KOMATSU

Point Cloud Processor / Base Station for professionals and beginners

Rapid on-site processing of drone data to create a 3D terrain map before leaving the jobsite.

Smart Construction Edge

Accelerated workflow efficiency

Seamless integration

Cost-effective solution

Complete automation and integration

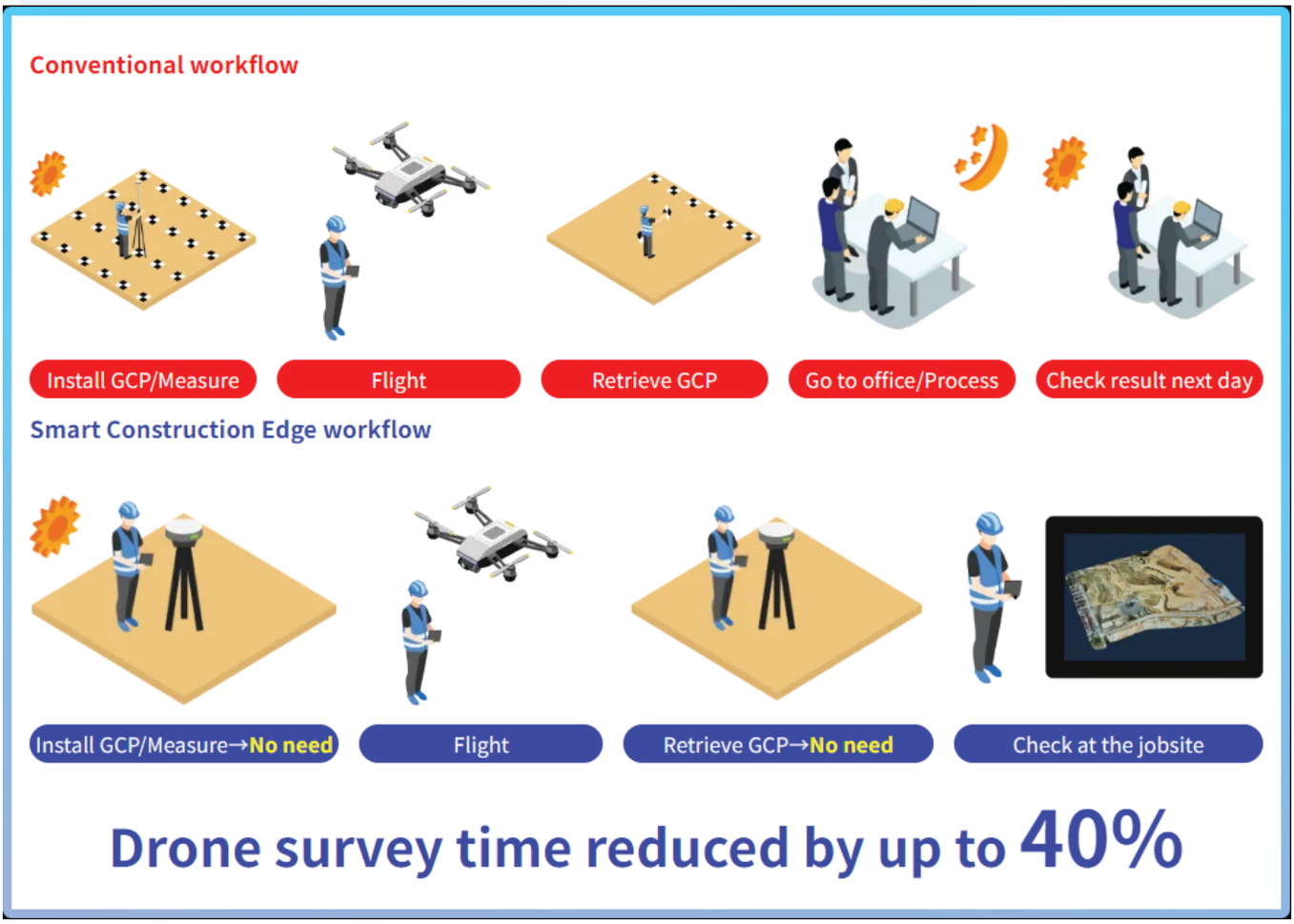
All-in-one solution

Local onboard processing

What is Smart Construction Edge 2?

