airpixel.cz

AIR C②mmander
ENTIRE

Entire r3 - Camera control

USER'S MANUAL

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!

Introduction

Basic parameters

- INPUT VOLTAGE 5V!

- WiFi2.4 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.

System

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!

<u>All input and output pins of 5V and Ground are interconnected.</u> 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, <u>contact us at info@airpixel.cz</u> or <u>disconnect the power pin by removing from cable connector.</u>

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_xxxx"*(xxxx 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.
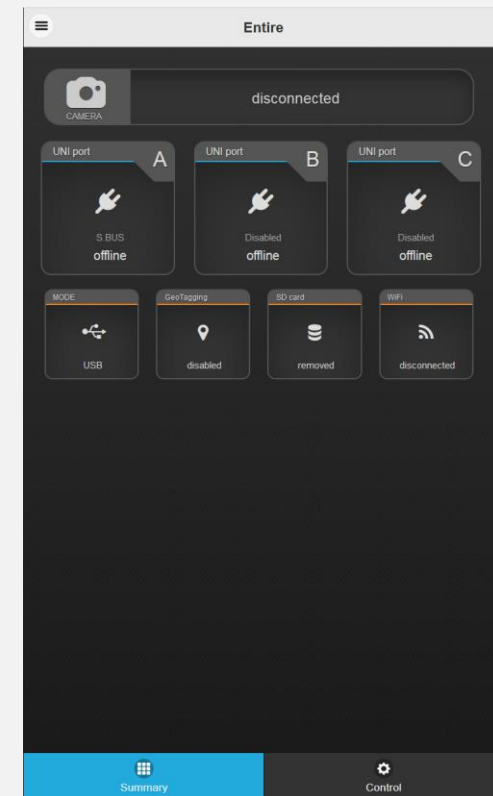
Connection

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.15)

    For the Nikon or Canon cameras

    ✓   *USB cable* (check cable photo at pg.15)

    ✓   *USB-C cable* (check cable photo at pg.15)

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
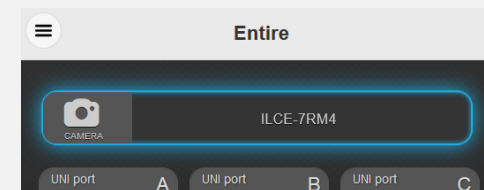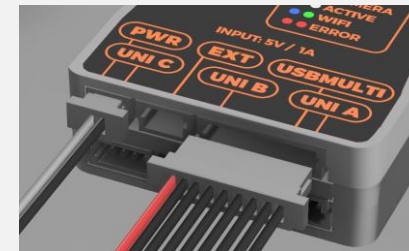
WARNING!

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.

Connection

UNI A/B/C connection

AIR Commander Entire has two 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.

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.

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
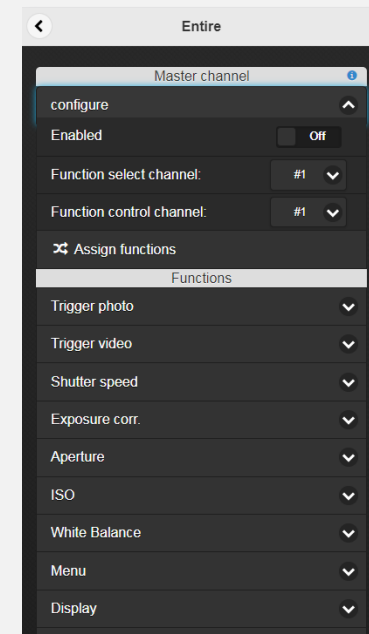
Master channel

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.

Example usage scenario:

- Let's use "Select channel" #2, this channel will select controlled function.
- Function channel will be at #4, this channel will trigger function selected by channel #2.

