

Mosaic 51

Most durable, precise and practical 360° camera for urban mapping & surveying.



Ultimate 360° Camera

Mosaic 51 is a Robust 360° Camera for Mobile Mapping, Street View, Surveying, Infrastructure Inspection and related 360° imaging applications such as VFX & HDR light probes for CGI backplates

Designed and built from the ground up to be durable and future proof.

Six 12.35-Megapixel image sensors

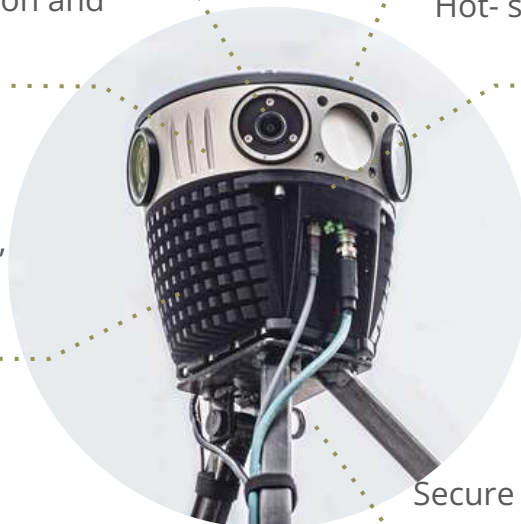
8-bit or h.264 compressed

Industrial-grade construction and durability

Hot-swappable storage

Advanced, precision GPS

Secure mounting hardware



Mosaic 51

*Designed and built in Europe
for outdoor mapping in all
kinds of weather.*



Feature highlights

**Robust combination
delivers durability,
precision, usability and
reliability all in one
camera.**



- 10fps h.264 (120Mbps per sensor)
- Onboard hot-swappable USB 3.0 storage
- External storage over ethernet via NFS
- Built-in precision GPS +/- 1.5 meter
- Sealed and water-resistant housing
- Protected lens, easily replace lens covers when scratched or smudged
- Data is non-vendor locked

Architecture

The 6 Sony image sensors with wide angle lenses capture 360° of RAW image data, which is precisely synchronized by our proprietary algorithm.

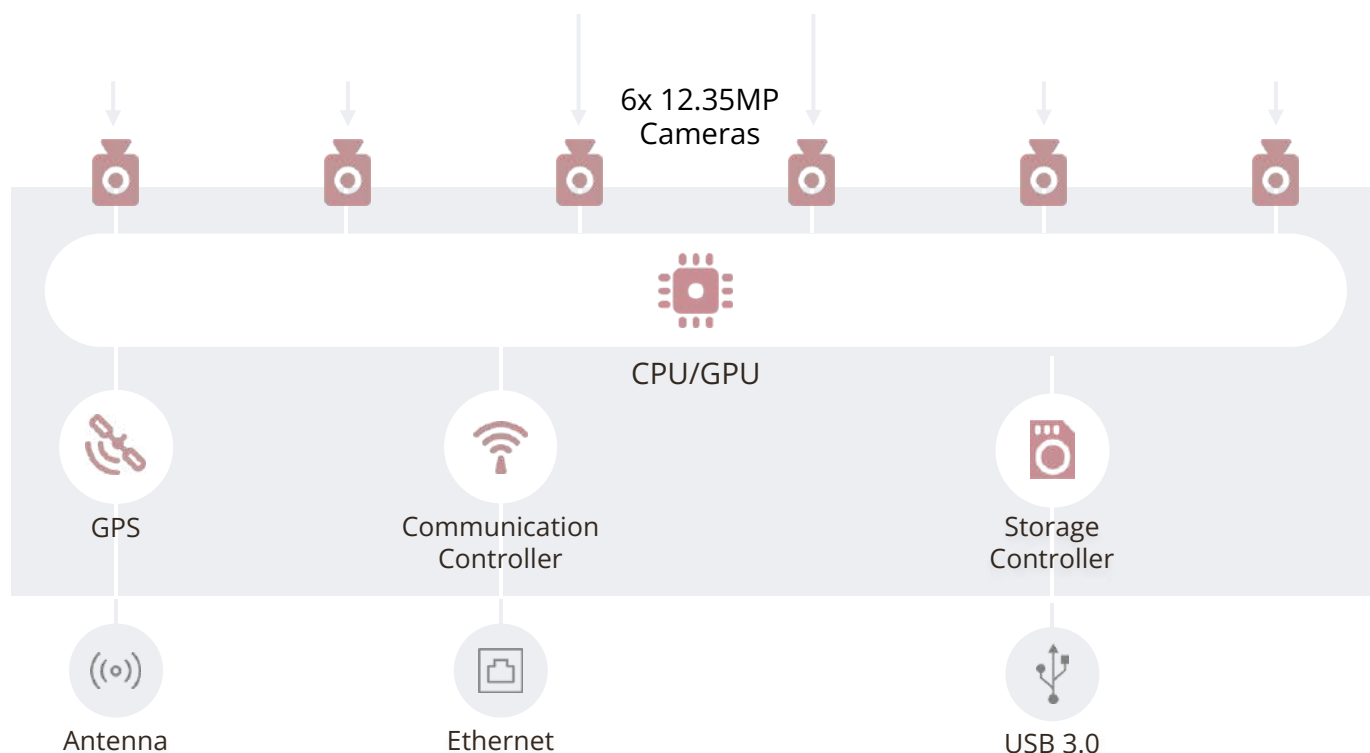
The image data is processed into an 8-bit image file by the ISP and compressed to a high-bitrate h.264 file and written to the removable USB dongle w/ 1TB SSD