Smart Construction Edge 2 offers the most seamless workflow for capturing accurate terrain data using a drone. Its onboard GNSS and processing hardware enables efficient terrain data capture and processing without the need for Ground Control Points (GCPs).

This makes aerial surveying accessible to anyone, allowing accurate, quick and easy site capture and analysis. With just a few button presses, you can calculate site volumes and assess current site conditions to effectively plan future decisions.



Benefits

Easier, Faster & Safer Surveys

Conduct surveys in as little as 10 minutes without ground control points, capturing accurate quantities for production tracking and billing without putting employees in harms way.

Seamless Integration

Visualise data effortlessly in the Smart Construction Dashboard or other survey software.

Unlimited Tracking Potential

Fly & Process as often as needed to track production, measuring data daily, weekly, or as required.

Minimal Downtime

Conduct drone flights without significant production interruptions, unlike traditional walking surveys.

Operational Cost Savings

Complete drone surveys and processing at a fraction of the time and cost of traditional methods, speeding up topographic surveys and reducing processing time.

Enhanced Team Capabilities

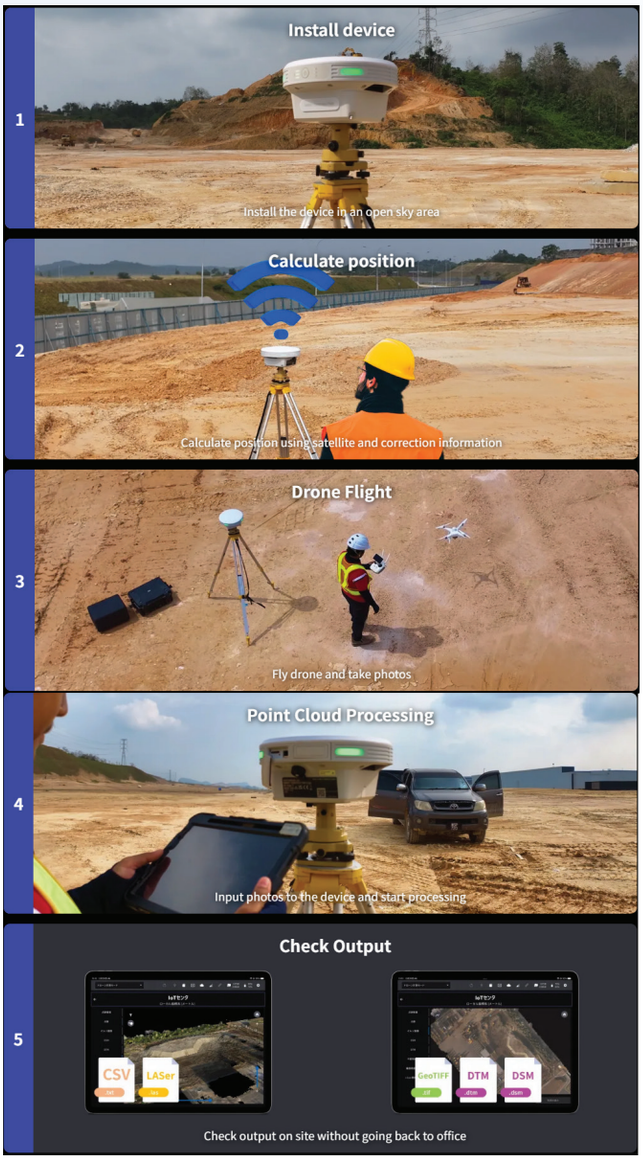
Improve survey accuracy by incorporating frequent aerial mappings, capturing hundreds of thousands of points compared to traditional surveys.

Rapid In-Field Data Processing

Validate and process drone data quickly without internet connectivity using Edge 2 technology.

On-Site Data Validation

Use Edge 2 technology to validate and adjust drone data in the field, avoiding next-day disappointments.



Key Features

Turn your drone into an RTK (Real-Time Kinematic) drone by connecting it to Edge 2 or fly in PPK (Post Processing Kinematic) mode. The Edge 2 hardware offers the most efficient data output on the market, providing accurate usable data in as little as 10 minutes.

Edge 2 Performance:

- Processes high-accuracy 3D point clouds in record time.
- Functions as an all-in-one GNSS (Global Navigation Satellite System) base station and processing unit, delivering drone data extremely fast in the field.
- Process data and send GNSS corrections to machines at the same time without disruption to production or processing.

