



# BirdOne Fly (DJI) User instructions

Thank you for supporting BirdOne! This user manual will help you get setup using BirdOne Fly (DJI). If you have any questions or comments, please contact us at: [support@b1rd.io](mailto:support@b1rd.io)

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## App functionality

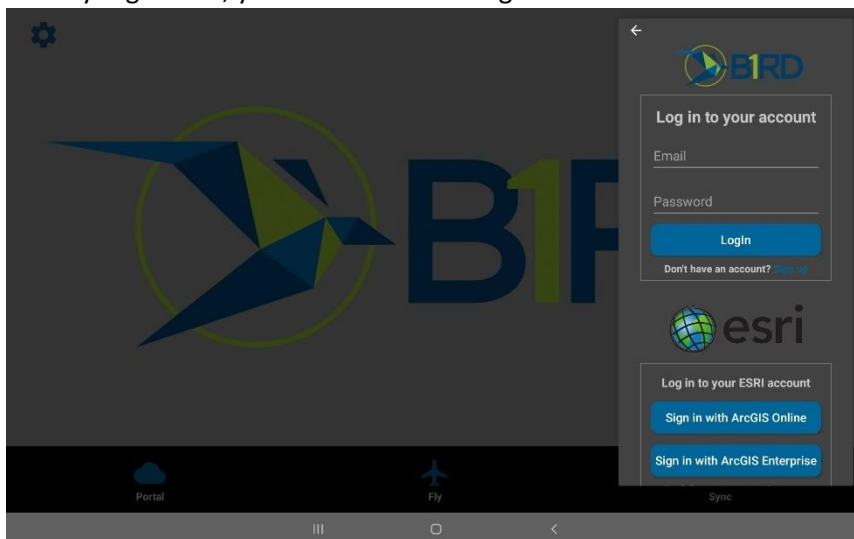
The next section will walk you through current functionality and how to set up your database for flight. When you first open the app, you will be prompted with the home screen. The home screen has 5 different icons in this edition. They include Login, Settings, Portal, Fly, and Sync.





## Login

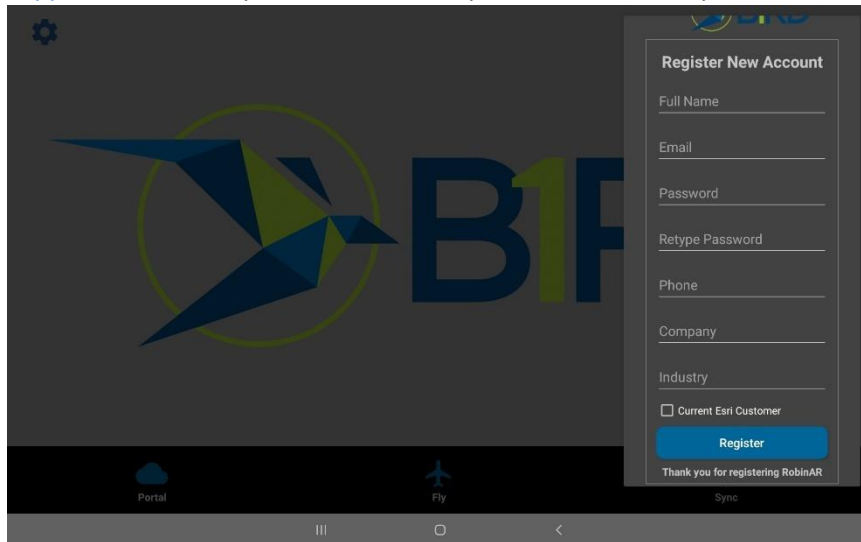
To log in, select the profile icon in the upper right corner. This will take you to the registration page shown below. For the first time login, fill out the information required to register a new user. If you have already registered, you can select the “Login Here” button.



Once you are registered, you will be able to login to access most software functionality however you will not be able to sync back to your portal without a license. To request a temporary license, please email



[support@b1rd.io](mailto:support@b1rd.io) if you would like to purchase a license, please contact [sales@b1rd.io](mailto:sales@b1rd.io).



