

Smart Construction Edge 2 User Manual

Product name : Edge computer for construction worksite Model Name : SC Edge2

Firmware Version: v9.3.3

Update date 2025/03/18.

How to use EdgeBox

TABLE OF CONTENTS	
Appendix	3
Install and configure certificate	8
Add a tablet app to your home screen	3
Before USING	9
Name of each part	9
EdgeBox Body Part Name	9
Name of each part of the status bar1	1
Preparation IN ADVANCE	ô
Charge batteries	ô
Turn on EdgeBox	8
Connect EdgeBox to the tablet (iPad)18	8
Start/Stop Using	9
Install EdgeBox on the tripod19	9
Enable tablet apps	9
Creating a project	C
Create in a public coordinate system (using ESPG code)	C
Create in local coordinate system (using localization file)	1
Create A new project by connecting to smart construction	ô
Turn Power Off/Restart	3
drone Survey function	D
UsING Network RTK	D
Import from a CSV file	3
INPUT manually	7
•inherit points from dashboard40	0
Start PPK logging	1
End PPK logging42	2
Generating Point Clouds	3
When we use GCPs to iMproVE the accuracy50	C

View the generated point cloud	58
Point Cloud Viewer Screen Part Names	59
Drone Flight Path Display (only when ortho imagE WAs generated)	61
UNWANTED OBJEcT REMOVAL from tHE Point Cloud	61
Point Cloud Accuracy Validation	62
GCP accuracy check	66
3D accuracy check	68
Sending Point Clouds to a SMART CONSTRUCTION Dashboard	75
Exporting Data	76
EXPORT GNSS logs to USB memory	
Exporting Point Cloud Data to USB Memory	
Load GNSS logs	80
Exporting drone flight data	82
Send GNSS logs to SMARTCONSTRUCTION Dashboard (Cloud SFM)	83
RTK CORRECTION DaTA BROADCASTING FUNCTION	
Set the location of EdgeBox	
Import from a CSV file	
INput manually	
INPUT using Network RTK	
•inherit points from dashboard	
Broadcast RTK Correction Data	94
Using Ntrip SERVER	
use an external radio	
use Wi-FI broadcast	
Delete data	
Delete a project and its contents together	
Select and delete data	
Basic setting	
Language setting	
GNSS Settings	
Setting GNSS epoch number and Mask angle setting	
Interwork (Linked) Service Settings	

Network Settings	107
EdgeBox Information and Operations	108
IMEI number display	110
WIFI dongle setup	111

This product is a GNSS receiver equipped with post-processing correction software. It supports PPK and RTK methods.

When surveying in the RTK method, a contract with a telecommunications carrier in each EU member state is required to use LTE communication.

This product requires a circumstance which can receive a substantial GNSS satellite signal.

*The data processed by SMART CONSTRUCTION Edge 2 will be used by Earthbrain or his cooperator to investigate the problem, or to improve the point cloud quality, without any notice.

Vender of this product: EARTHBRAIN Ltd. Address : 29F Izumi garden tower, 1-6-1 Roppongi, Minato-ku, Tokyo 106-6029, Japan TEL :

Importer : EU : Komatsu Europe International N.V. Address : Mechelsesteenweg 586 B-1800 Vilvoorde Belgium Phone : +32 2255241

AUS:

Komatsu Australia Pty. Ltd. Address : 50-60 Fairfield Street, Fairfield East NSW 2165, Australia Phone : +61-2-9795-8222



These symbols on the main unit and battery indicate that used electrical and electronic products and batteries should not be disposed of as general waste.

To properly handle, recover and recycle used products and batteries, take them to the applicable collection points in accordance with local regulations.

Correct disposal saves valuable resources and prevents negative consequences for the environment and human health.

Examples of Signal word

	Indicates content that, if mishandled, could result in death or serious injury to a person.
	injury to a person.
	Indicates content that, if mishandled, could result in minor or
	moderate injury to a person.
NOTICE	Indicates content that may result in product failure or property
NOTICE	damage (including data corruption) if handled incorrectly.

Do not replace the battery outside. If the water or any foreign objects comes in from the insertion slot, it may cause a short circuit and resulting in an ignition or an injury.

Always wear a hard hat during work.

If you drop the product from the top of the tripod by mistake and hit to your head, it may cause an injury.

A WARNING

DO NOT leave the product in a hot place (beside the fire, heater, inside a vehicle with a high temperature) with the battery in it.

The batteries may damage and result in an ignition or an electric shock.

DO NOT charge the product with a wet condition by water or any liquid (such as rain)

If the electrode gets wet, it may cause a short circuit and result in an ignition or an injury.

When using the product in rain, please make sure that all doors including the covers of ports, battery rid, and water-proof USB cap are securely installed.

If any rain comes inside, it may cause a short circuit and result in an ignition or an injury.

A WARNING

DO NOT connect to an external radio with USB-Serial conversion cable.

It may cause a short circuit and result in an ignition or an electrical shock.

DO NOT put any foreign objects into the SD card slot, the SIM card slot, the USB slot or the ethernet port.

It may cause a short circuit and result in an ignition or an electrical shock.

A WARNING

Wearers of a pacemaker or a defibrillator should not approach the product. Its electric wave may have a negative effect on its operation.

A CAUTION

The main unit should be in a stable, flat place.

If it was placed at unstable place, it may be dropped and cause a damagre or a breakage.

A CAUTION

Make sure that no one snagged with cables when using AC adopter, power cable or USB cable. If anyone snagged with cables, the product dropped and hit your foot and/or break the product.

NOTICE

If the product is used outdoors under the scorching sun for a long time, the product may become hot, and the power supply may be automatically shut off.

This is due to the high temperature abnormal processing function, not the failure.

If the power is automatically cut off, wait a few minutes and press the power button again.

NOTICE

Do not cover the main unit with a plastic bag in rainy weather.

The temperature of the device may rise, triggering the overtemperature abnormality handling function and cutting off the power.

NOTICE

Do not wrap the main unit with cloth while charging.

Heat may accumulate inside the main unit, causing malfunction or damage.

NOTICE

If the main unit interferes with the radio or TV reception, turn off the main unit and move it away from the radio or TV.

About batteries

A WARNING

DO NOT leave the battery in a hot place (beside the fire, heater, inside a vehicle with a high temperature) with the battery in the product.

The batteries may damage and result in an ignition or an electric shock.

DO NOT throw the battery into a fire or heat it.

If you throw it into the fire, it will burst and it will be very dangerous. Heating may cause liquid leakage, explosion, or ignition.

DO NOT disassemble or modify the battery.

Doing so may cause chemical burns from the contents or cause it to burst and catch fire. In addition, modification may impair the function of preventing danger, causing heat generation, an explosion, or an ignition.

A WARNING

DO NOT let the battery get wet.

Wetting liquids such as water, seawater, or juice may break the protection circuit and cause a heat generation, an explosion, or an ignition.

A WARNING

If the battery leaks, keep it away from fire.

If the leaked electrolyte ignites, it may burst or ignite.

A WARNING

DO NOT apply strong impact to the battery or pierce the nail.

If it damage the protective function, it may cause overheating, an explosion, or an ignition.

A WARNING

Charge the battery as described in this manual.

Charging in any other way may cause a heat generation, an explosion, an ignition, etc.

A WARNING

Do not allow conductive foreign objects (such as metal) or liquids to come into contact with the battery terminals.

It may cause a short circuit and result in a heat generation, an explosion, or an ignition..

NOTICE

When not in use for a long time, remove the battery from the main unit. Leaving the battery in may result in over-discharge and shorten battery life.

About the AC adopter

A WARNING

Attached AC adopter is only for this product. It cannot be used for other product.

Also, no power cable other than the attached can be used for this product.

It might generate heat and resulting an ignition or an electric shock.

Do not use the AC adapter outdoors.

If a foreign object or liquid gets on the terminals, it may short-circuit and cause an ignition or an electrical shock.

A WARNING

Do not use the AC adapter cord improperly, such as pulling, tying, bending, or stretching. When winding the cord around the AC adapter, wind it loosely rather than tightly wrapping it. It may cause an electrical shock or an ignition.

A WARNING

Do not use the AC adapter cord if it is damaged. It may cause an electrical shock or an ignition.

A WARNING

When unplugging the power plug from the outlet, hold the power plug without holding the cord. It may damage the cord and cause an electrical shock or an ignition.

A CAUTION

Make sure the SD card is oriented and insert it straight.

If you force it, it may damage the SD card or this product. Also, if you accidentally insert it and cannot take it out, please contact your Komatsu distributor. If you insert tweezers and try to forcibly remove them, there is a risk of a short circuit.

APPENDIX

Install and configure certificate

1. From the tablet (iPad) home screen, tap the Safari icon and enter the following in the Safari address field

http://scedge.local

Tips

The following two-dimensional bar codes can be used to access to the URL above.



- 2. Tap "Install Certificate" on the screen.
- 3. Follow instructions on the screen to download it.
- 4. Return to the Home screen and tap "Settings" icon.
- 5. Tap on the displayed "Profile downloaded" message and follow the on-screen instructions to install
- Tap General About Certificate Trust Settings in the settings screen to enable ##SC EdgeBox CA for Dev##.

Add a tablet app to your home screen

- 1. Start Safari on your iPad and access http://scedge.local.
- 2. Tap "Launch App" 😂.
- 3. After the top page of the App displayed, tap Share icon in Safari, then tap "Add to Home Screen"

An app icon will be added to the home screen, and you can start the app by tapping this icon next time.