Easy Setup:

- Quickly and easily set up the Edge 2 on a known or unknown point by self-positioning using Network Correction.
- Process your data with Projection Geoid or use a localisation file.

Enhanced Accuracy:

- Use the check & adjust function to fine-tune the point cloud vertically for optimal accuracy when GCPs are not used.

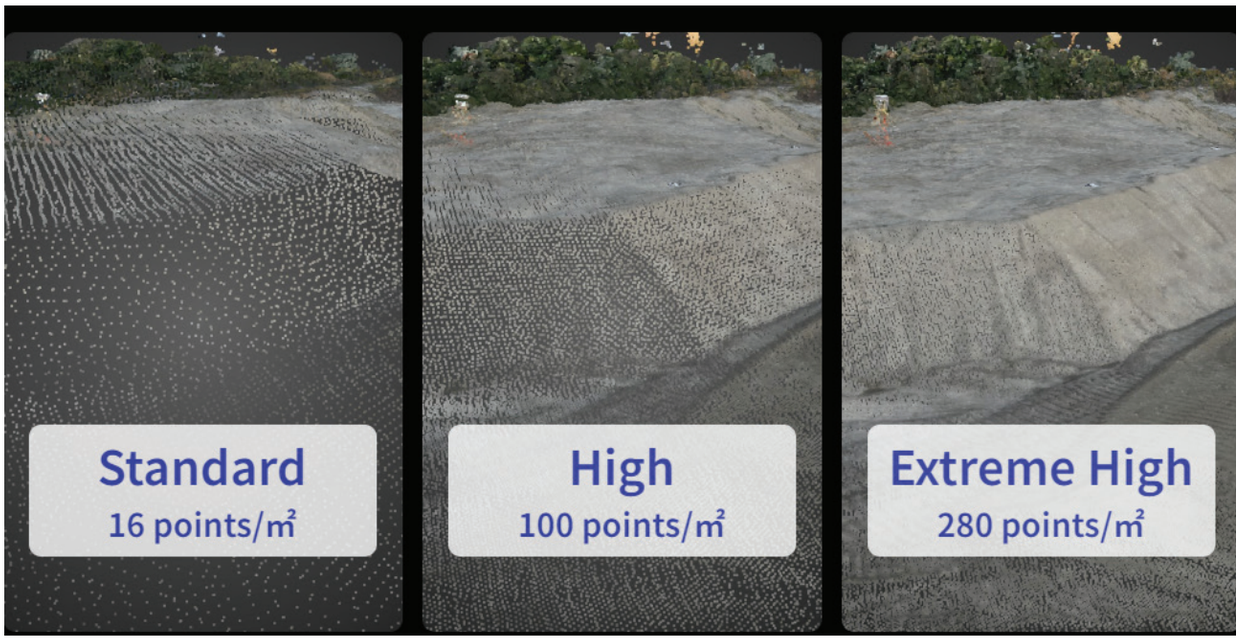
Integration and Automation:

