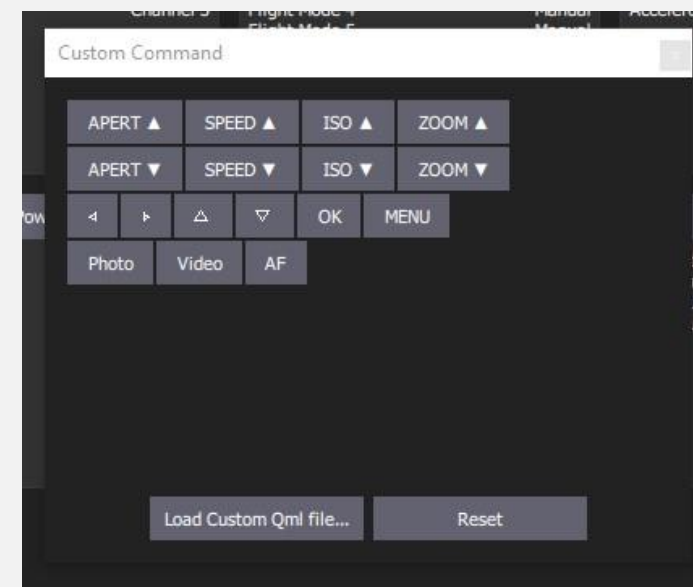
Instead of AIR Commander Link system and SBUS input for controlling of the Entire you can also use MavLink.

If you have PixHawk as drone flight controller, you can use MavLink telemetry channel for remote commanding of the Entire (and Camera). Our plugins are compatible with QGroundControl and Mission Planner application.

Aperture and Shutter-Speed control are not accessible during geotagging session. ISO is available only as custom key shortcut mapped to the arrows Left/Right/Down. Once GeoTagging is disabled all features can be used for camera control.

## QGroundControl

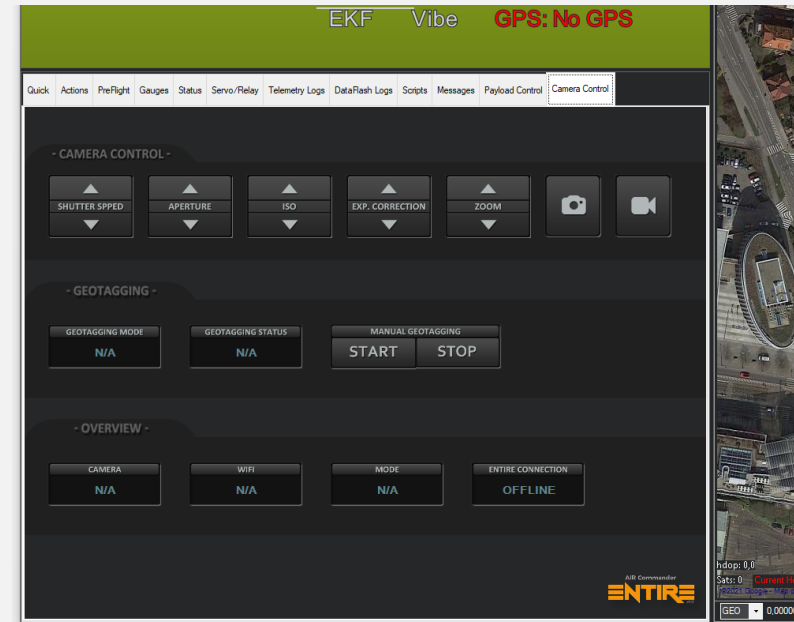
1. [Download](#) our QGroundControl plugin
2. open QGroundControl application (supported up to v3.5.6)
3. in the top menu click to "Widgets"
4. select "Custom commands"
5. at the bottom of new window select "Load Custom Qml file"
6. select file "entire\_qgc.qml" included in this ZIP
7. Plugin will be loaded as per image, click to the button will now be executed on your camera.



*The Entire must be updated to the minimum FW 1.079 for this feature.*

## Mission Planner plugin

1. [Download](#) our Mission Planner plugin
2. Unzip and copy all files to Mission Planner plugins path  
Path: "C:\Program Files (x86)\Mission Planner\plugins"
3. Open Mission Planner application
4. In few seconds new tab will appear



## HereLink internal Android application – MavCam for HereLink

If you have HereLink as remote controller for your drone, you can use MavCam for HereLink - our new Android application.

- 1) Unzip file MavCamHL.apk
- 2) Copy file to microSD card
- 3) Insert SD card to your HereLink
- 4) Click to notification - "New SD card detected"
- 5) Select "USE as portable storage" and confirm NEXT and DONE
- 6) Re-open notification area, click to "SD Card for transferring photos and media"
- 7) Click to MavCamHL.apk
- 8) Allow external sources if necessary
- 9) Install
- 10) Open app
- 11) Confirm "drawing over other apps" (this needs to be done only first time)
- 12) Click home button
- 13) In right bottom corner open list of installed applications
- 14) Run MavCam



## MavCam for HereLink – tips and tricks

MavCam for HereLink is easy app, however there are few features which are not clear at first look.