BEFORE USING

Name of each part

EDGEBOX BODY PART NAME

front of the body



- ① Status LED
- ② battery indicator
- ③ power button
- ④ GNSS Receive Status LED
- 5 PPK Logging Status LED
- 6 Error/Sub-microcomputer Update LED

Body Right Side



- ② AC Adapter Inlet

Body Left Side



- ① Status LED
- ② Battery Inlet (Inside Lid)
- ③ battery lid screw

back of the body



- ② SD card slot
- ③ Ether Cable Terminal
- ④ USB Slot (USB3.0)
- 5 SIM CARD SLOT
- (6) Waterproof USB Slot (USB2.0)

NAMF	OF EACH PART OF THE STATUS BAR
	e Survey Mode
	1 2 3 4 5 6 7 8 9 0 11
1	mode switching
	Tap to switch between drone survey mode and base station mode.
2	Running job icon
	Tap to list the jobs running in the background.
3	USB Memory Icon
	Displays whether USB memory is recognized. Tap this icon when removing USB memory.
4	SD card icon.
	Displays whether SD card is recognized. Tap this icon when removing SD card.
5	Exported data list Icon
	Shows the exporting status to USB memory.
6	Upload List Icon
	Shows the uploading status to the SMART CONSTRUCTION dashboard.
\overline{O}	LTE icon
	Displays the status of the LTE.
8	GNSS icon
	Displays the status of GNSS reception. Tap to view the Acquired Satellite list.
9	Storage
	Displays the amount of storage remaining on the unit.
10	Battery icon
	Shows the amount of battery life for each of the two batteries and the color of the icon
change	es when the charge drops.
(11)	Settings icon
	Tap to open the Settings dialog.

 $\divideontimes Version \ Up \ Icon$

A download icon will appear if there is an Updated program of Edge



The update program can be installed over the Internet or via USB. When the installation is completed, the following message will be displayed, and a reboot will complete the upgrade.

%If the edge version is older, a two-step update of the application and OS may be required.



In a good network environment, such as a wired LAN connection, it will take approximately 30 minutes.

For LTE, it may take 1 hour or more.

By good internet connection, we mean a downstream speed of around 50Mbps.

If the internet connection is poor, the update may take around 3 to 4 hours, and in some cases, considerably longer.

Tips

Please confirm all ②Running job ⑤Exporting data and ⑥Uploading data before you turn off the unit. Those jobs could be cancelled if they turned off before finishes

System Configuration:

Main unit:



iPad :

┘



Batteries : 2 for each set



AC adopter and Power cable:



Water-proof USB-Serial conversion cable:



Serial Female-Female cable:



SD card adapter:



iPad Charger:



USB Extender : *When using USB 3.0, be sure to use through this adapter because the GNSS of Edge 2 is affected by noise.



PREPARATION IN ADVANCE

Charge batteries

1. Make sure to charge the batteries fully before using SMART CONSTRUCTION Edge. First, remove 2 screws and open the rid to install the batteries.



2. Slide the batteries into the slot.





3. Charge fully until Status LED turns all solid. (Orange – Charging, Green – discharging)

Turn on EdgeBox

4. Press and hold the power button on the EdgeBox for about 4 seconds The Status LED on the unit will flash in green while the main unit is running, and the Status LED will turn green when the starting process has completed.



- ① Status LED
- ② Battery Indicator
- ③ Power Button
- ④ GNSS reception status LED
- 5 PPK logging status LED
- 6 Error / Update status LED

Connect EdgeBox to the tablet (iPad)

Verify that the Status LED turns green and connect the tablet (iPad as a default option) to the EdgeBox via Wi-Fi.

1. Tap the Settings icon on your tablet.



- 2. Tap "Wi-Fi" and select the EdgeBox SSID (Serial Number) from the available access point list.
- 3. Enter your EdgeBox pass rd (default: edge2-ap) in the password field. Return to the settings screen and make sure your tablet is connected to EdgeBox.

START/STOP USING

Install EdgeBox on the tripod

1. Prepare tripod with 5/8 in. screw on the top. Top of the tripod must be flat.



2. Fix the screw firmly to the bottom screw of EdgeBox. Use a levelling device if needed.



Enable tablet apps

 Press and hold the power button on the EdgeBox for about 4 seconds. The Status LED on the unit will flash in green while the main unit is running, and the Status LED will turn green when the start is complete.

Tap the Settings icon on your tablet.



- 2. Tap "Wi-Fi" and select the EdgeBox SSID (Serial Number) from the available access point list.
- 3. Enter your EdgeBox password (default: edge2-ap) in the password field.

Return to the settings screen and make sure your tablet is connected to EdgeBox.

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*	Bluetooth	On	MY NETWORKS	

- 4. If your tablet's Wi-Fi auto-connect destination is set to the EdgeBox, it will automatically connect to the unit.
- 5. Launch the tablet app.

Tap the tablet app icon 🗟 that you added to your home screen to launch it.

CREATE IN A PUBLIC COORDINATE SYSTEM (USING ESPG CODE)

1. Tap "Create a new project"

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2. Make sure "Known" is selected in "Coordinate system to use", and enter the ESPG code and Geoid. Enter any project name.



- If you enter a part of EPSG code, then you will show the candidates.
 If you are not going to use Geoid Hight, to select WGS 84, tap the (WGS84) icon.
- 4. Tap "Create".

CREATE IN LOCAL COORDINATE SYSTEM (USING LOCALIZATION FILE)

If you have a localization file from a rover, you can also create a project using the localization file. Localization files should be in CSV format and saved in the root directly of the USB memory. For more information on the format of localization files, s

1. Insert the USB memory into the USB slot (inside the waterproof lid) of the EdgeBox



- ① Status LED
- ② SD card slot
- ③ Ether cable port
- ④ USB slot (USB3.0)
- ⑤ SIM card slot
- 6 Water-proof USB slot (USB2.0) : cannot use this slot for USB memory

2. Tap "Create a new project"

3.

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4. Tap "Import Localization File" to specify the file for localization.

Project Name

m to Use

Create a project in WGS

5. Files are saved once loaded to the edge and

Files can be selected from USB or from within the Edge's memory.

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If you select t	the files ir	USB memor	y, the select	ed file will be c	opied to	SMART CO	NSTRUC	TION Ed	ge before	registeri	ng point	s to it.				
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5. Please prepare the localization file in advance. Set the file format parameter according to the file and tap "OK".

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0802_Mihama_TS.CSV				
ting, if importing file was not "Local	e setting" in the setting menu.			
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Example of the format above

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D	-44164.2	22697.367	3.904	35.36059902	140.050182	3 38.715		(Without any header)
E	-44071.288	22619.448	3.906	35.36090117	140.045873	6 38.741		
F	-43920.312	22743.991	3.548	35.36139004	140.050370	38.402		
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Unit of XYZ and Elipsoidal height are in feet.

6. Select the file and tap "Next".

Select point files.
O ATOS_0627_CHP.csv
O ATOS_0627_WGS.csv
HP_GCP mihama.csv
O EDGE20220810dd.csv
O EDGE20220810dms.csv
O Localization_mihama.csv
O result230418.CSV
O test.CSV
○ 検証点TS測量成果230418.csv
Cancel

- 7. The contents of the imported localization file are displayed on the screen. Confirm the values are correct and aligned correctly, then tap "Create".
- 8. You can choose to use or not use horizontal and vertical localization at any point. 10:54 2月21日(水)

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		E	Enter the proj	ect informatio	on and tap Creat	e.		
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CREATE A NEW PROJECT BY CONNECTING TO SMART CONSTRUCTION

1. (Generate a new project by connecting to SMART CONSTRUCTION Dashboard) Tap to go to the Dashboard screen and can create new site it from the EDGE2 app.

After creating the site, tap the completion icon in the upper left.

*Localization files for GC3 and TP3 should be placed directly under the IPAD folder.

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完了		dashboard.smartconst	truction.com	S	Ċ	
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2. (Import a project from SMART CONSTRUCTION Dashboard)

If you tap and are logged in to your account, the Dashboard site will be displayed.

By tapping any site and pressing OK, you can create a project using the same coordinate code as Dashboard.

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Turn Power Off/Restart

A CAUTION

Always follow this procedure when turning off the power. Follow this procedure to turn off EdgeBox before removing the battery or AC adapter.

It may cause a short circuit and result in an ignition or an electrical shock.

- 1. Tap Settings icon¹ on the upper-right portion of the tablet app.
- 2. Scroll down to tap "Shut Down or Restart SMART CONSTRUCTION Edge" in

"Information and Operations" section of the Settings screen.

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	Change	
Wi-F	i Client Mode Setting	
	Add	
Ethe	rnet Proxy Settings	
	Change	
	Information and Operations	
	Shutdown SMART CONSTRUCTION Edge	
	Restart SMART CONSTRUCTION Edge	
	Delete Data	
	Display SMART CONSTRUCTION Edge Information	
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3. You can also turn off the power by pressing and holding the power button on the main body for about 4 seconds.

The Status LED on the main body will flash green during the termination process. The Status LED will go off when the exit process is complete.

NOTICE

Shutting off EdgeBox while doing the following can lead to data corruption or system unavailability. Please turn off the power **AFTER** these processes are completed.

- $\boldsymbol{\cdot}$ Point cloud creation
- PPK logging
- \cdot Data Transmission
- Exporting data

DRONE SURVEY FUNCTION

USING NETWORK RTK

Before setting up the EdgeBox location using Network RTK, you must configure APN settings and Network RTK account settings.

For details, please refer below.

Tips

To use Network RTK, a LTE contract and a Network RTK Service contract were required.

1. Place EdgeBox anywhere in the site with a tripod at a wide, open sky.

A CAUTION

The main unit should be in a stable, flat place.

If it was placed at unstable place, it may be dropped and cause a damagre or a breakage.

2. Launch the tablet app 2 and select a project of the work site to survey.

If the project is not listed, create a new project.

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Drone Survey M	ode 🕶 🕐 🦉 🛆 🔟	<i>\$</i> \$, 🗖	133GB /198GB	61% 61%	۵
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S	elect a project.				
	Create a new project				
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	220720_0919_34_ATOS_EPSGwG		• /		
	220721_0921_34_ATOS_EPSGwG		Î /		
	220721_1414_34_ATOS_EPSGwG		Î /		

3. Tap "PPK Loggin"

The points you have previously set up or have used for localization will appear as a point list.

				└────────────────────────────────────					
		Test0 [°]	714						
	EPSG: JGD2011 / Japar		r, Vertical Datum: JGD2011 (ve	ertical) height					
Da	ata Generation	Point Cloud Name	Generation Start Time	Status					
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Ger	nerate Point Cloud								
Generate	ed Data Management								
Sen	nd Generated Data								
Export (Generated Data to USB								
Μ	Manage PPK Log								
)S									
	set the EdgeBox on	one of these point	s, you can just tap it t	o select it. (If not. go to 4.)					
f you have set the EdgeBox on one of these points, you can just tap it to select it. (If not, go to 4.) Fap "Adding Installation Points" or you can import with a CSV file (Go to next chapte									
	ing Installation P	oints" or you ca	n import with a CS\	/ file (Go to next chapte					
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5.