Camera system captures and stores precise GPS data and timestamps.

The camera can be monitored and controlled via an ethernet connection by any device with a web browser (PC, tablet, or smartphone).

The main processor combines a powerful CPU plus GPU making it fully mobile – no need for any storage devices or computers in the vehicle.

Hot swappable 1 terabyte SSD (up to 4TB possible) storage guarantees smooth data capture throughout a full day of data capture.



Design and Construction

The camera has been carefully and deliberately designed to work well in the most demanding environments:

- industrial grade waterproof connectors
- protected lenses which can withstand harsh daily use
- a hermetically sealed water-resistant enclosure with substantial thermal mass and heat sinks for passive cooling

Our optical design ensures:

- Sharp images at all angles, without a drop off in resolution at the edges (from which other cameras using fisheye lenses might suffer)
- A balance between uniform sharpness without using too many image sensors.

Other design considerations:

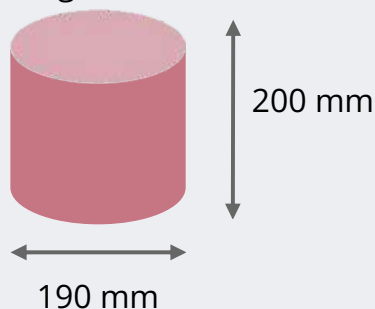
- Removable, swappable storage
- Control via web browser for simple onboarding and handling of operations for any staff member

Dimensions

Length: 190 mm

Width: 190 mm

Height: 200 mm



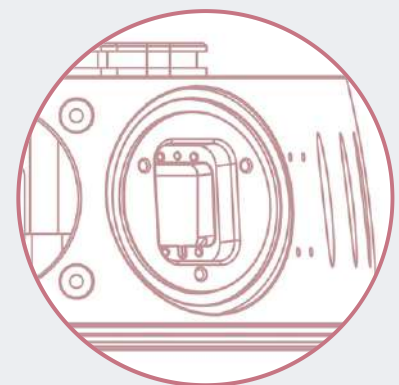
Weight

Approx. 4.6 kg (10.14 lbs)

Power consumption

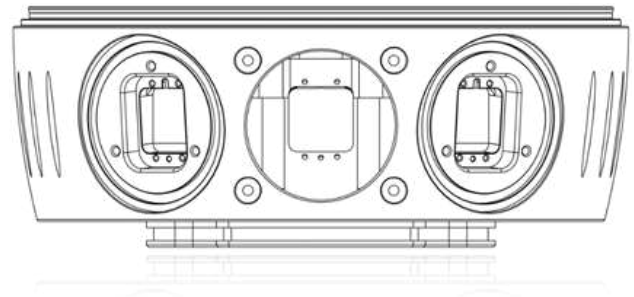
Average: 15 W

Maximum: 30 W



6 × wide angle cameras

Hightsensitivity and lownoise sensorsprovide ideal pixel density and consistency of optical resolution across the frame with minimal fisheye distortion or compression.



Sensor

Sony CMOS 12.35MP

Lens focal length

2.52mm +/- 5%

Pixel size

1.55 μm (H) × 1.55 μm (V)

Lens focal length / 35mm eq.