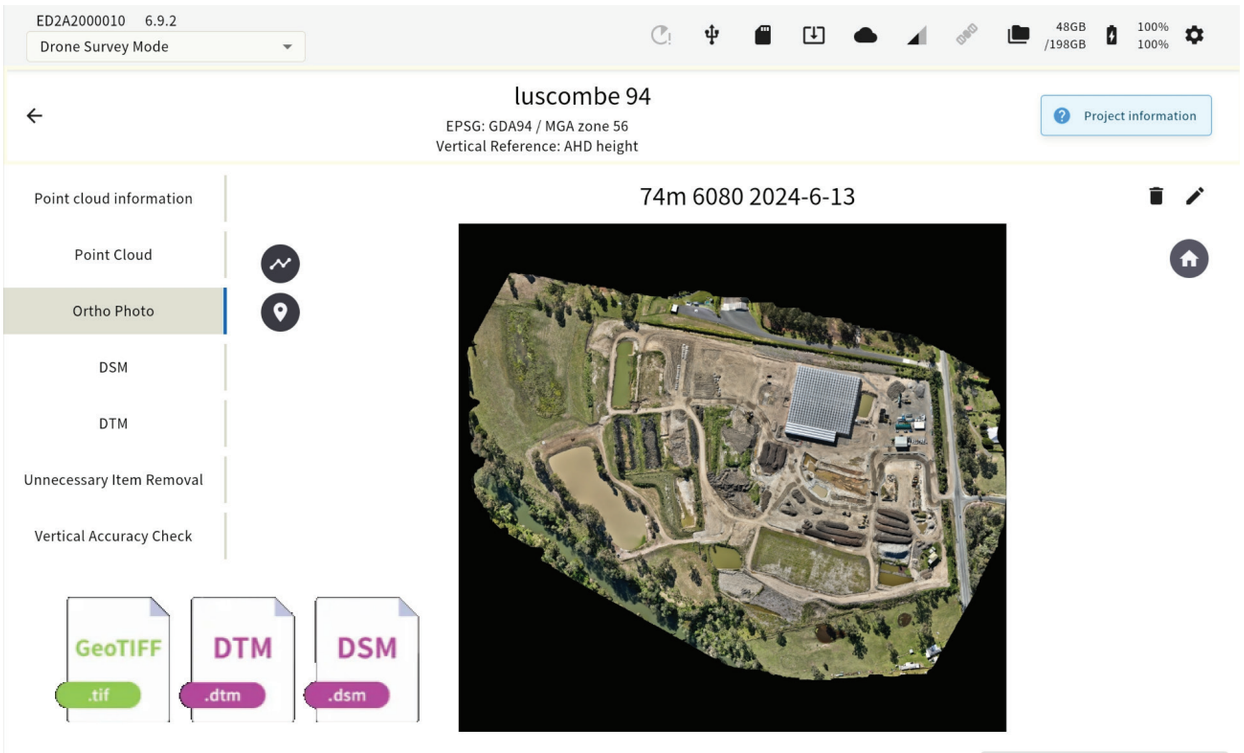
- Integrated into the Smart Construction Dashboard workflow using IoT.
- Automate your processed data by seamlessly uploading it to the Smart Construction Dashboard.

Advanced Features:

- Connect your GNSS rover to receive RTK corrections via the Edge 2 caster function for setting out GCPs (Ground Control Points) & CHPs (Check Points). Compatible with 3DMG GNSS systems streaming industry-standard formats.
- Automatic Object Removal function eliminates trees, equipment, buildings, and other objects using AI technology.
- Upgrade your drone capabilities and streamline your construction workflow with the advanced features of Edge 2 technology.

Variety of processing options





Functions

Smart Construction Edge 2 can achieve sub-5cm accuracy without the need for GCPs, thanks to its onboard GNSS hardware and processing software.

Multi-Function Capabilities:

- GNSS (RINEX) Recording
- Drone Data (SfM) Processing Unit
- GNSS Base Station Caster Capability
  - Unlimited devices can receive RTK corrections.
- RTK Streaming
  - NTRIP, UHF & Wifi

Coordinate Reference Systems:

- Supports Local Coordinates, WGS84 and Australia, New Zealand and New Caledonia Projections
- Global Coordinate Reference System Library

Smart Features:

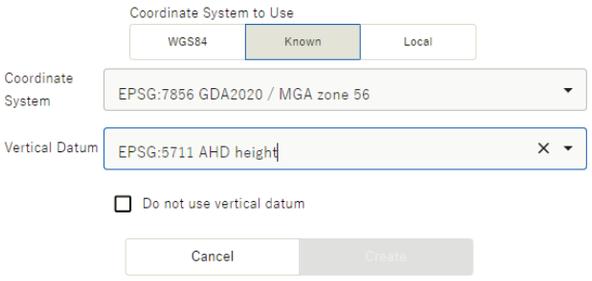
- Self-Positioning via NTRIP Network
- Setup on a Known Point
- RTK & PPK Modes:
  - Fly compatible drones in PPK or RTK mode
  - Compatible with Komatsu iMC dozers and excavators, SC 3D-MG, and other GNSS machine guidance systems in the market.