4.

- 6. Enter a point name and tap "Using network RTK" check box
- 7. Select the network RTK service from the drop-down list, and tap the "Execute Positioning" button

When the positioning is done, a surveyed coordinates are automatically entered in the coordinates field.

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		Enter the ins	stallation po	oint informa	ation and t	ap "Add"							
		Point Name	Point 3										
	(sing netw	vork RTK										
		Services to use	Jenoba 🔻		Execu	te Positioni	ing						
		Coordinates (E	nter Known Coord	dinate System.)									
		x											
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			c	Cancel	Ad	ł							

8. Confirm that coordinates are entered in the coordinates field, then tap "Add"

IMPORT FROM A CSV FILE

1. Align the Edge Box horizontally above the surveyed base point using the levelling device on the top of the tripod.



A WARNING

Always wear a hard hat during work.

If you drop the product from the top of the tripod by mistake and hit to your head, it may cause an injury.

- 2. Measure the height from the base point to the bottom of the EdgeBox
- 3. Enter this height as the "pole height"



4. Launch the tablet app 😂 and select a project of the work site to survey. If the project is not listed, create a new project.

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	Select a project.												
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5. Tap "PPK Logging"

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Data Generation	Point Cloud Name	Processing Start Time	Status					
PPK Logging	TestsiteH	08/10/2023 04:32:26 PM	✓ Generated					
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generation								
Generated Data Management Send Generated Data								
Export Generated Data to USB								
Manage PPK Log								

The points you have previously set up or have used for localization will appear as a point list.

6. Tap "Import Point Files" to open the file.

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	Select or add a ba	ase station insta	allation po	pint of S	SMART CC	NSTRU	CTION Edg	e.			
	Addir	ng Installation Poin	ts			Imp	ort Point File	s			
				G3							
				C4							

Please prepare the point file in advance. Select the control point file

Select a file and file type.
O 0126MIHAMA DOCOMO_type3.csv
O 0126MIHAMA DOCOMO_type3_dms.csv
GCP_CHP2023.csv
O Log_20230703_141224.csv
O Project1.CSV
Cancel

Set the file format parameter according to the file and tap "OK".

CSV file format					
Tap [OK] after changing below import setting, if importing file was not "Locale setting" in the setting menu.					
Coordinate Order			ENZ	NEZ	
Decimal Point			. (point)	, (comma)	
Separator	; (semicolon)	(tab)	, (comma)	Space	
Data start row				1 -	
Data start column				1 -	
Reflect the change here to "Locale setting" in the setting menu.					
Cancel			к		

If you tap" Reflect the change here" Locale setting" in the setting menu." these setting will be reflected to your next settings.
7. The contents of the imported localization file are displayed on the screen. Confirm the values are correct and aligned correctly, then tap "OK".



INPUT MANUALLY

1. Align the Edge Box horizontally above the surveyed base point using the levelling device on the top of the tripod.



A WARNING

Always wear a hard hat during work.

If you drop the product from the top of the tripod by mistake and hit your head, it may cause an injury.

- 2. Measure the height from the base point to the bottom of the EdgeBox
- 3. Enter this height as the "pole height"



4. Launch the tablet app and select a project of the work site to survey. If the project is not listed, create a new project.

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5. Tap "PPK Logging"

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Reservation of the point-cloud generation		Point Cloud 20	023-8-12		9:52:01 AM			~	Generated		
Generated Data Manageme	ent										
Send Generated Data											
Export Generated Data to USB											
Manage PPK Log											

6. Tap "Adding Installation Points".

The points you have previously set up or have used for localization will appear as a point list.

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	Adding Insta	Ilation Points					Import P	oint Files				
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				No								
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8. Enter the point name and coordinates of the EdgeBox location, and tap "Add".

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	x		Y						
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		Cancel		Add					
Tips									
The coordinates y	ou enter must b	e in the	same c	oordinate	syste	m you	created t	the proje	ect.

Caution.

[The EDGE2 device must be visible in the Drone images, and it must be set up at a known point during PPK logging as well, for a highly accurate Drone survey.]

· INHERIT POINTS FROM DASHBOARD

If the project is linked to the Dashboard site, the coordinated data registered on the Dashboard can be inherited.

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÷		美浜テスト			(Smart Construction Dashboard
Select or add	a base station installa	tion point of SM/	ART CONST	RUCTION Edg	ge.	
		Add Base Station	n points			
		Import Daint	Tiles			
	Import the po	oints from SMART CO	NSTRUCTION I	Dashboard		

%The dashboard icon is displayed for projects linked to the dashboard, and tapping the 'project information'' icon to view the GC3 information that has been loaded.

1. A list of points registered on the Dashboard is displayed. Select control points and press OK.

	H	川.ープ7 羊近テフト理] 目 目		0	Smart Construct Dashboard
Import th	e points from SMART COM	NSTRUCTION Dashboard.				
					Unit of leng	gth : meter:
					Resid	uals
	Point Name	X(N)	Y(E)	Z	Horizontal	Vertical
\checkmark	А	-44123.948	22739.494	3.864	0.010	-0.011
\checkmark	В	-44128.101	22734.851	3.870	0.009	0.006
\checkmark	c	-44040.093	22842.649	3.260	0.014	0.008
\checkmark	D	-44164.200	22697.367	3.904	0.014	-0.005
\checkmark	Е	-44071.288	22619.448	3.906	0.004	0.008
		-43920.312	22743.991	3.548	0.010	-0.006
	Cancel					

Start PPK logging

1. Select the po.int of EdgeBox from the point list.

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Select or add a base s	station installation p	oint.						
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		No3						
		No4						
		No5						
		No6						
		No7						
		No8						
		No9						
		ポイント1						

2. Check the point data and the number of satellites used and tap the "Start PPK Logging" button.

Image: Construction of the state of the	16:58 8月1日(月)									((-	@ 100% 🔲
EPSG: JGD2011 / Japan Plane Rectangular CS IX, Vertical Datum: JGD2011 (vertical) height No1 X Y Z Latitude Longitude Ellipsoid Height 119472.280 30522.601 417.831 37.076238226 140.176615700 461.001 Number of satellites in use: 7 GPS: 5 0 GLONASS: 2 0 Galileo: 0 0 Pole Height (up to 3 decimal places) 1.65 meters	Drone Survey Mode 🗕						• 4	1. And I.	122GB /198GB		۵
XYZLatitudeLongitudeEllipsoid Height119472.28030522.601417.83137.076238226140.176615700461.001Number stellites in user 7GPS:5QZSS:0Galiteo:0BeiDou:0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5: JGD2011 / 、	Japan Plane				Datum: JG	D2011 (ve	ertical) heigh	nt	
119472.280 30522.601 417.831 37.076238226 140.176615700 461.001 Number of satellites in use: 7 GPS: 5 QZSS: 0 Galiteo: 0 BeiDou: 0					No1						
GPS: 5 QZSS: 0 GLONASS: 2 Galileo: 0 BeiDou: 0		Х о			Latitude		ongitude	Ellipso	id Height		
GPS: 5 QZSS: 0 GLONASS: 2 Galileo: 0 BeiDou: 0		119472.280	30522.601	417.831	37.07623	38226 1	40.176615700		461.001		ſ
QZSS: 0 GLONASS: 2 Galileo: 0 BeiDou: 0 Pole Height (up to 3 decimal places) 1.65 meters ▼				Number	ofsatelli	ites in us	e: 7				
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BeiDou: 0 Pole Height (up to 3 decimal places) 1.65 meters											
		P	ole Height (up t	o 3 decimal	places)	1.65	meters				
Start PPK Logging					L	1.00					
				S	tart PPK Lo	ogging					

If you have set points manually or imported from a localization file, you need to enter a pole height in advance.

Tips

Make sure that the PPK logging has started before you start flying the drone.

Wait **3 min.** to stabilize GNSS reception after starting PPK logging and then, **2 min.** after turning on the drone.

End PPK logging

Important!

Make sure that your drone has completed its flight and that the drone and controller are powered off before you end PPK logging. This may adversely affect the accuracy of the PPK.

1. Tap the "PPK Logging Complete" button.

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	119472.280	30522.601	417.831	37.076238226	140.17661	5700	461.001		
			Number o	of satellites in	use: 10				
			GPS:						
			QZSS:						
			GLONASS		3				
			Galileo:						
			BeiDou:						
Be sure to	o end drone lo	ogging and t	turn off the	e power befor	e pressing	PPK log acc	quisition end	l button.	
		00 0		top PPK Logging					

2. If GNSS reception deteriorates during the logging period, an error message may be displayed.

Please note that this may affect the accuracy of the PPK.

Generating Point Clouds

1. After flying the drone, insert the SD card containing photo data from the drone into the SD card slot of the EdgeBox.



- ① Status LED
- ② SD card slot
- ③ Ether cable port
- ④ USB slot (USB3.0)
- ⑤ SIM card slot
- ⑥ Water-proof USB slot (USB2.0)

NOTICE

Before inserting the SD card, please check the direction and insert straightly. If you are forced to insert, damage on the SD card or this product.

If you insert wrongly and cannot take out the SD card, please contact Smart Construction Helpdesk. Please do not take out the SD card by inserting tweezers and so on, you may damage the product by short circuit. 3. Tap the "Point Cloud Generation" button on the top screen of the project.

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Data Generation	Point Cloud Name	Processing Start Time	Status	
PPK Logging	TestsiteH	2023/08/10 16:32:26	✓ Generated	
Generate Point Cloud	Point Cloud 2023-8-12	2023/08/12 09:52:01	✓ Generated	
Reservation of the point-cloud generation	点群 2023-10-14	2023/10/14	• Error	
Generated Data Management		00:28:36		
Send Generated Data				
Export Generated Data to USB				
Manage PPK Log				

Tips Reservation of the point Cloud can automated processing from PPK to Upload-to-Dashboard without manual intervention.