- Under the "Assign Functions" menu, you can now add functions to be selected by the ch #2.
- Our example map is on the picture at right.
- Ch #4 must be in center position at default (configured at RC transmitter). Moving position up or down will trigger function.
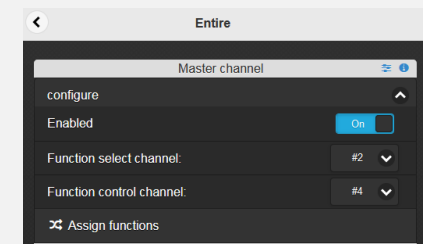
Example practice:

- With our example configuration moving of knob/stick which controls the ch #2 will select functions from "Shutter speed" at lowest value to "Zoom" at highest value.
- When ch #4 is moved from center position to "high" when ch #2 is selecting "Shutter speed" (low value), the Entire will start blinking white and start increasing camera shutter speed.
- When ch #4 is moved from center to "low", Shutter speed will be decreased.
- When ch #2 is changed to high, the Entire will stop changing Shutter speed, and instead of that it will start Zooming the camera IN or OUT, depending on ch # position.
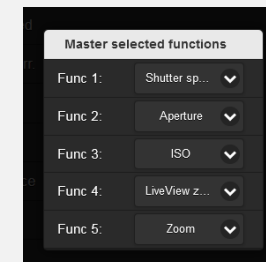
Of course all standard functions (page above) are still available, so you can for example add "Trigger photo" or "Trigger video" to any other available channel of your SBUS input.

Functions

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.*

Functions

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

*Functions*
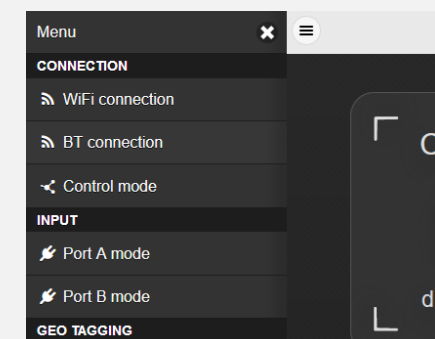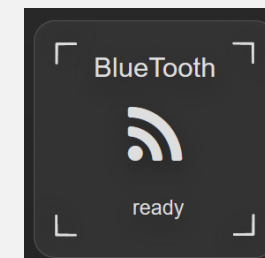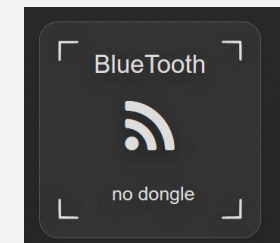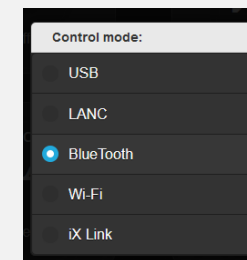
Pairing new camera via BlueTooth

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)

Functions
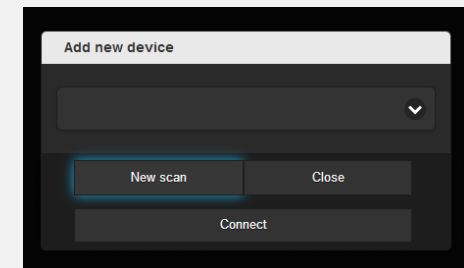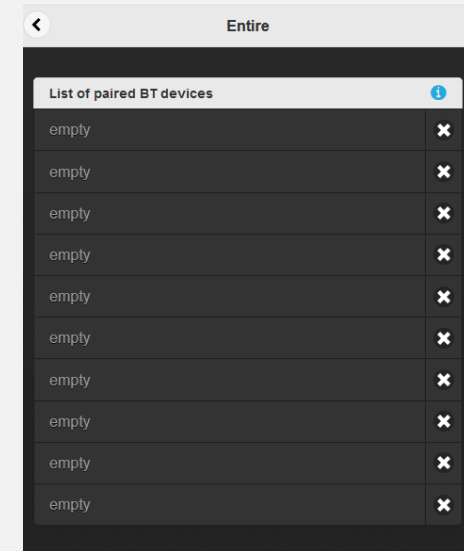
DJI LB2 control

You can use your DJI controller to manipulate your camera remotely. The Entire's configuration is basically the same as for any other SBUS input. For full camera control via DJI LB2, you have to use DJI Expansion KIT, which is connected to the DJI Transmitter via CAN and expands the amount of "sticks" and "knobs" of your standard DJI Transmitter. All you need is:

- Follow the DJI manual for the DJI Expansion KIT installation

- Use DJI Assistant to map sticks or knobs to unused F-ports of your A3/N3 flight controller's output

- Use any PWM-SBUS converter and connect all desired F-port outputs to the converter