## Settings

The settings button is in the upper left corner of the home screen. The settings page includes Geodatabase file, edit fly parameters, edit clip parameters, edit emulation parameters, version number.

### Geodatabase file picker

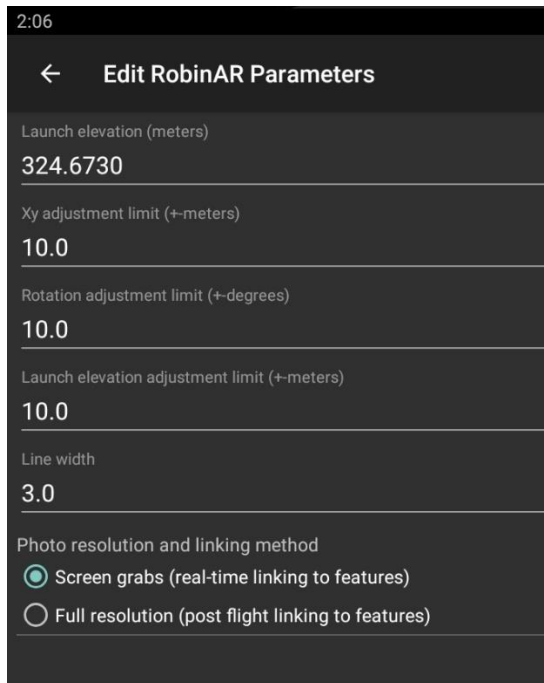
The Geodatabase file sets the location of the selected geodatabase once a web map has been downloaded. By default, all ESRI web maps are downloaded to the BirdOne directory in the root folder structure of your device.

To change the active geodatabase, select the Geodatabase picker which will drop down and show any Geodatabases currently saved on your device.

### Edit Fly Parameters

The Edit Fly Parameters currently contains 6 options; Launch elevation, XY adjustment limit, rotation adjustment limit, launch elevation adjustment limit, line width, and photo resolution and linking method.





#### *Launch elevation (meters)*

In this current build, terrain caching has not been implemented. If you are using 3D data, you will be required to know the launch elevation relative to your 3D data. If your launch elevation is off by some, you will be able to adjust the elevation in flight. For 2D data, the launch elevation does not matter however if you are flying in terrain, the augmented reality experience will not work as well.

#### *Xy adjustment limit (+- meters)*

The XY adjustment limit allows you to set the maximum distance that you can adjust the XY position of your data. The GPS on the DJI Mavic 2 Pro is typically better than 1 meter. More commonly, datum transformation errors exist in ESRI portal data when data is converted from a projected NAD83 coordinate system to the WGS84 Web Mercator system used by ArcGIS online. If the offset limit is set to high, additional errors can be introduced to your data by offsetting the location of your rotation matrix during augmented reality flight.

#### *Rotation adjustment limit (+- degrees)*

Similar to the XY adjustment, the rotation adjustment limits can be adjusted. The accuracy of the onboard sensors is about 1 degree. However, if proper compass calibration and gimbal calibration isn't performed, these values can be higher. It is recommended to first calibrate your compass and gimbal before using values greater than 3 degrees. The sensitivity of these adjustments in flight will scale based on the value used here.

#### *Launch elevation adjustment limit (+- meters)*

Launch elevation limits can also be set. Several factors can affect your elevation accuracy. For one, DJI does not use GPS elevation but rather a barometric elevation. During a flight, the elevation can drift up to 3 meters if barometric conditions change. Additionally, if the exact elevation of your takeoff point is unknown relative to your 3D data, it may be necessary to manually adjust this elevation a large amount during flight.



### *Line width*

In this current build, line styles have not been introduced however there is a global line width parameter. By default, this value is 3.