"Reservation of the point Cloud 'is not available GCP processing.

Point Cloud Generat	ion
Point Cloud Name	Point Cloud 2025-3-17
Generation Method	 Use PPK only +GCP Use RTK flight data +GCP Use GCP only
Destination of the generation process	SMART CONSTRUCTION Edge SMART CONSTRUCTION Cloud
Send to the cloud	✔ 展示会河川 ▼
Without a license of SMA	RT CONSTRUCTION Cloud SfM, you cannot use point-cloud generation on the cloud.
Cancel	

*If there is no network connection via wired LAN or LTE when starting SC Edge2, uploading to the Dashboard will not be displayed.

4. Enter the point cloud name and press OK.

Make sure that "Use PPK Only" is selected.

Point Cloud Generat	tion	
Point Cloud Name	Point Cloud 2025-3-17	
<	O Use PPK only	+GCP
Generation Method	O Use RTK flight data	+GCP
	O Use GCP only	
Destination of the	SMART CONSTRUCTION	۱ Edge
generation process	SMART CONSTRUCTION	N Cloud
Send to the cloud	展示会河川	*
Without a license of SMA	ART CONSTRUCTION Cloud SfM, you generation on the cloud.	ı cannot use point-cloud
	generation of the cloud.	
Cancel		Next

"If Edge 2 cannot be included in the drone photo, a GCP marker can be used to improve the accuracy of the point cloud. When Edge 2 is included in the drone photo, it serves as a GCP, allowing high accuracy with PPK-only processing.".

Using RTK flight data will be the same except for the PPK data processing process.

% If you want to automatically upload the point cloud, check (Send to cloud) and select the upload destination.

5. Tap the "Import Flight Data" button and select the drone data to upload to the EdgeBox from the displayed dialog.

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	After loa	ding the f	light data	a from th	ne SD car	d, sele	ct the i	flight d	ata to s	start th	ne proc	ess.			
				<	Im	port Flig	ht Data								
	Imported	d Flight Data													
		DJI_20230	08031254_0	18_mappi	ng2										
		DJI_20230	08031254_0	17_mappi	ng2										
		DJI_20230	08031247_0	10_230413	3-mihama0	2M300									
		DJI_20230	08031247_0	09_230413	3-mihama0	2M300									
		20230803	_1217												
		2023-08-0	03_04-17-45	-20230803	_Mihama										
						Next	(
						Westing and									

The imported data will be listed. You can also select and import multiple data.

Flight data can be imported from SD or USB.

Select flight data.		
	Data in the SD card	
Flight data name	Flight date and time	Number of photos
The SD card is not installed in the SMAR	T CONSTRUCTION Edge unit.	
Da	ata in the USB memory	
Flight data name	Flight date and time	Number of photos
The USB flash drive is not inserted in SM	MART CONSTRUCTION Edge.	
Cancel		

6. Check the flight data to generate point cloud from the imported data list and tap " Start PPK processing" button.

D2JB000007 9.3.3 Drone Survey Mode	×	C! 4	"	19GB 🖿 /198GB	100% 100%
	Local coord	Ari		🕜 Proje	ct inform
· ·	Pc oud to be generated. Inwanted Object Remov	int Cloud 2025-3		on Model) images.	
Unnecessary Item F (If you turn it [ON], Plea:	Removal se confirm the target to be removed	as Unwanted Objects)	OFF	ON	
				Select categories	
			() Cate	gories to be retained: Soil	
Point Cloud Density	Standard: 16points/m ² (64,750points/ac)	Medium: 100points/m ² (404,686points/ac)	High: 160points/m ² (647,497points/ac)	Ultra High: 280points/m ² (1,133,120points/ac)	
	(j)	For precise 3D accuracy of	heck, we will recomme	nd High density or higher.	
	Gentrate po	nt cloud for higher-precisi	on accuracy check.	Loading the check points	
			▲ Checl	k points are not imported.	
		ſ	OFF	ON	

We will show the details of the setting items from next page.

%If you tap "Conditions which was able to generate point cloud" The number of photos loaded and the maximum number of photos processed at each density can be checked.

Tips Check "Generate point cloud for higher-precision accuracy check" before generating point cloud. Increases the point cloud density in the vicinity of the Check Points by loading them in advance. If not checked, the same point cloud is generated as before.

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÷		美浜精度検証 D11 / Japan Plane Rect 達: JGD2011 (vertical)	angular CS	ix					0 7t	コジェクト	情報
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i-Con 精度校亚	imetray 🗲 🗕										→

Unnecessary object Removal:

When you toggle ON, it removes unnecessary objects, such as buildings and vehicles, that are not needed for soil volume calculations.

Soil	Remove	Retain
Short grasses	Remove	Retain
Road surface	Remove	Retain
Curing sheet	Remove	Retain

Press "Select Category" to choose the category for removal.

"Short grasses" can remove/retain all Short grasses, other vegetation such as tall trees will be removed, and "Road Surface" can remove/retain road surfaces, including concrete.

The "curing sheet" could remove/retain a green or blue sheet on site.

Point Cloud Density : Adjusts the density of the point cloud

Tips

3 D accuracy check requires Ultra high density . There's area size limitation with this setting.

	density	N	laximum pr	rocessing are	a
level		Point cloud + ortho +Unnecessary object Removal point cloud	Point Cloud + Ortho	Point cloud+ Unnecessary object Removal point cloud	Point clouds only
Ultra-high density	280p/m2	5 ha	5 ha	10 ha	10 ha
High- density	160p/m2	9 ha	9 ha	18 ha	18 ha
Medium	100p/m2	15 ha	15 ha	30 ha	30 ha
Standard density	16p/m2	50 ha	50 ha	50 ha	50 ha

Ortho and DEM image generation:

Generate ortho (sky photo) and DEM (Digital Elevation Model).

Tips

If you do not turn on the ortho generation, you will not be able to output an image showing the verification point positions on the ortho, which is the 3D accuracy check report material.

7. A dialog showing the PPK Fix rate will appear, check the rate and press "Next".



Tips

A low PPK Fix rate may affect the accuracy of the resulting point cloud. At the point where the red \times mark on the drone flight route has a worse acquisition of the drone location. Please confirm and fly again if necessary.

8. The point cloud viewer screen shows up and the point cloud generation process starts. During this process, it is possible to switch to another window and perform the other work. You can check the generated point cloud by selecting it from the list on the project top screen.

Tips

To generate a Digital Elevation Model (DEM), both the Unwanted Object Analysis and Ortho Image Generation settings must be both ON.

If you turn off SMART CONSTRUCTION Edge during the processes below, the data could be corrupted, or the system doesn't work properly anymore.

Please turn it off after these processes are done.

- Point cloud generation
- \cdot PPK logging
- Point cloud uploading
- Data exporting

WHEN WE USE GCPS TO IMPROVE THE ACCURACY

."If Edge 2 cannot be included in the drone photo, a GCP marker can be used to improve the accuracy of the point cloud. When Edge 2 is included in the drone photo, it serves as a GCP, allowing high accuracy with PPK-only processing. Please prepare the drone image with GCPs and coordinate information of GCP.

1. Select "Use PPK and GCP" in step 4 of "Generating Point Clouds".

Point Cloud Generat	ion
Point Cloud Name	Point Cloud 2025-3-17
Generation Method	 Use PPK only Use RTK flight dat Use GCP only
Destination of the generation process	 SMART CONSTRUCTION Edge SMART CONSTRUCTION Cloud
Send to the cloud	▼ 展示会河川 ▼
Without a license of SMA	NT CONSTRUCTION Cloud SfM, you cannot use point-cloud generation on the cloud.
Cancel	Next

2. Tap the "Import Flight Data" button and select the drone data to upload to the EdgeBox from the displayed dialog.

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÷	EPSG:	JGD2011	/ Japan P	Plane Re		est0		al Datu	m: JGD	2011 (v	ertical) he	eight		
	After loa	iding the	flight dat	a from t	he SD	card, se	lect the	flight d	ata to s	start the	e process.			
					li	mport Flig	ht Data							
	Importe	d Flight Dat	a											
		100_155	0											
						art PPK pr	a cossing							
					St	art PPK pr	ocessing							

3. The imported data will be listed. You can also select and multiple imported data.

4. Check the flight data to generate point cloud from the imported data list, and tap "PPK processing start" button.

%If you want to automatically upload the point cloud, check (Send to cloud) and select the upload destination.

5. A dialog showing the PPK Fix rate will appear, check the rate and press "Next"



Tips

A low PPK Fix rate may affect the accuracy of the resulting point cloud. At the point where the red \times mark on the drone flight route has a worse acquisition of the drone location. Please confirm and fly again if necessary.

6. Check the flight data to generate point cloud from the imported data list and tap " Start PPK processing" button.

Tips Use GCP only

This is a preliminary functional update based on future updates and will enable GCP-only SFM processing for P4RTK, M3E, and M300. We have confirmed the accuracy, but if there is no need for GCP-only processing, we recommend normal PPK/RTK or +GCP processing for the models listed above at this time.

7.

0 3月17日(月) ED2JB000007 9.3.3 Drone Survey Mode	•	C! 4	Ľ 🌢 🖌	8 🖿 19GB /198GB	₹ 78% 100%
÷	Local coord	Ari linate system(meters)		P	roject informatio
Configure point clou You need to turn Un		int Cloud 2025-3		on Model) images.	
Unnecessary Item Ren (If you turn it [ON], Please o	noval	as Unwanted Objects)	OFF	ON Select categories	
Point Cloud Density	Standard: 16points/m ² (64,750points/ac)	Medium: 100points/m² (404,686points/ac)	(i) Cate High: 160points/m ² (647,497points/ac)	gories to be retained: Soil Ultra High: 280points/m ² (1,133,120points/ac)	
	Generate po	For precise 3D accuracy c		nd High density or higher. Loading the check points	
Ortho Image and DEM	Image Creation	ſ	Check OFF	on voints are not imported.	1
			Upper limit of pho		

We will show the details of the setting items from the next page.

8. XIf you tap "Conditions which was able to generate point cloud" The number of photos loaded and the maximum number of photos processed at each density can be checked.

