ULTRACAM PANTHER

Redefining 3D Reality Capture
The most flexible Reality Capture System

The UltraCam Panther enables your business to meet even the most demanding mobile mapping challenges: indoors, outdoors, everywhere!

Take advantage of the industry-first capabilities of the portable UltraCam Panther with its unrivaled flexibility and versatility. With 172 megapixels per full-spherical image, the camera head provides photogrammetric-grade imagery with an unprecedented resolution and image dynamic while always on the move. Combined with complimentary orientation-, LiDAR- and odometry-modules, the system simultaneously captures full-spherical imagery, precision LiDAR 3D data, and highly accurate geo-positioning information in both indoor and outdoor environments. Even without GPS reception, the visual odometry sensor provides uninterrupted and accurate positional information, especially indoors or underground.

Document, extract and model with a portable and ruggedized system that is easy to deploy, operate and maintain for use in areas such as mobile mapping, facility & asset management to natural resources and safety & security. Its versatility is also evident in the functional design of the UltraCam Panther: The camera unit as well as each individual module are factory adjusted for high geometric accuracy to ensure long-term stability and reliability. Combined with its high accuracy and flexibility, in terms of handling and range of usability, the UltraCam Panther defines a new class of 3D capture systems.
### Specifications & details

**[Preliminary]**

#### PANORAMIC HEAD

- **Field of view:** 360°
- **Full spherical coverage**
- **Camera resolution:** 172 Megapixels
- **Maximum frame rate:** 1.5 frames per second
- **Number of cameras:** 26

#### CAMERA

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imaging sensor</td>
<td>CMOS</td>
</tr>
<tr>
<td>Sensor size</td>
<td>3,088 x 2,152 pixels</td>
</tr>
<tr>
<td>Pixel pitch</td>
<td>1.4 x 1.4 µm</td>
</tr>
<tr>
<td>Color filtering type</td>
<td>Bayer Pattern</td>
</tr>
<tr>
<td>Focus type</td>
<td>Fixed focus</td>
</tr>
<tr>
<td>Focal length</td>
<td>3.24 mm</td>
</tr>
<tr>
<td>F-number</td>
<td>2.00</td>
</tr>
<tr>
<td>Depth of field</td>
<td>1.5 m to infinity</td>
</tr>
<tr>
<td>Optical format</td>
<td>1/3.6 inch</td>
</tr>
</tbody>
</table>

#### COMPUTER AND DATA STORAGE

- **Type:** Industrial PC Core i7
- **USB3 & Ethernet interface available**
- **Storage capacity:** 4 TB SSD hot-swappable
- **Interface:** Ruggedized tablet PC

#### BATTERY SYSTEM

- **Type:** V-Mount Li-Ion high load battery 14.4 V
- **Operating time at continuous data capture:** Several hours depending on application
- **Capacities & weight:**
  - 294 Wh, 1.4 kg
  - 156 Wh, 1.0 kg
  - 89 Wh, 0.8 kg

#### MODULUS

- **Orientation:** Applanix APX-15L
- **Odometry:** Stereo camera system for indoor localization and enhanced outdoor localization in dense cities and covered areas
- **LiDAR:** Velodyne VLP-16

#### ACCURACY

<table>
<thead>
<tr>
<th>Accuracy Type</th>
<th>cm range</th>
<th>cm to dm range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative accuracy (outdoor and indoor)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute accuracy (outdoor)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute accuracy (indoor)</td>
<td></td>
<td>Accuracy depends on scene structure, loop closures and track length</td>
</tr>
</tbody>
</table>

1. Accuracy depends on location and user compliance with walking regulations based on application area.

#### APPLICATION AREAS

**DOCUMENT**

- Visual Documentation & Exploration
  - Mobile mapping
  - Disaster response
  - Progress documentation
  - Risk analysis
  - Quality control
  - Damage inspection

**EXTRACT**

- Feature Extraction & Classification
  - Forest management
  - Topographic mapping
  - Object detection
  - Asset inventory

**MODEL**

- Feature Measurement & Reconstruction
  - Clearance measurements
  - Volumetric analysis
  - As-built verification

**OPERATIONAL SPECIFICATION**

- Operating temperature: 0°C to +40°C non-condensing
- Storage temperature: -20°C to +50°C non-condensing
- IP protection level: IP52

**DATA FORMATS**

- **JPEG, TIFF**
- Camera images 360° x 180° equirectangular panorama
  - Cube-face panorama
- Trajectory: Various formats - position and orientation for each cube
- Point cloud: Laser File Format (LAS) - coordinates, reflectivity, color images

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2. For optimal accuracy, an operating temperature from 5°C to 35°C is recommended.
STREAMLINED EFFICIENCY

UltraMap Terrestrial, the raw data processing software, leads to optimal output in all of the numerous applications. Ability to export to standard file formats allows data to be easily plugged into existing workflows and business processes.

EXCEPTIONAL QUALITY

Capture the world in more detail, superior sharpness and in higher fidelity than ever before.

IMPRESSIVE EFFICIENCY

Even images with high variations in luminance are exposed perfectly and provide detailed information in every part of the image.