- Connect converter's SBUS output to the SBUS input of the Entire

- Now you have all DJI Expansion KIT sticks movement directly in the Entire, and you are free to use them for control of any camera feature
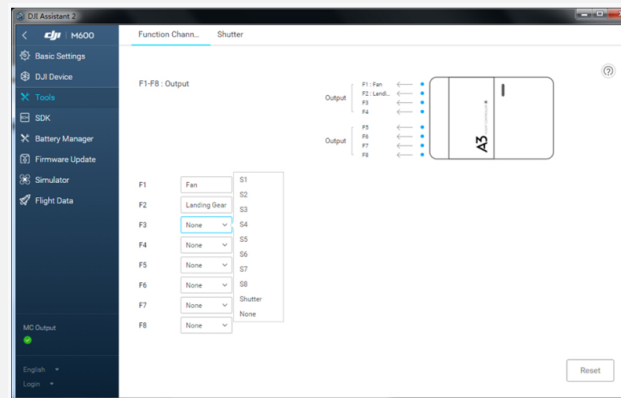
MavLink control

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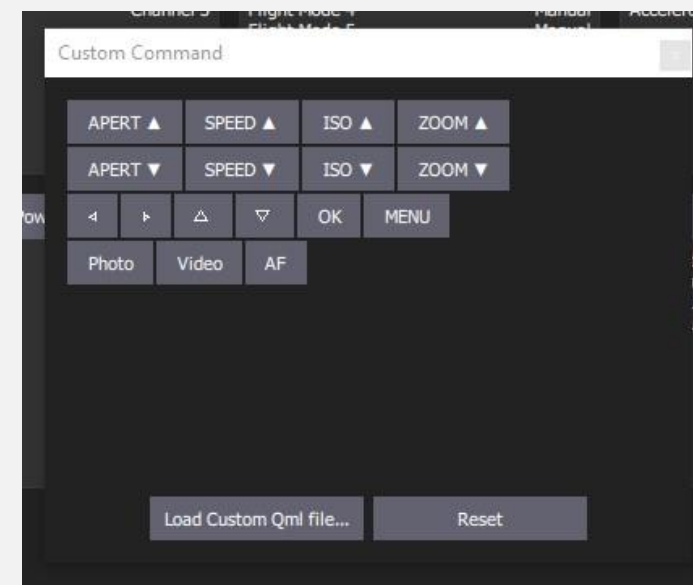
The Entire must be updated to the minimum FW 1.079 for this feature.

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
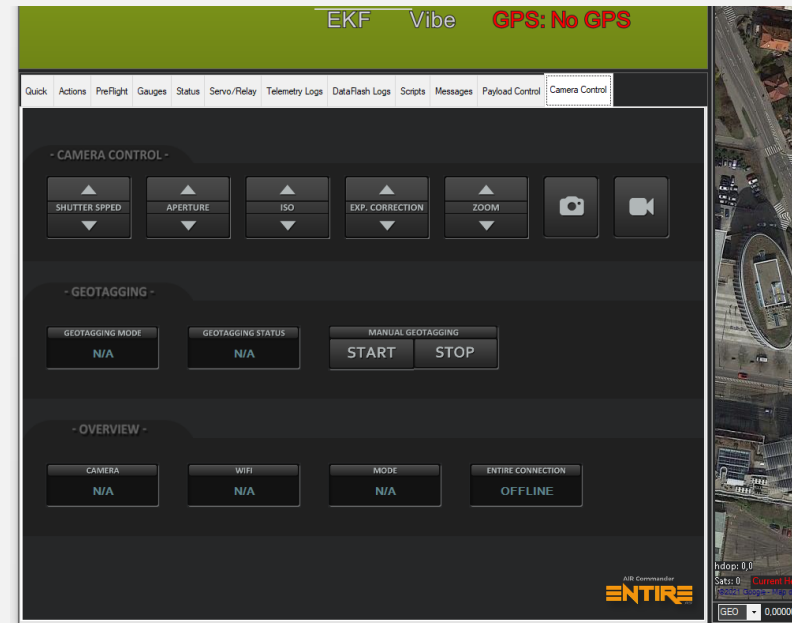
HereLink internal Android application – MavCam for HereLink

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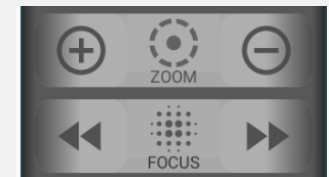
MavCam for HereLink – Using with external control (QGC / MissionPlanner / UgCS / etc.)