Unnecessary object removal:

When you toggle ON, it removes unnecessary objects, such as buildings and vehicles, that are not needed for soil volume calculations.

Soil	Remove	Retain
Short grasses	Remove	Retain
Road surface	Remove	Retain
Curing sheet	Remove	Retain

Press "Select Category" to choose the category for removal.

"Short grasses" can remove/retain all Short grasses, other vegetation such as tall trees will be removed and "Road Surface" can remove/retain road surfaces, including concrete.

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Point Cloud Density : Adjusts the density of the point cloud

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	density	N	laximum pr	rocessing are	a
level		Point cloud + ortho +Unnecessary object Removal point cloud	Point Cloud + Ortho	Point cloud+ Unnecessary object Removal point cloud	Point clouds only
Ultra-high density	280p/m2	5 ha	5 ha	10 ha	10 ha
High- density	160p/m2	9 ha	9 ha	18 ha	18 ha
Medium	100p/m2	15 ha	15 ha	30 ha	30 ha
Standard density	16p/m2	50 ha	50 ha	50 ha	50 ha

Ortho and DEM image generation:

Generate ortho (sky photo) and DEM (Digital Elevation Model).

Tips

If you do not turn on the ortho generation, you will not be able to output an image showing the verification point positions on the ortho, which is the 3D accuracy check report material.

 Insert the USB memory with GCP coordinates file (.csv) in the USB slot of SMART CONSTRUCTION Edge. Please refer to the file format <u>here</u>.
 Insert the USB memory into the USB slot (inside the waterproof lid) ④ of the EdgeBox



- ③ Ether cable port
- ④ USB slot (USB3.0)
- ⑤ SIM card slot
- ⑥ Water-proof USB slot (USB2.0) : cannot use this slot for USB memory
- 10. Tap the "Import Point File" button and specify a CSV file from displayed dialog, which contains coordinates of GCP. You may select "Add Control Point" if you manually add a control point.

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		indees of control	Sourcemana		rom pom	emes.					
		Add Control P					Import Poi				
		marker coordinat						nerate p	point cloud.	If	
	the point i	is not selected, on	ly PPK will	be used	to gener	ate poin	t cloud.				
	Poi	nt Name	x	Y	z	,	Image Ass	ociating			
	POI	nuname					image Ass	ociating			
	No coordir	nates of control point a	available.								

- 11. Set the file format parameter according to the file and tap "OK".
- 12. Tap edit button of each GCP to display a thumbnail of the image that may have the selected GCP in the image.

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A	dd coordinat	es of control point	manually or fr	om point file	s.		
		Add Control Point			Import Point Files	2	j
	he point is no	ker coordinates wi ot selected, only PP	K will be used	to generate p	ooint cloud.	point cloud. If	
	Point Na	ime X			Image Associating		
	No10	119149.200	30614.940	393.570	Done		
	V 02	119467.800	30685.521	409.554	Done	• /	
	V09	119147.560	30519.380	403.560	Done	• /	
ļ	Vol	119472.280	30522.600	417.831	Done	Next	

14. Tap the thumbnail of the image, align the center of the cross mark to the center of GCP in the image, and tap "OK"



You can zoom in and out by pinching in and out, move the displayed portion by swiping.



More than four images are required to align a GCP.

At least more than 1 GCP must be selected and aligned like this. If you proceed without selecting a GCP, point cloud is generated only with PPK.

16. When you finish matching the coordinates of the GCP (at least 4 of them) with the image center, tap the "Done" button.



18. Set the parameters of point cloud generation and tap the "Start" button.

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	cloud to be genera m Removal must b					ation Mode	l) images.			
Unnecessary Iter	m Removal					OFF	ON			
Point Cloud Den:	sity				5.6	andard: 16 points/m²	High: 100 poin	ts/m²		
Ortho Image and	I DEM Image Creation					OFF	ON			
		Cancel		Start						

19. The point cloud viewer screen shows up and the point cloud generation process starts. During this process, it is possible to switch to another window and perform the other work. You can check the generated point cloud by selecting it from the list on the project top screen.

Tips

To generate a Digital Elevation Model (DEM), both the Unwanted Object Analysis and Ortho Image Generation settings must be both ON.

View the generated point cloud

The right pane of the project top screen displays a list of point clouds and detailed information. You can see the generated point cloud in the Point Cloud Viewer by tapping the list.

3558 7月2日(火) ED2JB000007 6.7.0-dis	Сі Ф		54% ■ 178GB 100% ↓ /198GB 100% ↓
Drone Survey Mode	Mihama demo EPSG: WGS 84		Project information
Data Generation	Point Cloud Name	Processing Start Time	Status
PPK Logging	点群 2024-7-1	2024/07/01 17:00:54	✓ Generated
Generate Point Cloud	Point Cloud 2024-7-2	2024/07/02	✓ Generated
Reservation of the point-cloud generation		12:50:20	Generated
Generated Data Management			
Send Generated Data			
Export Generated Data to USB			
Manage PPK Log			

Press the pen icon at the right end of the point you can change cloud name display.

Change the point clou	id name
New point cloud name	点群 2024-7-1
Cancel	Change
JSB	



In point cloud information Scroll down to "Generated Information" is displayed



Point Cloud: Displays the generated point cloud

- Ortho Image: Displayed only when the Ortho image option and DEM image option was "ON" upon the point group generation. Select to display the ortho image.
- DSM/DTM: Displayed only when the Ortho image option, DEM image option and Unwanted Object analysis was "ON" upon the point group generation.

Vertical Accuracy Check: Enables you to verify the accuracy of the generated point cloud. Unwanted Object Removal: Only displayed when Unwanted Object Removal was "ON" upon point

cloud generation. If this was selected, displays a point cloud with the Unwanted Object Removal filter applied. You can also change the strength of the filter by tapping the icon **T**.

The intensity of object removal can now be changed with the +/- buttons as well as the slide bar.

The point cloud displayed in the Viewer area can be

Shrink/Enlarge: Pinch in/out

Vertical/Horizontal Rotation: The slider in the Viewer Area is displayed vertically and horizontally. You can also use the arrow buttons to fine-tune

• Reset: Tap the icon to reset the Viewer Area operation to the initial conditions

%Tap the trash icon to delete data from the viewer screen

DRONE FLIGHT PATH DISPLAY (ONLY WHEN ORTHO IMAGE WAS GENERATED)

- 1. Tap "Ortho Image" in the Point Cloud Viewer screen
- 2. Tap the icon **w** in the upper left corner of the viewer



Displays the flight path of the drone. Tap \bigcirc , then tap the "View Photo" button to show the image taken at that point.

UNWANTED OBJECT REMOVAL FROM THE POINT CLOUD

EdgeBox's Unwanted Object Removal feature uses a proprietary algorithm to calculate the "Unwanted Object Likeliness" score, and you can change the filtering strength.

TO CHANGE THE STRENGTH OF POINT CLOUD JUNK REMOVAL

- 1. Tap "Unnecessary object Removal" in the Point Cloud Viewer screen
- 2. Tap the icon \mathbf{M} in the upper left corner of the viewer and use the slider to adjust the strength of the unwanted object removal.

POINT CLOUD ACCURACY VALIDATION

To verify the accuracy of a point cloud, you need coordinates of the points you want to verify. Place the CSV file which contains coordinates of check points included in the measurement area directly under the root folder of the USB memory in advance. for the CSV format.

Insert USB memory into USB slot ④ on EdgeBox
 Insert the USB memory into the USB3.0 port in the waterproof lid. The USB2.0 port outside the waterproof cover is for communication with the radio and cannot be used for USB memory.



- ① Status LED
- ② SD card slot
- ③ Ether cable port
- ④ USB slot (USB3.0)
- 5 SIM card slot
- 6 Water-proof USB slot (USB2.0) : cannot use this slot for USB memory

2. Tap "Vertical Accuracy Check" in the Point Cloud Viewer screen.



3. Tap the "Import check point file" button and select the check point coordinate file to use for validation in the dialog that appears.

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÷	Vertical Acc	curacy Check		
Poin		Import Check	Point File	
Poin	If you import the file again, 0719_ATOS_CHP.csv	the currently visible Check Point is cleared		
	Point Name			
	Nol	119472.2	78 30522.600	417.831
	No2	119467.75	30685.521	409.554
Ur	No3	119404.02	28 30596.961	413.818
Verti	No4	119314.1	.5 30573.892	406.492
	No5	119306.05	30530.651	408.822
	No6	119292.5	56 30648.141	394.978
	No7	119230.23	39 30584.115	414.363
		Cancel	Start	

4. Set the file format parameter according to the file and tap "OK".

CSV file format				
Tap [OK] after changing below import setting, if importing file was not "Locale setting" in	n the setting menu.			
Coordinate Order			ENZ	NEZ
Decimal Point			. (point)	, (comma)
Separator	; (semicolon)	(tab)	, (comma)	Space
Data start row				1 -
Data start column				1 •
Reflect the change here to "Locale	e setting" in the	setting men	u.	ан — С
Cancel	<	OF		

5. Specify a range of point cloud around the check points to use for vertical accuracy check and tap "Start".

Vertical Accur	acy	/ Check		
Radius of point cloud Range (cm)	30 -			
	5	Import Check Point File		
/ertical accuracy check can be ru	10	y the position of SMART CONSTRUCTION	Edge if the check point is not sp	ecified.
	15			Lat./Lon.:DMS
Point Name	20	Latitude	Longitude	Ellipsoid Height
	25			
EdgeBox	30	35.360997286	140.050495301	39.758
	35			
Car	40		Start	

The results are shown in the screen.

Red character shows the out of tolerance. (+/-5cm)

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- EPS		0230803- Dan Plane Rectan					height	
oint cloud information			Vertical Ac	curacy C	heck Res	ult		
Point Cloud	Validation Resul	ts Check point in red lett out of +/- 5cm.	ers is out of range of p	oint cloud and n	ot used by vertica	l accuracy check	. Characters will	be displayed in
ertical Accuracy Check					The V	ertical Differe	ence	
3D accuracy check	Point Name	X(N)			Average	Highest	Lowest	Extraction Points
	EdgeBox	-44007.582	22796.934	7.447	-0.008	0.031		
		-44024.480	22798.452	3.569	-0.012	-0.009	-0.018	
		-44010.052	22780.865	3.623	-0.015	-0.011	-0.019	
		-44011.678	22807.717	5.674				
		-43991.647	22785.944	5.693	0.002	0.005	-0.004	
	Average of valid	vertical difference fo	r all Check Point:	0.009				
		Redo Validatio			-	e accuracy ch		100

You can redo or export the result to USB.