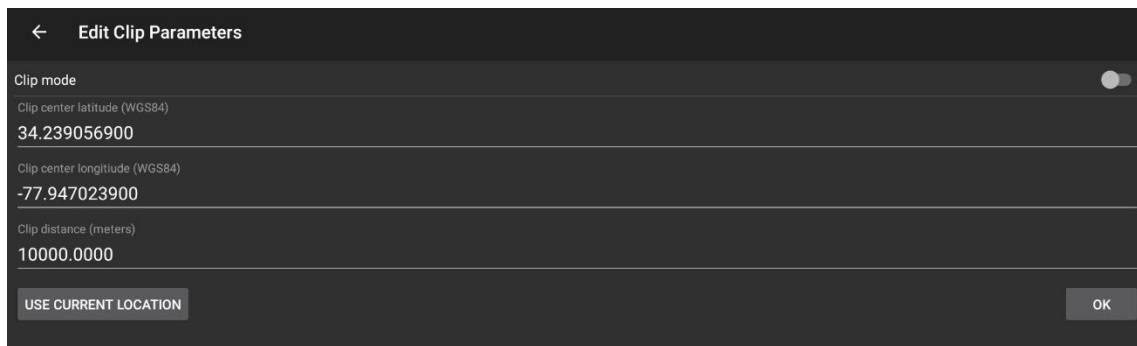
### *Photo resolution and linking method*

There are two ways that photos can be linked to your database depending on your workflow. If you need to get smaller files quickly back to your team in near-realtime, your best option may be the screen grabs. Screenshot grabs are dependent on the resolution of your tablet but are typically around 1900 x 1200. When this mode is selected, any photos taken are automatically placed in the local copy of your geodatabase. There is no need to link anything from your drone.

The second mode is full-resolution imagery. Due to SDK limitations, data must be linked after the flight. RobinAR automatically tracks which images are associated with which features. After the flights, either connect your USB cable directly to the drone or insert the SD Card in the tablet. RobinAR will automatically determine where the photos are located and load them into the geodatabase before sync.

### *Edit Clip Parameters*

The edit clip parameters allow you to download a very large geodatabase and then clip it locally on the tablet for a better flight. This can improve video streaming when using large databases with several million vertices. The toggle in the upper right corner can turn this feature on and off. By default, it is off.



### *Clip center latitude (WGS84)*

The decimal degree latitudinal location of the center of the clip function

### *Clip center longitude (WGS84)*

The decimal degree longitudinal location of the center of the clip function

### *Clip distance (meters)*

The buffered distance from the center location to clip data.

### *Use Current Location*

RobinAR can read the GPS coordinate of the location you are preparing to fly and auto-populate the coordinates

### *Edit Emulation Parameters*

Before a flight, emulation can be useful to verify that the data loaded correctly. The user can verify this by using the emulation mode in Fly. To turn this feature on, select the toggle button in the upper right



corner. By default, this is turned off. If this is turned on during the flight, your data will not display correctly in augmented reality.

← Edit Emulation Parameters

Emulation mode

Emulation latitude (WGS84)  
39.267034000

Emulation longitude (WGS84)  
-94.492627000

Emulation altitude (meters)  
500.0000

Gimbal roll (degrees)  
0.0000

Gibal pitch (degrees)  
-89.9000

Gimbal yaw (degrees)  
12.1000

EMULATE SITE 1 EMULATE SITE 2 OK

*Emulation latitude (WGS84)*

The emulated latitude of the drone position in decimal degrees

*Emulation longitude (WGS84)*

The emulated longitude of the drone position in decimal degrees

*Emulation altitude (meters)*

The emulated altitude of the drone position in meters

*Gimbal roll (degrees)*

The emulated roll value of the camera in degrees

*Gimbal pitch (degrees)*

The emulated pitch value of the camera in degrees

*Gimbal yaw (degrees)*

The emulated yaw value of the camera in degrees

Version Number

The current version number and release date.

Portal

The portal login screen allows you to access your ArcGIS portal account to view and download your web maps.



### ArcGIS Online Portal URL

The URL address of your ESRI portal i.e. <https://YOURDOMIAN.maps.arcgis.com>. If you are using ArcGIS Online, you should only have to enter your domain. The rest of the information (.maps.arcgis.com) will automatically fill out.

If you are using ArcGIS Enterprise you will need to set up an app on your portal. Instructions are provided [here](#). After you set up the app you will receive an enterprise OAuth ClientID. You will need to enter that value and then log in normally.