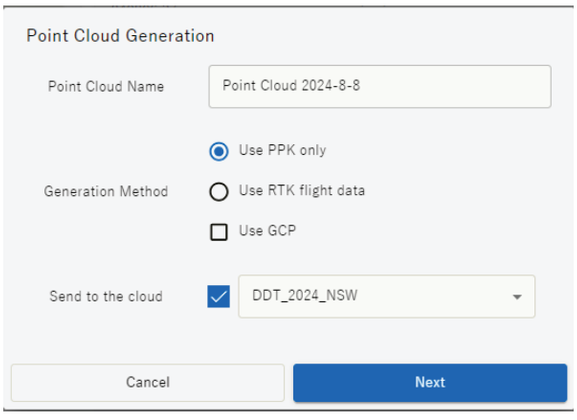
Onboard Processing:

- In-the-field or on-the-go processing:
  - No cellular connection required.

Automation:

- Queue and process datasets automatically.
- Automatically send processed data to the cloud.





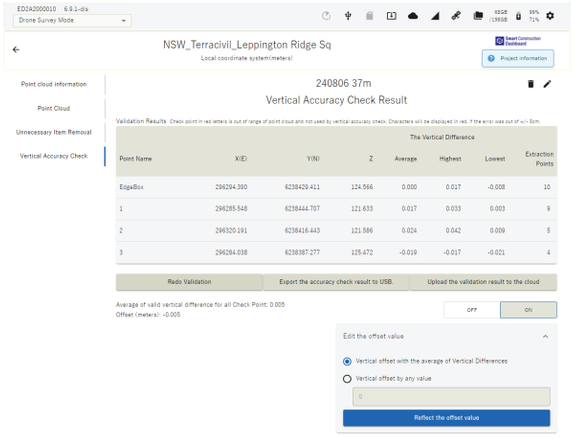
Functions

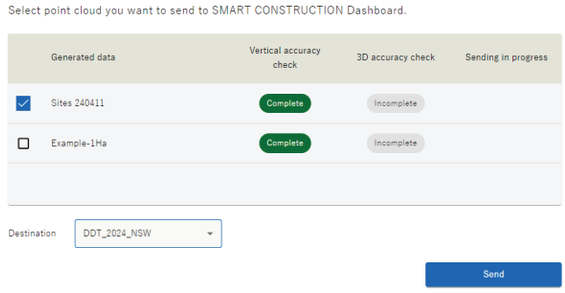
Accuracy:

- Vertical Accuracy Check and Adjust Function
- Include GCPs to Improve Accuracy
- Generate an Accuracy Report

Export Data Types:

- Export accuracy report
- Point Cloud: .las
- Point Cloud Object Removed: .las
- Orthophoto: .tif
- DSM & DTM: .tif
- Coordinate Options: WGS84 or Local Coordinates





Processing Capabilities:

- Point Clouds: 16ppm, 100ppm, 160ppm, 250ppm (up to 50 hectares at 16ppm)
- Orthophoto: 4cm/pixel (1cm GSD)
- DSM & DTM

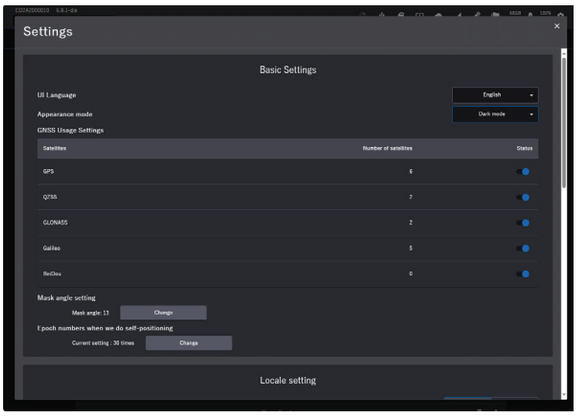
Cloud IoT:

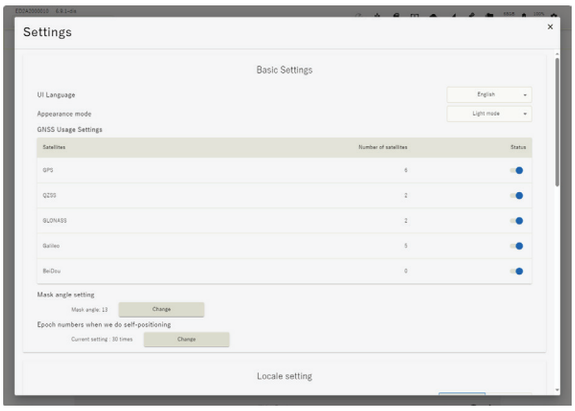
- Send PPK Logs and Processed Data to Cloud
  - With a single button press.