6. You can also correct (offset) the error in the Z axis. To offset the Z axis, turn on Error Correction in Z Axis.



Offset settings are applied when the generated point cloud is exported to the outside.

Important!

Validation cannot be performed if all check points are outside the point cloud range. Also, the error correction function in the Z-axis direction is not available when the validation is not performed.

Tips

Once you have verified it, you can reload it by reading the CSV again. When you revalidate, the validation results and the Z offset value are updated based on the most recent results.

Tips

Vertical accuracy Check simultaneously outputs camera calibration data together. This CSV reports the results of camera distortion correction and is mainly used in the Japanese market.

Tips

When using the EDGE2 vertex as a verification point, the edge must be visible in the photo for both PPK and RTK processing.

Tips

In the case of RTK processing, this function is enabled when the EDGE2 is placed at a known point and correction data is sent to the drone in fixed station mode.

GCP accuracy check

If GCPs are used for SFM processing, the center accuracy of the selected GCPs can be checked after processing

When GCP is used for processing

A GCP accuracy check item has been added after processing Selecting GCP on the screen will transition the screen



Select a point that you think is the center of the GCP and scroll down the screen to display the residual between the GCP center and the coordinates.





3D accuracy check

3D accuracy check can verify XYZ accuracy by checking the coordinates center of the verification points put on-site.



1. Tap '3D accuracy check''

2.Tap 'Import Check point File'

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Point cloud information	EPS		Cloud 2024-7-2 cy check results	• /
3D accuracy	check			
Assign the check points to do	the 3D accuracy check	Import Check Point Fi	le	
/erti 3D accuracy check	Cancel		aptono cu	an in the second se

3. Files are saved once loaded to the edge and

Files can be selected from USB or from within the Edge's memory.

Tap 'OK'' after selecting a file.

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Select Point	file.							ł
If you select the f	iles in USB memory, the selected file will be c	opied to SMART CONSTRU	JCTION Edge befor	e registering point	s to it.			1
	Files	in the SMART CON	STRUCTION	Edge				1
	File name							1
U	iocaiProject1.csv						1	I
0	mihaK[Project1.csv						/	I
0	検証.csv						1	I
		Files in the USE	3 memory					
	File name							I
0	0510_GCP_XYH.csv							I
0	0513_Kijyun.csv							I
\sim	nons Mihama TE CEV							
	Cancel		(ЭŘ.			

If a point cloud is not generated at the verification point location, the verification point will be displayed in red. 4.

4. Confirm the verification point and tap "Start".

5. The verification point locations are indicated by gray pins. Tap one by one to focus on it and specify center of verification point location on the point cloud.

one Survey Mode	*	CI	ψ 📾	Ľ	• 4		100%
		Mihama demo EPSG: WGS 84	c			Pro	ject inform
cloud information			Point (loud 2	024-7-2		Î
3D accurac	y check						
If you import the point data	again, the Check Po	Import Che ints displayed currentl					
mihaK[Project1.csv						Lat./	Lon.:DD
Point Name	2	Latitu	de		Longitude	e Ellipsoid I	Height
✓ HT.8	>	35.6029540	00		140.08504400	0	39.608
	Cancel			<			
	Cancei						



6. The coordinates of the validation point are indicated by yellow pins.



7. The position of the pink pin can also be fine-tuned with the cursor in the lower right corner. After placing it at the center of the verification point on the point cloud, tap "Confirmation of the positions for each check point" icon.


8. The pins of the validation points for which positions are specified turn light blue.

"If there are unused validation points, leave them unassigned"



Tap 'Confirmation of the positions for all check points"

Tap the following icons you can available Re-verification and output of 3D accuracy report to USB/upload report to Dashboard.

ED2JB000007 6.7.0-dis Drone Survey Mode	*	Cı	ψ		ГŧЛ	-		~	- 178		1000	
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Point Cloud		3D	acci	uracy	cheo	ck res	sults					
v	alidation Results	Characters will be displayed in r	ed, if the o	error was o	ut of +/- !	5cm.					Lat./Lon	.:DMS
Ortho Photo									En	or		
DSM	Point Name	Latitude		Longitud	e	Ellips Hei		X(N)		Y(E)		z
DTM	нт.8	35.361063440	140.0	5061584	0	39.0	508					
Unnecessary Item Removal												
	Re-	select the check point file	Į.				Confirm	and edit	the check	point	5	
ertical Accuracy Check	Export th	ne accuracy check result to	USB.			Up	load the	validatio	n result to	the cl	oud	
3D accuracy check												

· USB exporting

If you tap 'Export the accuracy, check result to USB' Go to the following screen.

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			Mihama d EPSG: WGS	1000 1000 100 100 100 100 100 100 100 1					0	Project infor	matic
	Exporting data		Point cloud data		Accuracy	/ check report	3D	accuracy o	check report]	
		n export 3D accu ed a 3D accuracy	racy check report only v check.	vhen the	point clou	d was generat	ed in Ultr	a high den	sity and		
	Select poir	nt cloud you v	vant to export to th	ne USB	flash dri	ve.					
	Gen	erated data				Vertical acc check		3D accu	iracy check		
	Poir	nt Cloud 2024-7-	2			Incompl	ete	Cor	mplete		
							- (1 EAAA			

Select the data you want and tap Export to save the report to your USB.

• Upload 3D accuracy report to Dashboard.

If you tap " Upload the validation result to the cloud" Go to the following screen.

Select the data and upload the site you want, and tap send to save the report to your Dashboard site

	Mihama d EPSG: WGS			0	Project informat
Data to be sent	Point cloud data	Accuracy	check report	ID accuracy check report]
(i) You can export 3 executed a 3D ac	D accuracy check report only w curacy check.	hen the point c	loud was generated i	n Ultra high density and	
Select point cloud	you want to send to SMA	RT CONSTRU	ICTION Dashboa	rd.	
Generated dat	a Vert	ical accuracy check	3D accuracy chec	k Sending in k progress	
Point Cl ud 20	24-7-2	ncomplete	Complete		
Destination SC+	K→ FD_Simulation F				

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	Docalization	亮小林	01/29/2024	亮小林		
	MachineTransmission	亮小林	01/29/2024	亮小林		
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	Dutput	亮小林	01/29/2024	亮小林	-	
	Preconstruction	亮小林	01/29/2024	亮小林	~	
	Shared	亮小林	01/29/2024	亮小林	~	
	Survey	亮小林	01/29/2024	亮小林	*	
	Vector overlay	亮小林	01/29/2024	亮小林	-	

Sending Point Clouds to a SMART CONSTRUCTION Dashboard

Before sending it to the SMART CONSTRUCTION Dashboard, set the destination from the settings screen.

For details, please click here.

- 1. Launch the tablet app and select the project which contains the point cloud you want to send to the SMART CONSTRUCTION dashboard.
- 2. Tap "Upload Generated Data".

Displays a list of point clouds generated in the selected project.

15:20 7月21日(木)			
Drone Survey Mode 🔻	Cı 4	A 4	□ ^{133GB} ∎ ^{61%} ✿
← EPSG: JGD2011 / Japan	Test0 Plane Rectangular CS I>	714 (, Vertical Datum: JGD2011 (vertical) height
Data Generation	Point Cloud Name	Generation Start Time	Status
PPK Logging	点群 2022-7-14	2022/07/14 20:52:22	✓ Generated
Generate Point Cloud			
Generated Data Management			
Send Generated Data			
Export Generated Data to USB			
Manage PPK Log			

- Tap the check box of the point cloud to send. You can also select multiple point clouds.
- 4. Select the destination and tap "Send".

The SMART CONSTRUCTION dashboard work site list appears.

If you can't find the right destination, check your account logging in.

Tips

You can check the status of your message after it has been sent by tapping the status bar. You can also check the progress and cancel the submission on this screen.

Exporting Data

EXPORT GNSS LOGS TO USB MEMORY

To perform PPK on other systems, etc., you will need to export the GNSS log from EdgeBox.

1. Insert USB memory into EdgeBox

Insert the USB memory into the USB3.0 port in the waterproof lid. The USB2.0 port outside the waterproof cover is for communication with the radio and cannot be used for USB memory.



- ① Status LED
- ② SD card slot
- ③ Ether cable port
- ④ USB slot (USB3.0)
- 5 SIM card slot
- 6 Water-proof USB slot (USB2.0) : cannot use this slot for USB memory
- 2. Launch the tablet app 😂 and select the project from which you want to export GNSS logs to USB memory

3. Tap "Manage PPK Log"

4.



 To export to USB memory, tap the check box of the GNSS log to check it, and then tap Export

You can also select multiple logs.

A dialog appears when the exports are complete.

6. Remove the USB memory

Tap the USB icon $\stackrel{\P}{ ext{ }}$ on the status bar to see the message that the USB memory can be safely removed and then unplug the USB memory.

EXPORTING POINT CLOUD DATA TO USB MEMORY

1. Insert USB memory into EdgeBox

Insert the USB memory into the USB3.0 port in the waterproof lid. The USB2.0 port outside the waterproof cover is for communication with the radio and cannot be used for USB memory.



