Process RedEdge Panchromatic images with Metashape

Learn how to process MicaSense RedEdge Panchromatic (RE-P) images with Agisoft Metashape photogrammetry software.

General recommendations

- WingtraOne datasets, in particular those that are captured with the MicaSense RE-P sensor, can be quite large. Please make sure to have enough computing resources available.
- We recommend >= 32GB RAM, >6 core and enough high-speed SSD storage.

> **Note**
> At the moment, Metashape is not directly compatible with PPK-geotagged images. If you ran PPK geotagging, we recommend using the raw images collected by the drone and importing the geotags CSV file for more precise location information.

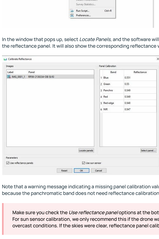
Step 1. Create the project and import the images

- Open Metashape and create a new project (*File → New*)
- Open the *Workflow* menu and select *Add Photos* or *Add Folder* to import all the images
- Select *Multi-camera system*

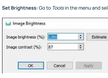
Metashape identifies the calibration images and moves them to a special camera folder so that they are not used in the alignment.

Step 2. Set primary channel to Pancho band

To use the higher-resolution panchromatic band to align the data, make sure that you set the primary channel to Pancho under the *Tools → Set Primary Channel* menu.



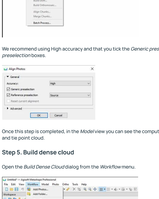
In the *Set Primary Channel* window select *Channel 3 - Pancho* and then click on *Apply* and *OK*.



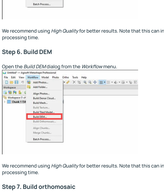
Step 3. Calibrate camera

In order to compare the multispectral data to other measuring tools, to satellite imagery, or even across different times of the season, it is important that the images are calibrated radiometrically. The images of the calibration panel that were taken before and after the flight are used for this step.

To implement the calibration, go to the *Tools* menu and then select *Calibrate Reflectance...*



In the window that pops up, select *Locate Panels*, and the software will look for the pictures of the reflectance panel. It will also show the corresponding reflectance values for each band.



Note that a warning message indicating a missing panel calibration value will come up. This is because the panchromatic band does not need reflectance calibration.

> Make sure you check the *Use reflectance panel* options at the bottom of the window. For sun sensor calibration, we only recommend this if the drone was flown under overcast conditions. If the skies were clear, reflectance panel calibration is sufficient.

Set Brightness: Go to *Tools* in the menu and select *Set Brightness*.

In the *Image Brightness* window, select *Estimate* and then *Apply*.

Step 4. Align photos

Open the Align photos ... dialog from the *Workflow* menu.

We recommend using High accuracy and that you tick the *Generic preselection* and *Reference preselection* boxes.

Once this step is completed, in the *Model* view you can see the computed camera locations and te point cloud.

Step 5. Build dense cloud

Open the *Build Dense Cloud* dialog from the *Workflow* menu.

We recommend using *High Quality* for better results. Note that this can increase the processing time.

Step 6. Build DEM

Open the *Build DEM* dialog from the *Workflow* menu.

We recommend using *High Quality* for better results. Note that this can increase the processing time.

Step 7. Build orthomosaic

Open the *Build Orthomosaic* dialog from the *Workflow* menu.

Use DEM as a source surface. Note that the software will take some time since it needs to create 6 orthomosaics (one for each band).

You can view the Orthomosaic by double-clicking on Orthomosaics under Chunk1

Step 8. Pansharpening

Pansharpening can be done in Metashape using the raster calculator. Pansharpening uses a higher-resolution panchromatic image fused with lower-resolution multiband images to create a higher-resolution raster dataset.

Open the *Raster Calculator* from the *Tools* menu and use the formulas below to pansharpen the bands for a pansharpened version of the dataset.

You can copy the formulas below:

B1 * (B3 / ((0.2 * B1 + 0.2 * B2 + 0.2 * B4 + 0.2 * B5 + 0.2 * B6)) / 32768

B2 * (B3 / ((0.2 * B1 + 0.2 * B2 + 0.2 * B4 + 0.2 * B5 + 0.2 * B6)) / 32768

B4 * (B3 / ((0.2 * B1 + 0.2 * B2 + 0.2 * B4 + 0.2 * B5 + 0.2 * B6)) / 32768

B5 * (B3 / ((0.2 * B1 + 0.2 * B2 + 0.2 * B4 + 0.2 * B5 + 0.2 * B6)) / 32768

B6 * (B3 / ((0.2 * B1 + 0.2 * B2 + 0.2 * B4 + 0.2 * B5 + 0.2 * B6)) / 32768

Step 9. Export the orthomosaic

To export the orthomosaic with the above raster transformation, select on the *File* menu the *Export Orthomosaic → Export JPEG/TIFF/PNG* option. In the *Export Orthomosaic* page, set the *Raster transform* field to *Index Value* and *Export* the orthomosaic.

If you don't want to create a pan-sharpened dataset, you can choose "None" in the *Raster transform* field.

If you are interested in creating additional multispectral products from RE-P data, you can find more information in the article Creating multispectral products with RedEdge-P and QGIS.

Related articles
RX1: Can I capture and geotag RAW images?
WingtraOne GEN II/trumfloodEdge: Missing images
How to process RedEdge data in PIx4D
Process WingtraOne images with PIx4Dmapper
Data acquisition with WingtraOne RedEdge MX