Main handle is used as shortcut to other menus via Swiping:

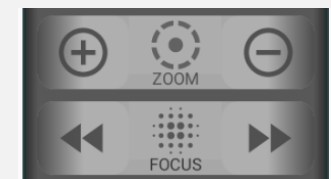
- 1) *SWIPE RIGHT* - MavCam configuration
- 2) *SWIPE UP* - Camera configuration (Shutterspeed / Aperture / etc.)
  - Camera configuration panel has small handle at right edge, which will expand panel with information about Entire status, and Entire configuration
- 3) *SWIPE LEFT* - hide MavCam
  - Hide MavCam. This is handy when you need to use software keyboard, where sometimes MavCam interfere with ENTER key.
  - Swipe up in the middle of bottom screen to re-open MavCam.



Zoom and focus panel is scrollable:

When you opened Camera control panel, there is a few exposure tools. One of them is ZOOM. ZOOM handle reacts to PLUS or MINUS clicks as all others, but you can also swipe the ZOOM icon in the center to the left or right. Swiping left or right will give you proportional zoom control if camera supports this feature.

If your camera supports proportional focusing, you can also use this sliding approach for focus tool (currently supported only for PhaseOne cameras).

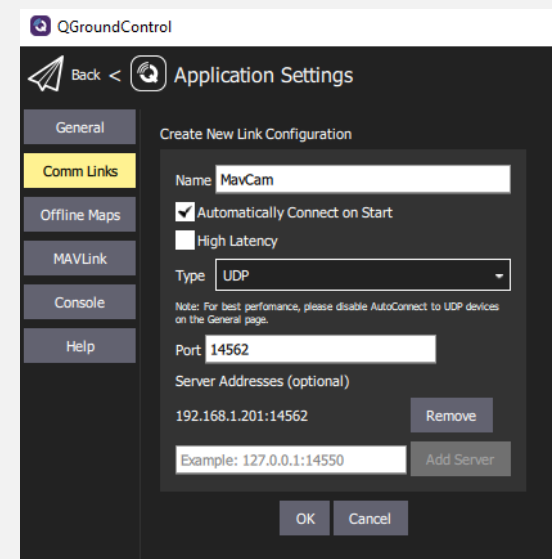


## MavCam for HereLink – Using with external control (QGC / MissionPlanner / UgCS / etc.)

MavCam uses UDP port 14552 in the HereLink so this port cannot be shared with external application. For these cases, where external control needs to be gained, MavCam forwards all data to new UDP port 14562. Please configure your external application to use 14562 port instead of default 14552. MavCam must be running to gain control via 14562!

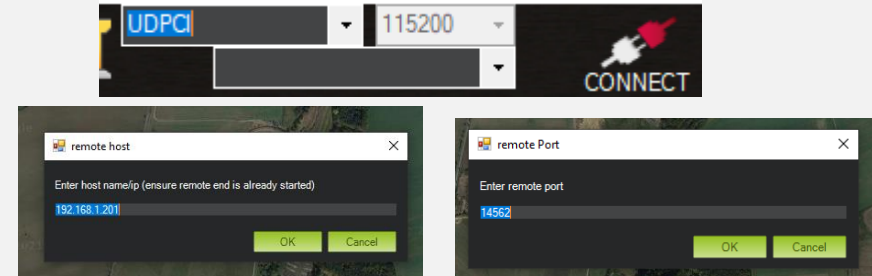
### QGC external configuration for cases of share in local network (not directly connected to the HereLink hotspot)

- Click to Q icon in top left corner
- Application settings
- Comm Links
- Add
- Fill name
- Check “automatically connect on start”
- Type UDP
- Port 14562
- IP: IP of your HereLink in local network
- Click - Add Server
- Confirm OK
- Select new port and click Connect



### MissionPlanner external configuration for cases of share in local network (not directly connected to the HereLink hotspot)

- Open MissionPlanner
- Connection mode UDPCI
- Click Connect
- Fill IP of your HereLink in local network
- Fill port 14562
- Confirm OK



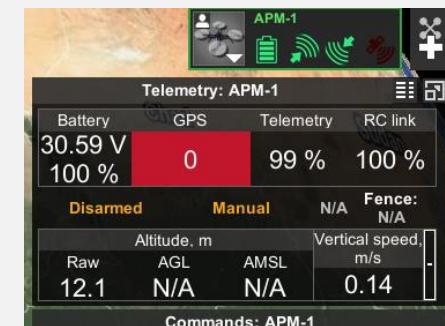
### UgCS external configuration for cases of share in local network (not directly connected to the HereLink hotspot)

- Open UgCS configuration file ("C:\Program Files (x86)\UgCS\bin\vsm-ardupilot.conf")
- Search for part beginning #Vehicle can be connected via UDP.
- Fill there UDP options:
  - o connection.udp\_in.1.local\_port = 14550
  - o connection.udp\_out.1.address = IP of your HereLink in local network
  - o connection.udp\_out.1.port = 14562

```

42 # Vehicle can be connected via UDP.
43 # UDP port which will listen for incoming mavlink messages.
44 connection.udp_in.1.local_port = 14550
45 connection.udp_out.1.address = 192.168.1.201
46 connection.udp_out.1.port = 14562
47