- ① Status LED
- ② SD card slot
- ③ Ether cable port
- (4) USB slot (USB3.0)
- 5 SIM card slot
- 6 Water-proof USB slot (USB2.0) : Cannot use this slot for USB memory
- 2. Launch the tablet app 😂 and select the project that contains the point cloud data to export to USB memory

3. Tap "Export Generated Data to USB/SD"

Drone Survey Mode 🛛 🔫	C! 4		♣ ■ 38GB ■ 1009 /198GB ■ 1009	
÷	Mihama demo EPSG: WGS 84		Project info	rmatic
Data Generation	Point Cloud Name	Processing Start Time	Status	
PPK Logging	点群 2024-7-1	2024/07/01 17:00:54	✓ Generated	1
Generate Point Cloud		2024/07/02	✓ Generated	
Reservation of the point-cloud	Point Cloud 2024-7-2	Point Cloud 2024-7-2 2024/01/02 12:50:20		1
generation Generated Data Management	点群 2024-8-9	2024/08/09 17:32:58	✓ Generated	1
Send Generated Data	点群 2024-8-30	2024/08/30 11:49:02	✓ Generated	1
Copy the generated data to recording media				
Manage PPK Log				
Flight data management				
	_			

Displays a list of point clouds generated in the selected project.

4. Tap the check box of the point cloud to export USB/SD memory. You can also select multiple point clouds.

	rvey Mode 👻		ф 🗰 🖽 🌰	/198GB	■ 100% ♥		
÷		Mihama den EPSG: WGS 84	าด	@ P	Project information		
	Exporting destination		USB memory	SD card			
	Exporting data	Point cloud data	Accuracy check report	3D accuracy check report			
	Coordinate System to Transfor	m	WGS84	*			
	Point cloud format		LAS	-			
	Select the point cloud t	o be copied.					
	Generated data		Vertical accura check	cy 3D accuracy check			
	_ 点群 2024-7-1	>	Incomplete	Incomplete			
	Point Cloud 2024-7-	2	Complete	Complete			
			Incomplete	Complete			

5. Select a point cloud coordinate system and tap "Export".

You can select the coordinate system which you have selected when you created the project, or WGS84 coordinate system.

A dialog appears when the export to the USB memory is completed.

Tips

If an ortho has been generated, (.tfw file) will be automatically output.

6. Remove the USB/SD memory

Tap the USB/SD icon on the status bar to see the message that the USB/SD memory can be safely removed and then unplug the USB/SD memory.

Load GNSS logs

- 1. You can load GNSS logs from one EdgeBox to another.
- Insert a USB memory containing data from a EdgeBox
 Insert the USB memory into the USB3.0 port in the waterproof lid. The USB2.0 port outside the waterproof cover is for communication with the radio and cannot be used for USB memory.



- ① Status LED
- ② SD card slot
- ③ Ether cable port
- ④ USB slot (USB3.0)
- 5 SIM card slot
- 6 Water-proof USB slot (USB2.0) : cannot use this for USB memory
- 3. Select a project to import logs from.

4. Tap "Manage PPK Log "



5.
 6. Tap "Import ".

37 2月16日(金)								? 26
Drone Survey Mode	*		С! Ф	e 🗉	• 4	l 🤌 🖿	107GB /198GB	97% \$ 97% \$
-		グループL	_ 美浜					
(UND	EFINED)					Import		
	(UNDEFINED)			(1	JNDEFINED)	(UNDEFINED)		
	20231201T01485	6Z-20231201T074034Z			05:51:38			
	(UNDEFINED)					Export		

7. The GNSS log in the USB memory will be loaded.

Exporting drone flight data

Processing Start Time 2024/07/01 17:00:54 2024/07/02 12:50:20 2024/08/09 17:32:58	~	Generated Generated	Project information
2024/07/01 17:00:54 2024/07/02 12:50:20 2024/08/09	~	Generated Generated	1 1
17:00:54 2024/07/02 12:50:20 2024/08/09	~	Generated	1 1
12:50:20 2024/08/09			1
2024/08/09			
	~	0200709000000020	
		Generated	1
2024/08/30 11:49:02	~	Generated	i

Export flight data from drones that are imported into Edge2.

- 1. the flight data can be imported/exported by the following items for each project.
- 2. To export, select the data, choose USB or SD, and tap the export icon.

ED2JB000007 Drone Survey		•	Cı	ψ	Ē	• 4	1 🕫 🗎	38GB /198GB	100%	•
÷			Mihama der EPSG: WGS 84	no				0	Project infor	rmatio
	Select the	e flight data.					Import			
		Flight data name			Flight date	and time	Number of photos			
		2024-08-30_02-40-14- æ°è¦āāāā∙ā	§ā ³		2024-08-30	02:40:59	42	1		
		2024-07-01_07-46-36-ç¾	æµ è"è"		2024-07-01	07:47:06	46	1		
	Exporting destination			US	B memory		SD card		>	
		A The USB fla	sh drive is not inse	erted in SMA	RT CONSTI					
			1.	- mirro	-					

Send GNSS logs to SMARTCONSTRUCTION Dashboard (Cloud SFM)

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÷		グループL	美浜 ordinate syst						
(UNDE	EFINED)					Import			
	(UNDEFINED)			1	(UNDEFINED)	(UNDEFINED)			
	20231201T0148	562-20231201T074034Z Send PPK LO	G		05:51:38				
	(UNDEFINED)	>				Export			

Customers who subscribe to Cloud SFM for SFM processing at large sites can use this function to upload PPK logs.

To process PPK SFM using Cloud SFM, tap the corresponding PPKLOG and then tap (Send to Cloud).

RTK CORRECTION DATA BROADCASTING FUNCTION

To Broadcast RTK compensation information, you need to switch the app to base station mode. Tap the drop-down list at the top left of the screen and select "RTK Correction Data Distribution".

Tips

Once you switch mode, it starts in the same mode even if you restart the app. If you want to change to the drone survey mode, you can switch from the drop-down list at the top left corner of the screen.

Set the location of EdgeBox

A CAUTION

The main unit should place a stable, flat place.

If it was placed at unstable place, it may be dropped and cause a damagre or a breakage.

IMPORT FROM A CSV FILE

1. Align the Edge Box horizontally above the surveyed base point using the levelling device on the top of the tripod.



Always wear a hard hat during work. If you drop the product from the top of the tripod by mistake and hit your head, it may cause an injury.

- 2. Measure the height from the base point to the bottom of the EdgeBox
- 3. Enter this height as the "pole height"



4. Launch the tablet app and select a project of the work site to broadcast.

:16 Mon Aug 21				••						ŝ	e 96% 💋
Base Station Mode	•		ψ	(Œ	•	4	Carlo I	133GB /198GB	100% 100%	۵
	Ę	Base	Stat	ion	Мо	de					
Select a project.											
			Create a r	ew proje	ect						
		202	230718AT)S					i /		
		202	30718-2AT	os					i /		
		Te	st atos071						i /		
		20230802	-Mihama-)07-epsg					î /		
		20230803	-Mihama-)07-epsg					Î /		
		20230804	-Mihama-)07-epsg					i /		
		Те	st2023080	8					î /		
			Test						î /		
the project is not li	sted, c	reate	a ne	w pi	rojeo	ct. F	or d	eta	ils, plea	ase se	e p.1

Tips Projects and points added in the drone survey mode are also listed.

5. The points you have previously set up or have used for localization will appear as a point list.

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Base Station M	lode	•		ф (Ē	٠	4	CARE -	133GB /198GB	10 10 10	
÷				2023							
	EPSG: JGD20)11 / Japan Pla	ane Rectangu	lar CS IX, '	Vertical D	atum: J	GD2011	(verti	ical) height		
5	Select or add a	a base station	installation p	oint of SM	IART CON	STRUC	TION Ed	ge.			
1	Adding Installation Points Import Point Files										
			/	G3							
				C4							
				C4							
Tips											
lf you set t	he EdgeB	Box on one	e of these	e point	s, you	can j	just ta	ap i	t to sele	ect it	. (If no

6. Tap "Import Point Files" to open the file.



Select point files.

Image: Older of the state of the state

Please select the parameters of your point file.

CSV file format				
Tap [OK] after changing below import setting, if importing file was not "Locale setting"	in the setting menu.			
Coordinate Order			ENZ	NEZ
Decimal Point			. (point)	, (comma)
Separator	; (semicolon)	(tab)	, (comma)	Space
Data start row				1 -
Data start column				1 •
Reflect the change here to "Local	le setting" in the	setting mer	าน.	
Cancel			ок	

Please prepare the point file in advance.

Set the file format parameter according to the file and tap "OK".

8. The contents of the imported localization file are displayed on the screen. Confirm the values are correct and aligned correctly, then tap "OK".

22:38	4月20日(木)				•••			≂ © 10	00%
									\$
÷	Select the	installation p	oint of SMAR1	CONSTRUCTION	N Edge.		Unit	of length : feet	5
		Point Name			X(E)	Y(N)			
				-4412	3.954	22739.500		3.888	
		в		-4412	8.104	22734.856		3.885	
				-4404	5.079	22784.727		3.856	
				-4403	7.855	22778.716		3.844	
				-4413	7.008	22711.815		3.772	
			Cancel			ок			

INPUT MANUALLY

1. Align the Edge Box horizontally above the surveyed base point using the levelling device on the top of the tripod.



A WARNING

Always wear a hard hat during work.

If you drop the product from the top of the tripod by mistake and hit your head, it may cause an injury.

2. Measure the height from the base point to the bottom of the EdgeBox Enter this height as the "pole height" later.



3. Launch the tablet app and select a project of the work site to Broadcast.

If the project was not listed, create a new project. For details,

Tips	
Projects and points added in the drone survey mode are also listed.	

4. Tap "Adding Installation point" to open the file.

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Base Stat	on Mode	•		ψı	۳ U	•	u an	133GB /198GB	00% 🗢
÷	EPSG: JGD)2011 / Japan Plan			80808 Vertical D		GD2011 (ver	tical) height	
	Select or ad	ld a base station ir	nstallation p	oint of S	MART COM	ISTRUCT	ION Edge.		
		Adding Installation F	Points			Impor	t Point Files		
				G3					
				C4					

5. Tap "Install above reference point". Enter the point name, pole height, and coordinates of the EdgeBox location, and tap "Add

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EPSG	: JGD2011 / Japan Plar	ne Rectangu	ılar CS IX, V	/ertical [Datum:	JGD20	011 (vei	rtical) h	ieight		
	Enter the installatior and tap "Add".	n point infoi	rmation of	SMART	CONST	RUCTI	ON Edg	ge			
	Point Nar e Base positi	on									
	O Gnss Positioning										
	Network RTK S	Service	D	ocomo				•			
			ecute Position	ning							
•	Install Above Referen	ce Point									
	Coordinates (Enter Known C	Coordinate System	n.)								
	X(N)		Y(E)								
· · · · · · · · · · · · · · · · · · ·	L										
	z										
		Cancel		Add							
īps											
he coordinates	you enter must b	be in the	same c	oordir	nate s	syste	m wł	nen y	ou cr	eated	the pro

INPUT USING NETWORK RTK

Important!

