



# ULTRACAML

Photogrammetric Medium Format  
Digital Aerial Mapping Camera

Can be used on smaller airplanes  
meaning lower operating costs  
without sacrificing image quality.

## Overview

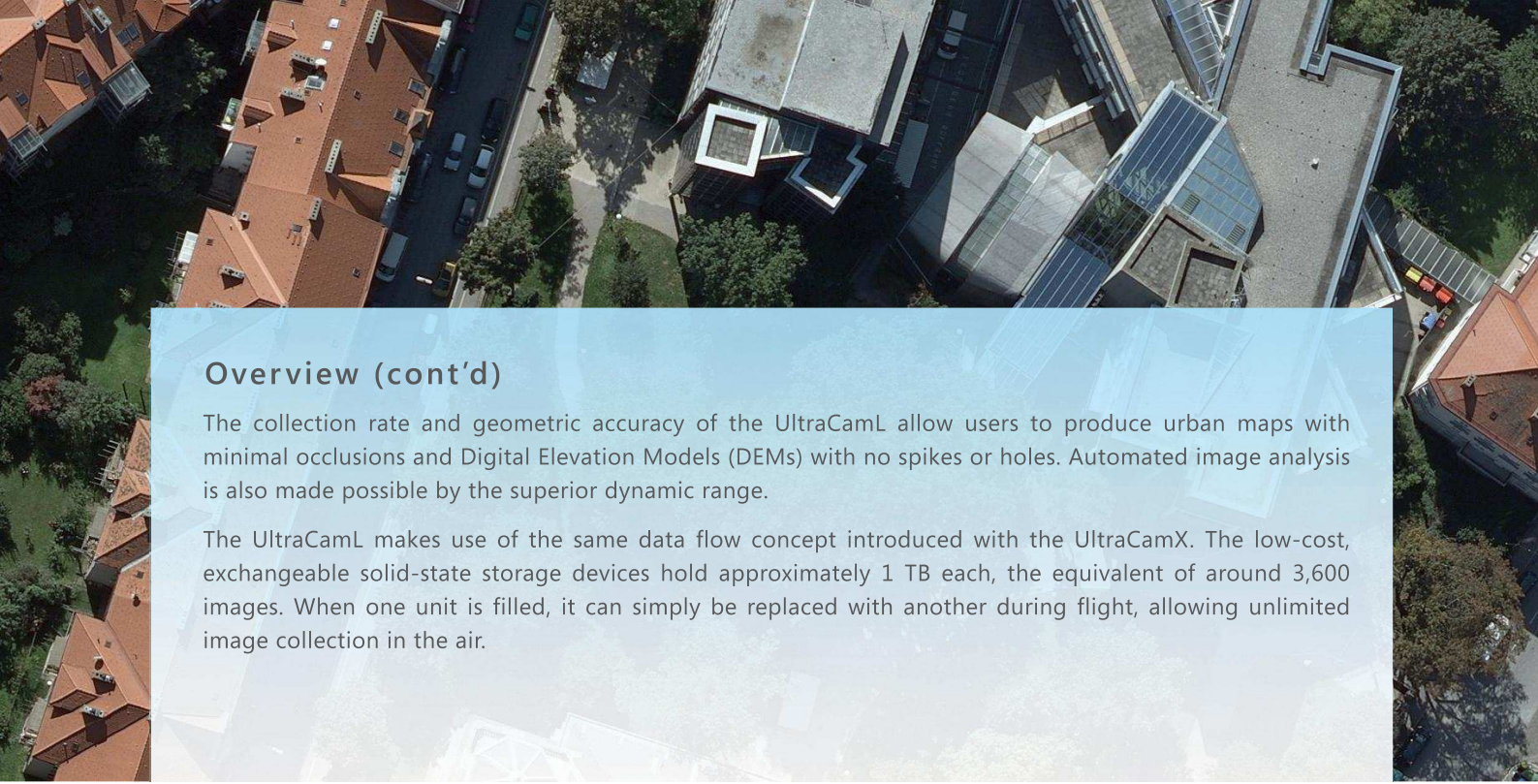
The Microsoft UltraCamL photogrammetric medium format digital aerial camera provides a reliable and economical solution for producing image data of superior quality. Taking advantage of the large-format camera concept that has proven most successful with the UltraCamX and UltraCamXp, the UltraCamL now offers the same geometric accuracy and dynamic range in the medium format market. The collection rate and geometric accuracy of the UCXp allows users to produce urban maps with minimal occlusions, and Digital Elevation Models (DEMs) with no spikes or holes, and to produce high-quality large-scale ortho-photos. Automated image analysis is also made possible by the superior dynamic range of the UCXp.