Additional Features:

- Hot Swap Batteries
  - For continuous operation
- WEB application to access using most Tablet or Laptop brands

Dark & Light mode





Compatibility

Drones:

- Phantom 4 rtk
- Mavic3E rtk

RTK streaming:

- NTRIP formats
  - RTCM3.0
  - RTCM3.2 (MSM4, MSM5, MSM7)
- UHF formats
  - RTCM3.0, RTCM3.2 (MSM4)
  - CMR
- Wifi
  - RTCM3.0, RTCM3.2(MSM4/7)
- GNSS Base Station Caster Capability
  - Unlimited devices can receive RTK corrections.

Processing Capabilities

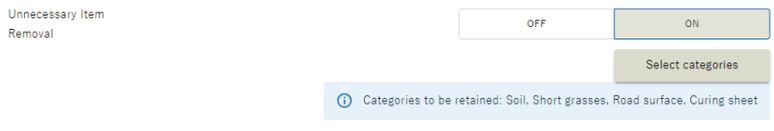
Process up to 50Ha Area Size Datasets & Up to 5,000 Photos

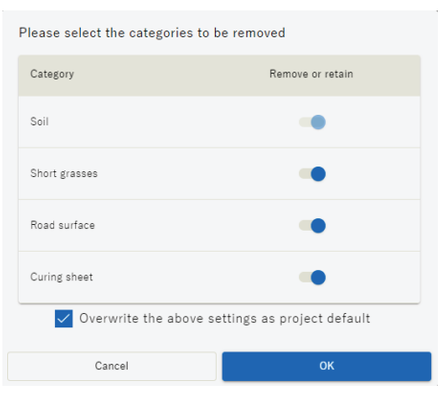
Level	Density	Max. area size			
		Point cloud + Ortho + Object removal	Point cloud + Ortho	Point cloud + Object removal	Point Cloud only
Ultra High	280p/m2	5 ha	5 ha	10 ha	10 ha
High	100p/m2	15 ha	15 ha	30 ha	30 ha
Standard	16p/m2	50 ha	50 ha	50 ha	50 ha

Choose what you want to process

Unnecessary item removal. Select to remove or retain certain items

- Soil (Always on)
- Short grass (Football field)
- Road surfaces (Asphalt)
- Cutting sheet (Plastic lining)





Approximate Processing Times

*Results may vary pending photo count.

Area (hectares)	Point Density (ppm)	Data Type	Processing Time
1	16	Point Cloud Only	< 10 min
1	16	Point Cloud & Orthophoto	< 20 min
10	16	Point Cloud Only	< 30 min
10	16	Point Cloud & Orthophoto	< 60 min
20	16	Point Cloud Only	< 60 min
20	16	Point Cloud & Orthophoto	< 120 min
50	16	Point Cloud Only	< 120 min
50	16	Point Cloud & Orthophoto	< 180 min

Photo Count Parameters

Upper limit of photo number

If the photo numbers of the flight data exceeds the upper limit, the point cloud generation could fail.

Point Cloud 2024-8-8

Number of photos	110

Calculation setting

Point Cloud Density	Standard density
Ortho photo・DEM	OFF

* In case if GSD: 1.0cm

Point Cloud Density	Max. photo numbers: Ortho photo・DEM ON	Max. photo numbers: Ortho photo・DEM OFF
Standard: 16points/m² (64,750points/ac)	5000	5000
Medium: 100points/m² (404,686points/ac)	1500	3000
High: 160points/m² (647,497points/ac)	937	1875
Extreme High: 280points/m² (1,133,120points/ac)	500	1000

Close

Hardware Specification

Items		Specification	Remarks
Temperature Range	Operating	-20C~50C	
	Charging	0C~45C	
	Storage	-20C~50C	
Input voltage		19.5V DC	
Power consumption	Standard	13.3W	When broadcasting RTK corrections data via LTE modem
	Maximum	87.5W	When generating a point cloud while charging the batteries.
Electrostatic resistance		±8kV	
Operating hours		Approx. 12 hours	When broadcasting RTK corrections data via LTE modem
Charging hours		Approx. 5 hours	Charging with EdgeBox and attached power cable.
Dust-/Water-proof performance*		IP65 or equivalent	Tested by a third party