### Username

Enter your ESRI login credentials. The BirdOne credentials are separate.

### Password

Enter your ESRI password.

### Sort Oder

Web maps can be sorted by either upload date or by title.

### Login and Search Portal

Once your ESRI credentials have been entered select “Login and Search Portal”. If your login is successful you will see your web maps displayed below.

### Select Web map

Use the select web map dropdown to select the web map you would like to load.

### Load Next group

By default, only 5 web maps are displayed at once. Use the load, next group, to display the next 5.



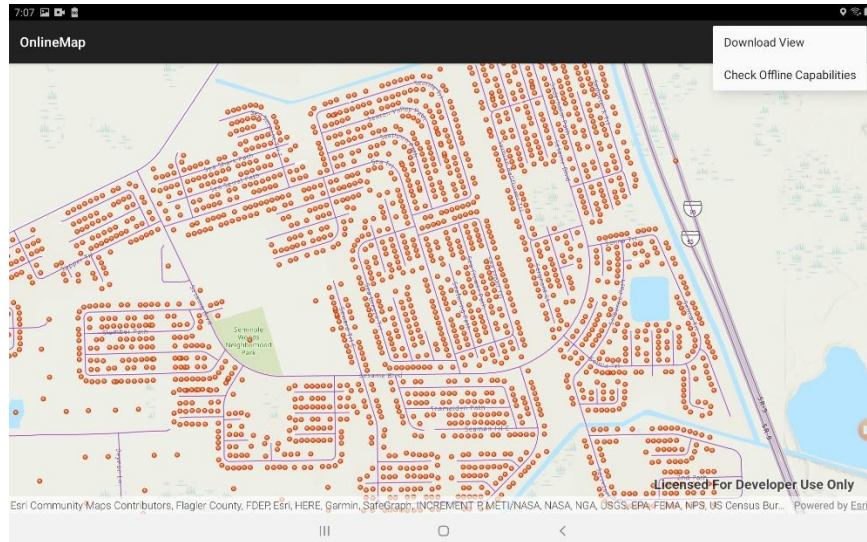


## Open Map

Open Map will display the selected web map.

## OnlineMap

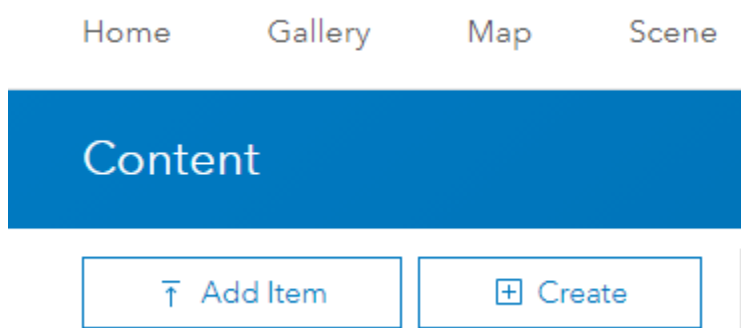
Once a map is selected, the OnlineMap screen will appear. You can zoom in or zoom out of your web maps to select the area you would like to download. Once that area is selected, hit the 3 dots on the right and select download view. This will initiate the download process. Depending on the size of the web map, this can take some time. It is recommended to download over Wi-Fi before going to the job location. Once the web map is downloaded sync operations are much faster.



## ArcGIS Enterprise Setup

In order to access ArcGIS Enterprise you will need to configure your portal to accept BirdOne. To do so, log into ArcGIS Enterprise Portal as an administrator and follow the following steps.

1. Go to Content and select "Add Item"



2. Next select Add an application. Be sure to select "Application" as the Type and give it a title. The title can be anything you want. You will also have to give it a tag.



## Add an application



Add an item from your computer or reference an item on the Web.

