Hyperspectral Video Camera
ULTRIS X20 Plus

High Resolution HSI Camera for UAV Aerial Mapping

The **ULTRIS X20 Plus** is the dual-sensor version of our X20, designed for aerial mapping from a UAV. A second camera takes **panchromatic images** in parallel to the spectral camera. It provides a resolution of **1886 x 1886 pixels**, giving incredibly detailed images. The extra data allows us to use **pansharpening** to enhance the images even further and increase the spatial resolution of the spectral data.

When it comes to stitching the single data files after the flight, the pan data increases the spatial accuracy of the generated mosaic. Even though the ULTRIS X20 Plus integrates two sensors, it is still lightweight (**630 g**), so together with a gimbal, a mini computer and GPS the payload is still less than 2 kg, making it suitable for a wide range of drones, especially for the well established **DJI Matrice M300 RTK**.

Technical Specifications ULTRIS X20 Plus

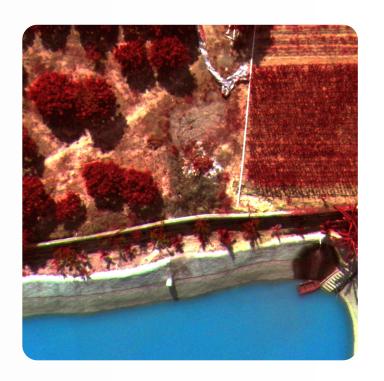|			
Technology	Light Field	FOV (Field of View)	35°
Readout	Global shutter	Data Depth	12 bit
Spatial Resolution	410 x 410 pixel	Max Frame Rate	4 Hz
Spatial Resolution Pan	1886 x 1886 pixel	Data Link	GigE
Wavelength Range	350 – 1000 nm	Sensor	CMOSIS CMV20000
Spectral Bands	164	Sensor Pan	Sony IMX264
Spectral Sampling	4 nm	File size unprocessed	< 25 MB (< 2.5 MB Pan)
FWHM	Constant 10 nm	File size processed	< 55 MB (< 1.2 GB PS)
Bandpass Filter	Mosaic	Weight	630 g
Integration Time	0.1 – 1000 ms	Dimensions	86 x 121 x105 mm

UAV compatible

The ULTRIS X20 Plus is compatible with **any drone**. For recording data the camera can work in time lapse mode or be triggered directly from the UAV. The image on the left shows the camera onboard a **DJI Matrice M300 RTK**. It is mounted on a gimbal containing a Windows-based mini computer which runs the Cubert CUVIS software and records the data. The gimbal is connected via **DJI-Skyport** to the UAV, which triggers the camera automatically during the flight and provides the RTK GPS signal for each single data file.

Comprehensive options

The CUVIS software takes **Raw data**, **Reflectance** and **Radiance**. The dedicated server allows for autonomous operation during UAV flights. While retaining a minimal raw data consumption, the exported data, available in **ENVI**, **Single Tiff** or **Multitiff**, seamlessly integrates with common GIS and mapping software, including pansharpening. Meta data like GPS information, a necessary input for the stitching software, is written to the exported files as well. The image on the right shows a pansharpened Colored Infrared scene taken with a X20 Plus of a corn field, trees and a lake. The data was taken in a height of 40 m, with a resulting panchromatic resolution of stunning 1.5 cm per pixel.