```



## Android application (HereLink)

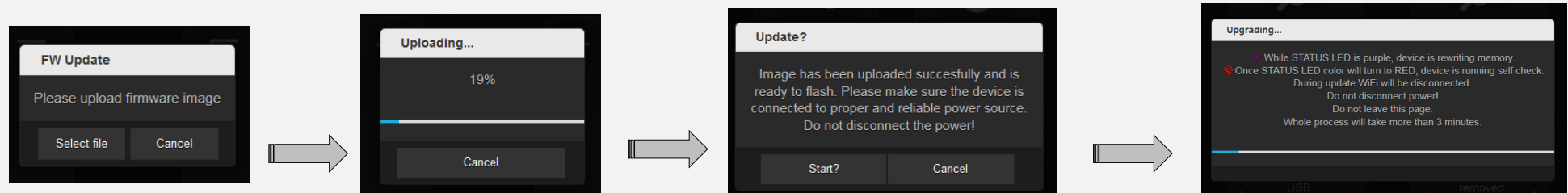
If you have HereLink as remote controller for your drone, you can also use our new Android application for Entire control.

1. [open](#) our manuals page and download MavCam – our Android control app.
2. Install app to your phone / tablet
3. Power up your HereLink unit and enable HereLink's WiFi hotspot
4. Manage your phone WiFi to connect HereLink's hotspot
5. Once connected launch MavCam application
6. If all connection / configuration is proper link icon in top right will become green



## Firmware update

1. Download the firmware update package from <http://shop.airpixel.cz/entire-firmware/>
2. Unzip the content and save the .img file
3. Connect your device to the Wi-Fi hotspot of Entire
4. Open the control page at <http://entire>
5. Open the MENU and select "Firmware"
6. Select the .img file downloaded from our website
7. Package will be uploaded and decompressed
8. IMPORTANT!!!  
**Double check the power source. Power failure during update can damage your device.**
9. Confirm Start and check if the STATUS LED turns to Purple
10. While STATUS LED is Purple, device is rewriting memory, this step is critical for interruption
11. Once LED turns to RED, device is restarting and making self-check. During self-check device can be restarted.





Cables description

USB Power



Multiport USB cable



USB cable



USB-C cable



UNI cable (Link RX connection)



Cables description

IR cable



POWER cable  
(2pin)



SBUS/PWM  
cable (4pin)



AIR Commander v2  
RX cable



## FAQ

- **HDMI feed is missing once REC is enabled via USB**

This is the most frequent issue on SONY cameras. In the basic, Sony cameras are unable to keep HDMI feed with USB connected. In the default mode, the Entire is trying to trigger video via USB and disconnect itself from USB. However this trick does not work on some models. If you are missing HDMI feed during video recording, please enable "Use IR video triggering" function under miscellaneous. Also you have to mount the IR cable to the EXT port of the Entire and to the camera sensor (remember to enable "Remote CTRL" function in the camera). Once enabled, The Entire will firstly disconnect the USB, and after while it starts video recording via IR command. This will keep your HDMI feed active during recording.

- **HDMI feed is missing in the MOVIE mode**

In the Movie mode most of Sony cameras cannot keep HDMI feed and the USB connection. If you would like to get high quality HDMI output for external recording (that is the only reason for Movie mode usage), you have to use WiFi control. In the WiFi control the HDMI feed does not disappear.

- **WiFi hotspot disappear after few minutes**

The Entire's WiFi is extremely sensitive to input power stability. If you have issues with hotspot disappearing, your power input is most probably too weak. You have to take in mind, that once USB is connected to the camera, power consumption of the Entire can be as high as 1.8A! (depending on your camera model) If you have no other option to power the Entire, you can disable the USB camera charging (via the Camera menu).

- **USB re-connecting after each photo is annoying, can be shortened?**

Yes, we know that especially for photographers is repetitive USB re-connecting after photo capture very exhaustive. That is why we have implemented the "Don't reconnect USB after photo" feature. It's self-descriptive, after photo trigger, the Entire will not re-connect the USB and you are free to take another capture immediately. USB will be connected back automatically in the moment of necessity, for example at the moment of aperture change.

- **Do I have to insert SD card into the Entire's slot?**

No. SD slot is used only for GeoTagging purposes. During the camera control it has no usage.

## FAQ

- **AIR Commander Link (or v2) is still offline, it is defective?**

Defect is of course every time possible, however in 99% of cases are both PORT A and PORT B configured as Acv2. Please disable the secondary port if unused or configure to different connection.

**This MANUAL is not complete.**

If you are missing some information please feel free to write us to:

[Info@airpixel.cz](mailto:Info@airpixel.cz)

## Warranty

All warranty and post-warranty service provides manufacturer at [www.airpixel.cz](http://www.airpixel.cz). If any malfunction or non-usual behavior occur, stop using device and contact manufacturer at [info@airpixel.cz](mailto:info@airpixel.cz).

## Manufacturer

**AIRPIXEL.CZ**

Na výsluní 25

Prague 10

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Czech Republic

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