Type:

- Web Mapping  Mobile  Desktop  Application  
 Application Extension (AppBuilder)

Title:

BirdOne\_Field\_DJI

Tags:

Application X  
Add tags

Add Item Cancel

- Once your application is created you will need to go to the settings for that app. At the very bottom you will see a section called Application. Select Registered Info

Application

Data Source

URL

App Registration

Registered Info

Update Unregister App

- Under Registered Info you will see an App ID: This value is your Client ID for BirdOne to access your portal using OAuth. You will need to enter this value in BirdOne under the ClientID
- Next you will need to add the redirect for BirdOne. To do so, select update under App Registratoin. This will bring up the registered info dialog. In the Redirect URI box, type: robinar://auth and hit add. Be sure to leave the oauth URI that was already there.



×

Registered Info

App ID:  
XXXXXXXXXX

App Secret:  
[Show Secret](#)

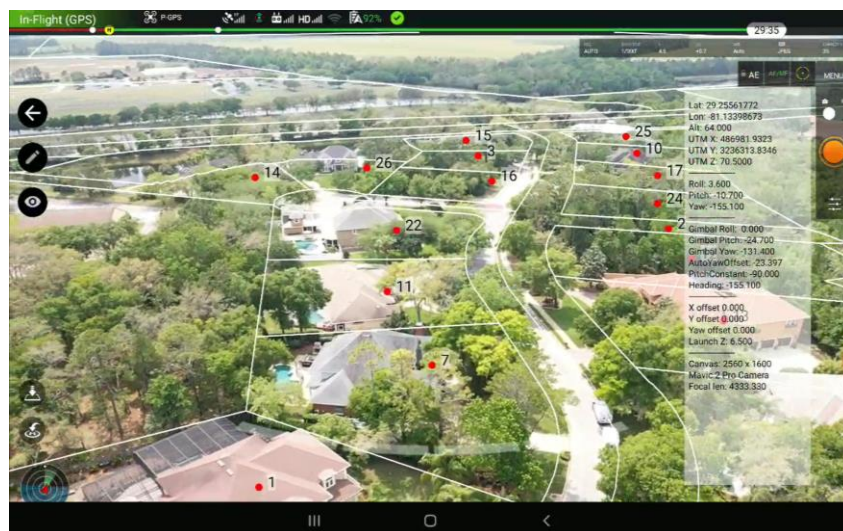
App Type:  
 Multiple

Redirect URI:

- Once these steps are complete on the portal, log into your enterprise portal. Be sure to exclude /home from your portal URL. The first time you log in, you will be prompted to enter your App ID. Enter the app id from the portal. This information will then be stored for your organization for all other users. After this setup is complete, you will only have to enter your username and login for the portal just as you would other esri mobile apps.

## Fly

Once you have downloaded and selected a web map to display in AR, you are ready to enter flight mode. For DJI users, the user interphase will be very familiar to them. The current release maintains most of the visual components of DJI Go 4 with the addition of three buttons on the left; Home, Edit / Graphics Adjustment, and View Telemetry.



## Emulation mode

As mentioned in the settings, Fly can emulate your data before a flight. The advantage of this is that you can determine if your data is correct before you leave the office. Using the three sliders in the upper left corner you can rotate the viewpoint of the camera and change the elevation.



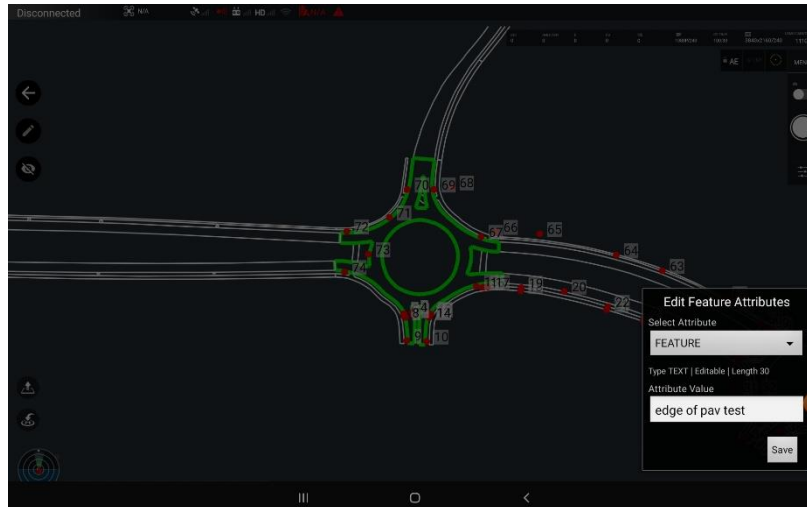
## Home Button

In both Fly and Emulation mode, the first icon on the left is the home button. By selecting this, you will return to the home screen.