Without sacrificing image quality, the UltraCamL can be used on smaller airplanes, and thus operated at lower cost. Smaller mapping companies now have an affordable option for offering a digital platform and expanding their aerial services. The UltraCamL is also ideal for larger mapping firms who need to cost-effectively fly small projects or collect digital data in conjunction with lidar or other data.

The UltraCamL provides the same high geometric accuracy, broad dynamic range, matching and stereo capabilities, and full metric capabilities, as the large format cameras. The image data are suitable for DSM (digital surface model) production, aerotriangulation, ortho mapping and 3D technical vector mapping.

## features

- *Highest quality medium format available (64 megapixels in pan format; 9,735 across track, 6,588 along track) means superior price/performance ratio*
- *1:1.83 pan-to-color ratio delivers brilliant true-color and color-infrared (CIR) image quality with unmatched radiometric range*
- *Short frame interval allows multi-ray photogrammetry even for large-scale mapping at low altitude and high aircraft speed; forward overlaps of 80% are achieved at a 10 cm pixel size at 105 knots*
- *High level of detail with no blur due to Forward Motion Compensation (FMC) using Time Delayed Integration (TDI)*
- *Pixel size on the ground (GSD) at flying height of 486 m is 5 cm (10 cm GSD at 972 m altitude)*
- *Removable storage units provide two benefits: the length of missions is limited only by the constraints of the aircraft; ground time is minimized*
- *Maximum use of legacy environments; supports ALL standard gyro-stabilized camera mounts (PAV-30, Z/I-TAS, GSM3000) and most common GPS/IMU systems*
- *Utilizes only a sensor head with integrated sensor and computing sub-systems, integrated computing sub-system and integrated solid-state devices (storage sub-system) for maximum reliability; no additional computing or storage units are required*
- *Weight of UltraCamL sensor head is approximately 55 kg*
- *Panchromatic Focal Length: 70 mm, Color and NIR 33 mm*



## Overview (cont'd)

The collection rate and geometric accuracy of the UltraCamL allow users to produce urban maps with minimal occlusions and Digital Elevation Models (DEMs) with no spikes or holes. Automated image analysis is also made possible by the superior dynamic range.

The UltraCamL makes use of the same data flow concept introduced with the UltraCamX. The low-cost, exchangeable solid-state storage devices hold approximately 1 TB each, the equivalent of around 3,600 images. When one unit is filled, it can simply be replaced with another during flight, allowing unlimited image collection in the air.

## configurations

### Sensor Sub-system (integrated in the sensor head)

- Simultaneously collects Pan, RGB and NIR
- Panchromatic image size is 9,735 x 6,588 pixels; color and NIR image size is 5,320 x 3,600 pixels
- State-of-the-art 7.2 micron CCD technology allows 64 megapixels in pan image

### Computing Sub-system (integrated in the sensor head)

- Processes raw images on board in real time, to compute quick views and histograms

### Data Sub-system (integrated in the sensor head)

- In-flight storage capacity is limited only by number of solid-state storage devices on board, given space and weight constraints of aircraft
- Approximately 3,600 uncompressed images per device (~1 TB) can be stored

### Operational Specifications

- At 70% and 20% overlap, with 20 cm GSD and flying at 140 knots, the data collection period is approximately 7 hours per SSD unit
- Post-processing can begin in the air and be completed on the ground with a laptop or group of PCs
- Image geometric accuracy is approximately +/- 2  $\mu$ m
- Time between frame collections is 2.5 seconds
- Weight of UltraCamL is approximately 55 kg (only sensor unit required, no additional computing and storage units)
- Panchromatic Focal Length: 70 mm, Color and NIR 33 mm

## More Information

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