Items		Specification	Remarks
External dimensions	Width x depth x height	300 x 300 x 150 [mm]	
Body weight	Including battery	Approx 4.0kg	
	Excluding battery	Approx 2.7kg	
Total Weight	Including carry case and accessories	Approx 8.3kg	
Housing material	Top cover	AES	
	Main frame	Magnesium die casting	
	Bottom case	Magnesium die casting	
External I/F	USB connector	USB3.1 x1	
		USB2.0 x1	Waterproof connector
	SD card slot	UHS-I SDR104 ww	Standard size
	SIM card slot	Nano SIM	

Hardware Specification

	Lan port		
SoM	Jetson Xavier NX		
	GPU	384 core NVIDIA Volta,48 Tensor core	
	CPU	6 core NVIDIA Carmel ARM v8.2 64bit, 6MB L2+4MB L3w	
	RAM	16GB 128bit LPDDR4x 59.7GB/Sec	
	EMMC	16GB	
Storage	SSD	256GB	
Network	Wired LAN	10/100/1000 BASE-T	
	Wireless LAN	2.4GHz 802.11b/g/n	
	LTE	TE-FDD:B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28 LTE-TDD: B38/B39/B40/B41 WCDMA: B1/B2/B4/B5/B6/B8/B19 GSM:850/900/1800/1900	Overseas SIM free
GNSS	GPS	L1C/A, L2C	
	QZSS	L1C/A, L2C	
	GLONASS	L1OF, L2OF	
	Galileo	E1B/C, E5b	
	BeiDou	B1I, B2I	

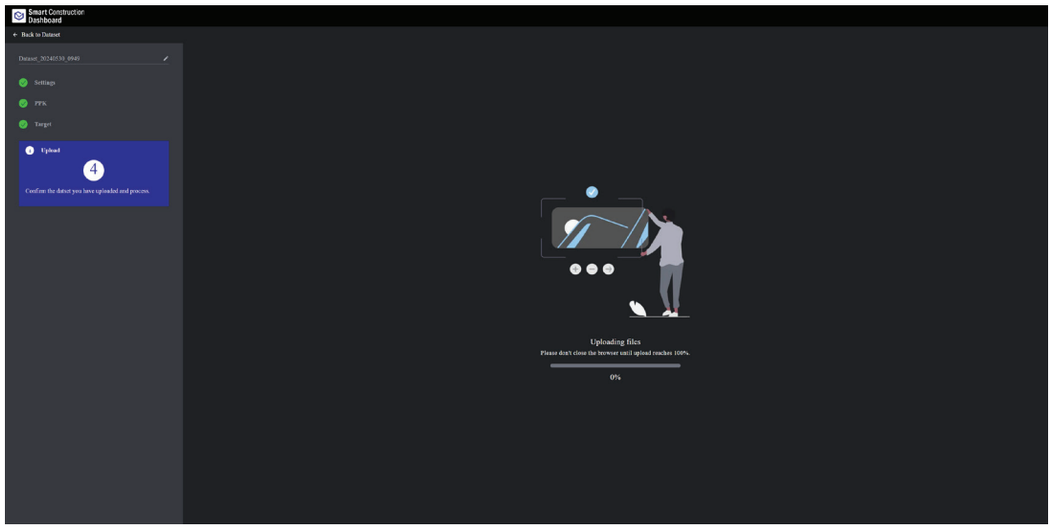
Items	S/N	No	Remarks
AC Adapter		1	Input: 100-240V, 50/60Hz Output: 19.5V, 100W
USB-Serial conversion cable		1	2m
Battery		2	37v. 2,518mAh
Power Cable		1	2m

SC Cloud SfM

SC Cloud SfM (Available only for Dashboard & Edge SfM customers, T&C's apply)

- Process high resolution Orthophoto & DTM,DSM for optimum visual quality of 3d data
- Process sites up to 120Ha
- Process up to 9,999 photos
- Advanced AI object removed
- Automation of generated data to Dashboard
- Email notification of data processing completed status

*Processing times will increase significantly due to cloud-based processing and quality standards, ranging from 2 hours to over 24 hours, depending on the number of photos and area size.



1. Setup Edge 2
2. Fly drone
3. Send PPK log to SC Cloud
4. Upload data to SC Cloud SfM
5. Auto Tile to Dashboard

For more information:

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