## Edit / Graphics Adjustment Button

The next icon looks like a pencil. The graphics adjustment button allows you to move your data using touch. It also allows you to select and edit attributes of your GIS data. When you first enter the Fly screen, the edit button is selected. By tapping the button, you can toggle to three different graphic adjustment modes. The first mode will allow you to add a bias in the X, Y, Z, and rotation all at the same time. To move graphics in X and Y, select the feature a location and drag your finger. To move the graphics in Z, use two fingers to pinch or spread them apart to add and remove a Z bias. To rotate the graphics, use two fingers and rotate either clockwise or counterclockwise. To reset any bias introduced, double-tap the screen while in any edit mode.





### Telemetry Button

The telemetry button allows you to view the live telemetry information while in flight. By selecting the eye icon, you can toggle this information on and off. This is primarily used for troubleshooting during beta production however the telemetry information can be useful to verify GIS data as well.

### Camera settings

In this release, for AR display to work correctly, the camera must remain in the 4:3 aspect ratio for the DJI Mavic 2 Pro. Changing the aspect ratio will affect the camera geometry making AR unusable. Future builds will limit the camera settings so that both image and video views will always display correctly.

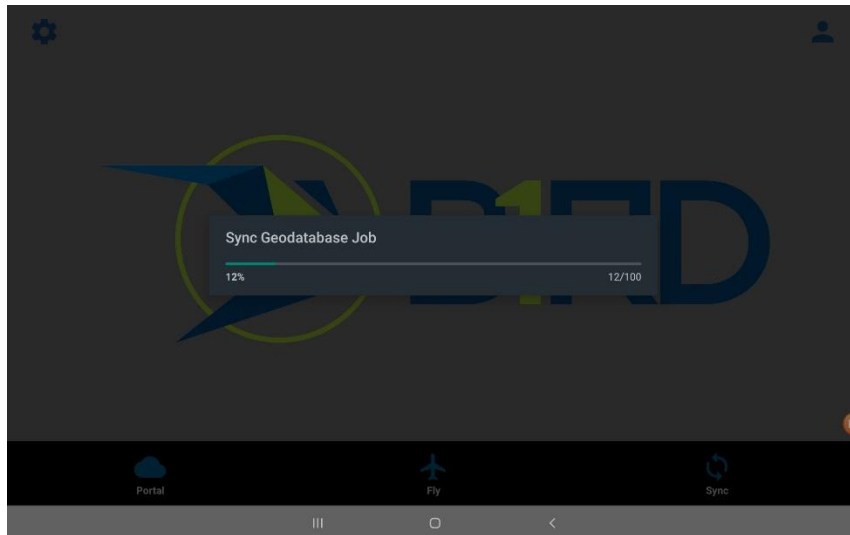


### Sync

Once data has been edited during flight, those changes need to sync back to your portal. RobinAR will store your encrypted credentials from the web map you downloaded. Just select sync and your data should sync back to the portal. This sync is two way so If an edit is made on the portal and you need the



updated information locally, use the sync button to update your offline geodatabase. Once a Geodatabase is offline, you should only need to use the sync button to update both what other users are doing and the edits you make with RobinAR.



## Troubleshooting

As with all beta software, we fully anticipate errors and bugs to occur. To help find and correct those bugs, as much information you can provide is best. When possible, our recommendation is to use a screen recorder with the telemetry displayed. We recommend you use [XRecorder](#). This is a free app that you can run while flying without disrupting the flight.

For support, please email us at [support@b1rd.io](mailto:support@b1rd.io)

Thank you for your support of this software and we look forward to building a better product with you as our partner.