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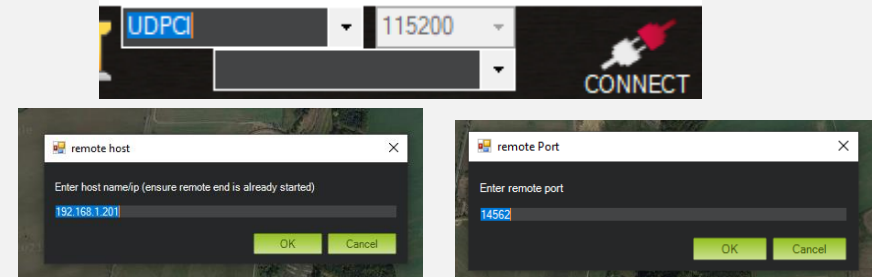
QGC external configuration for cases of share in local network (not directly connected to the HereLink hotspot)

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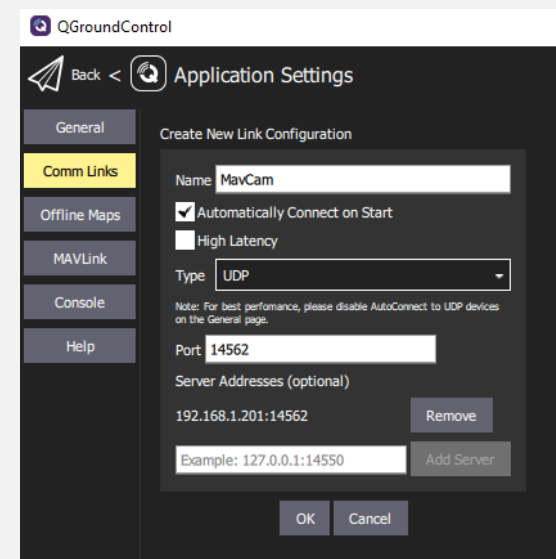
MissionPlanner external configuration for cases of share in local network (not directly connected to the HereLink hotspot)

- 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
```
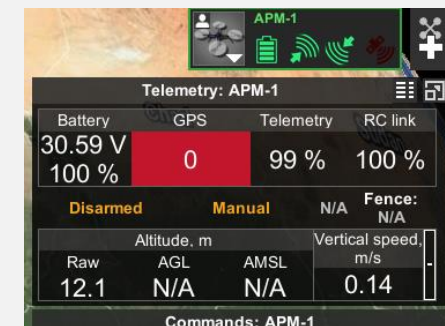
Android application (HereLink)

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 it 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.
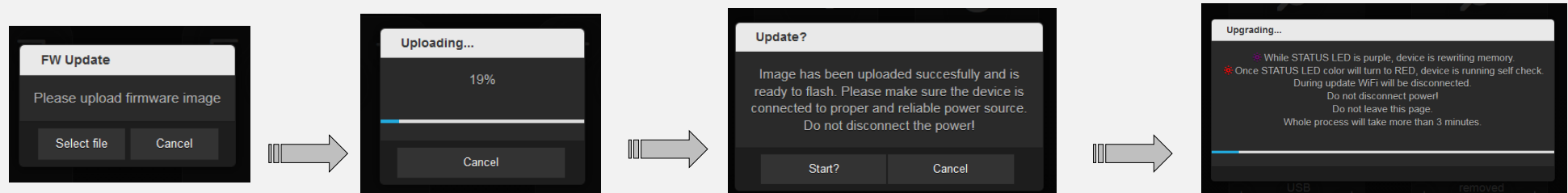
Cables description

USB Power

Multiport USB cable

USB cable

USB-C cable

UNI cable (Link RX connection)

20

Cables description

IR cable

POWER cable
(2pin)

SBUS/PWM
cable (4pin)

AIR Commander v2
RX cable

output

7-20V input voltage adaptor cable

7-30V input power adaptor

input

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.

FAQ

This MANUAL is not complete.

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

Info@airpixel.cz

Warranty

All warranty and post-warranty service provides manufacturer at www.airpixel.cz. If any malfunction or non-usual behavior occur, stop using device and contact manufacturer at info@airpixel.cz.

Manufacturer

AIRPIXEL.CZ

Na výsluní 25
Prague 10
100 00
Czech Republic

Made in Czech Republic

Legal