14.1mm

Focusing range

0.3mm – ∞

Aperture

f/2.4

Guaranteed temperature performance

Camera sensor

-10°C – 60°C



Camera lenses

-20°C – 80°C

Top of the line, protected optics



The crispest, cleanest and most true-to-life images available on the market.



- Six 12.35-Megapixel image sensors (five in a circle and one pointing up) giving 12.3K resolution panoramas, unsurpassed in this class.
- Microsecond-level synchronization (sync measured in microseconds, not milliseconds).
124° x 96° lenses utilizing all pixels on the sensor, with optimal overlap producing the ideal balance of overlap vs. resolution.
- Minimal stretching and distortion of the source images means that the actual resolution in the final panorama is consistent across the whole image, including straight up.
- Image sensors with proper thermal management, giving noise-free operation even in the harshest environments.
- Replaceable flat glass lens covers prevent expensive servicing of lenses. Easily and economically replace lens covers rather than requiring costly manufacture servicing.

Advanced, precision GPS



Built-in GNSS sensor allows for distance based triggering out of the box

- Connect up to 4 GNSS networks simultaneously (GPS, Galileo, Glonass, BeiDou) for precision measured to the meter
- Active dual-band antenna giving a fix in seconds, and precise location even in urban canyons
- Able to integrate with external RTK GNSS to achieve centimeter level accuracy

Amazing 8-bit compressed images or h.264



Perfect balance between preserving highest quality and efficient image storage

- Option for internal removable storage: m.2 disk, up to 4TB capacity, hot-swappable
- Option for external storage over ethernet via NFS

Image quality › Level of detail

Never before seen
crisp, clean, 12.3K-
resolution video to
better map your
city, assets, space,
or streets.



Image quality › Us vs. the competition

See the superb image quality of the Mosaic 51 versus the competitor in a side-by-side comparison of the same street view.

Mosaic 51 camera



- Preserves nearly all of the dynamic range even in harsh lighting
- Eliminates artifacts from different image sensors exposing the scene differently
- Offers a single unified and consistent image
- Minimizes 'blowout' between sun and edge of buildings







The competition



- Camera / image processing implementation is sub-optimal
- Many over- and under-exposed pixels
- Very few correctly-exposed pixels
- High 'blowout' between sun and edge of buildings

Competitive matrix

Mosaic 51 outperforms
the competition in
every category

	Mosaic 51	NCTech Pulsar	Insta360 Titan	Insta360 PRO	Ladybug 5	Google
						
Resolution	12.3K	11K	11K	8K	8K	16K
Single-standalone system	YES	NO	NO	NO	NO	YES
Lens protection	YES	NO	NO	NO	YES	NO
On-board GPU	YES	NO	NO	NO	NO	NO
IP64 water resistance	YES	YES	NO	NO	YES	NO
Waterproof industrial grade connector	YES	NO	NO	NO	NO	YES
Vendor unlocked	YES	NO	YES	YES	YES	NO
Deep LiDAR integration ready	YES	NO	NO	NO	NO	NO
H.264 120 Mbit	YES	NO	NO	NO	NO	YES
Single swappable storage	YES	NO	YES	YES	NO	NO
Internal & external storage via NFS	YES	NO	NO	NO	NO	NO
Built-in GPS	YES	NO	NO	NO	NO	YES
External GPS antenna	YES	NO	NO	NO	NO	NO
Robust integrated car mount	YES	NO	NO	NO	NO	YES

Applications

How to create a competitive advantage with Mosaic 51



Road / Infrastructure Maintenance & Mapping cos. can survey more often to identify issues before they cause problems.



Governments and municipalities can keep an up-to-date inventory of street furniture and their conditions.



Telecommunication & Utility Companies gain a better view of right of way, powerlines, telephone poles and more.

Geospatial Imaging Leaders

Mosaic is a 360° camera hardware and services company based in Prague, Czech Republic.

We are passionate about documenting the world.

We can help you map a city or a whole country with solutions for cars, motorcycles, bicycles, and hikers.

We are the only company in the world building a camera specifically for ground-level mapping and imaging at scale, with available services combining our hardware, logistics know-how, and delivery of data in one integrated package.



Our team has been in the game for decades making us industry experts in the field of 360° imaging.

Our plan is to build a single, detailed, high resolution photographic map of all the world's streets over the next few years. This will allow us to understand the world better, faster, and in greater detail than ever before: better street maps, better driving directions, better traffic management, better city management and safety inspection, and safer self-driving vehicles on the street.