RTK correction data distribution from points added using Network RTK is not recommended because it is less accurate.

Tips

To use Network RTK, an LTE contract and a Network RTK Service contract were required.

1. Place EdgeBox anywhere in the site with a tripod at a wide, open sky.

A CAUTION

The main unit should be in a stable, flat place.

If it was placed at unstable place, it may be dropped and cause a damage or a breakage.

2. Launch the tablet app and select a project to broadcast.

13:16 Mon Aug 21		•	••							🕫 <table-row> 96% 🚱</table-row>
Base Station Mode	• (ζı ψ	–	Ð	٠	4	Carlo	133GB /198GB	100 100	* 🔹
	Bas	e Stat	ion	Мо	de					
Select a project.										
		Create a n	iew proje	ct						
		20230718ATC	os					i /		
		20230718-2AT						• /		
		Test atos071						i /		
	20230	802-Mihama-I	007-epsg					i /		
	20230	803-Mihama-	007-epsg					î /		
	20230	804-Mihama-I	007-epsg					î /		
		Test2023080	18					î /		
		Test						î /		

If the project is not listed, create a new project. Please see P.18.

3. Tap "Adding Installation point" to open the file.

A list of the points that you have set in the past will be displayed.

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Base Station	Mode	•		ф	—	Œ	•	▲ 680	133GB /198GB	Ø	100% 100%	۵
÷	EPSG: JGD20)11 / Japan Plane	Test Rectangu				atum: J	GD2011 (ve	rtical) height			
	Select or add a	a base station ins	stallation p	point of	SMAR	T CON	STRUC	TION Edge.				
	A	dding Installation Po	ints				Impo	rt Point Files				
				G3	1							
				C4								

4. Tap "GNSS positioning". Enter the point name and select the "network RTK service" from the drop-down menu.

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Base Station Mode	*		Ψ	- U	•	4			33GB 98GB	100% 100%	٠
		Test	t202	30808	3						
EPSG:	JGD2011 / Japan Plane	e Rectangu	ular CS IX	, Vertical	Datum	: JGD20)11 (vei	rtical) h	eight		
	Enter the installation	point info	rmation	of SMART	CONS	TRUCTI	ON Edg	e			
	and tap "Add".										
	Point Nam Point 3										
	Gnss Positioning										
	Network RTK Se	ervice		Docomo							
		Ev	ecute Posit	ioning							
		LAG	ecuterosit	oning							
	O Install Above Reference	e Point									
	Coordinates (Enter Known Co		n.)								
	X(N)	•	Y	(E)							
	7		U								
	2										
		Cancel									
lino											
ips											
Projects and	points added ir	n the dr	rone s	urvey n	node	e are a	also	isted			
If your notwo	ork PTK corvico	was no	t on t	ha list	nlog	0000	P P	106 +	bc o	d the	orvio

- If your network RTK service was not on the list, please see P,106 to add the service.

5. Tap "Execute positioning" to start network RTK Positioning.

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	-	[Test	202	308	308								
EPSG: JGD2011 / 、						atum: J	IGD20	11 (ver	tical)	height			
Enter the i and tap "A Point Name	nstallation poi dd". Point 3	nt inforr	nation	of SM	ART C	ONSTR	UCTIC)N Edg	e				
Gnss Pos	sitioning												
Ν	etwork RTK Servic	e		Docon	no				-				
		Exec	ute Posi	itioning									
	bove Reference Po (Enter Known Coordin			Y(E) A	dd								

When the positioning was completed, coordinates are automatically entered to the fields.

6. Confirm the coordinates were entered in the fields, and tap "Add"

· INHERIT POINTS FROM DASHBOARD

If the project is linked to the Dashboard site, the coordinated data registered on the Dashboard can be inherited.

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Drone Survey Mode	*	C! T			89 E	/198GB □ 100% ◆
÷		美浜テスト			(Smart Construction Dashboard
Select or add	a base station installa	tion point of SM/	ART CONST	RUCTION Edg	ge.	
		Add Base Station	n points			
		Import Daint	Tiles			
	Import the po	oints from SMART CO	NSTRUCTION I	Dashboard		

%The dashboard icon is displayed for projects linked to the dashboard, and tapping the 'project information'' icon to view the GC3 information that has been loaded.

1. A list of points registered on the Dashboard is displayed. Select control points and press OK.

	H	リープ7 羊浜テフト番	目t早		0	Smart Construct Dashboard
Import th	ne points from SMART COM	NSTRUCTION Dashboard.				
					Unit of leng	gth : meter:
					Reside	uals
	Point Name	X(N)	Y(E)	Z	Horizontal	Vertical
\checkmark	А	-44123.948	22739.494	3.864	0.010	-0.011
\checkmark	В	-44128.101	22734.851	3.870	0.009	0.006
\checkmark	C	-44040.093	22842.649	3.260	0.014	0.008
\checkmark	D	-44164.200	22697.367	3.904	0.014	-0.005
\checkmark	E	-44071.288	22619.448	3.906	0.004	0.008
)	-43920.312	22743.991	3.548	0.010	-0.006
	Cancel					

Broadcast RTK Correction Data

USING NTRIP SERVER

It is possible to broadcast correction data by connecting ICT construction machines and GNSS rovers which can be connected, and EdgeBox via Ntrip server.

Tips

To Broadcast RTK compensation data via Ntrip server, you must have an LTE contract and APN setup in advance. Akso require the LTE connection in the field.

1. Select the base position from the list.



%RTK broadcasts can be simultaneously distributed by setting each method (LTE,WI-FI, External Radio) and starting the distribution.

	EPSG: JGD20)11 / Japan Plan	9803-M				<u> </u>	ical) height	
		Confi	gure Base	Station	Mode	settings	5.		
L	X(N)	Y(E)	Z	Lat	itude	Lor	ngitude	Lat./Lor Ellipsoid He	
	-44007.582	22796.934	5.758	35.3611	0640	140.05	057947	40	.594
			atellites in u	Wi-Fi Se: 42	External				
		GPS: QZSS:				11 4			
		GLONASS:				9			
		Galileo:				8			
		BeiDou:				10			
		Pole Height (up places)	to 3 decimal	1.5	39	meters	*		
		Measuring	; method of						

2. Make sure "LTE" is selected, enter the pole height, and tap "Start Broadcasting"

Base Station Mode			• 🔺 d ^e		00% 🏟
÷					
EPSG: JGD2011 / Japan Plar		ar CS IX, Vertical D	atum: JGD2011 (ve	ertical) height	
G3 Confi	gure Base	Station Mode	settings.	Lat./Lon.:DD	
X(N) Y(E)	Z	Latitude	Longitude	Ellipsoid Height	
6363923.676 347255.967	82.992	85.59948908	-85.12512534	82.992	
GPS: QZSS: GLONASS: Galileo: BeiDou: You don't need to input pole beight if you detect	p to 3 decimal p	ise: 0	0 0 0 0 0 0		

When you want to stop broadcasting, tap "Done"

Tips

You don't need to input Pole Height If you selected to use Network RTK positioning, because it directly measures the antenna height.

3. Configure the NTRIP setting of receivers (rover) side.

When using LTE to broadcast RTK compensation data, set the following information for the receiver side.

 $\star\star$

Host: rtcmsv.smartconstruction.com

Port: 2101

(If there was no "Port" input,

please make the host URL: rtcmsv.smartconstruction.com/2101)

Mount: (See below Tips)

Username: EdgeBox Serial Number (Example: EB2A100XXXX)

Password: SC21

**

Tips

For [Mount], enter one of the mount points shown below for the satellites used by the receiver. MSMx(4,5,7): RTCM3.2 with GPS, GLONASS, Galileo and BeiDou RTCM30: RTCM3.0 with GPS and GLONASS

USE AN EXTERNAL RADIO

DO NOT connect to an external radio with other USB-Serial conversion cable than the attached. it may cause a short circuit and resulting an ignition or an electrical shock.

1. Connect the external radio to the EdgeBox using the Conversion Cable. (attached USB-Serial conversion cable)



- ① Status LED
- ② SD card slot
- ③ Ether Cable Terminal
- ④ USB Slot (USB3.0): cannot use this slot for RTK correction broadcasting
- 5 SIM CARD SLOT
- 6 Waterproof USB Slot (USB2.0)
- 2. Select a point from the list.

3. Input the Format, Serial communication rate, Transmission Interval, Pole Height, and Satellites used for distribution. (Constellations used for broadcast)

5:48 Tue Aug	22									💿 100% 🜠
Base Sta	ation Mode	•	Ċ	Ŷ	- U	•	UN ^D	133GB /198GB		0% 0%
÷	EPSG: JGD201	l / Japan Plane			80808 Vertical Da	atum: JGD	02011 (vert	tical) heigł	nt	
	63	Config	ure Base	Statio	on Mode	setting	s.	Lat.	./Lon.:DD	
	X(N)	Y(E)	Z		Latitude	Lon	gitude	Ellipsoid	Height	
	6363923.676	347255.967	82.992	85.5	9948908	-85.125	512534		82.992	
			LTE	E	ternal Radio					
	Format	RTCM3.2 MS	iM4		Satellites us distribution	ed for	Numbe satelli		sage tting	
	Serial communication speed (bps)	4800			GPS			0		
	Transmission Interval (seconds)	1			QZSS			0 -	•	
	Pole Height (up to 3 decimal places)		meters		GLONASS				•	
Yo	u don't need to inp	out			Galileo			o 🖷	•	
th					BeiDou			0	•	
					Nu	mber of sa	atellites in	n use: 0		
			Star	rt Broadc	asting					

Tips

The serial communication speed and transmission interval must be set according to the external radio connected. Please refer to the instruction manual of your external radio for the setting values. You can select the constellations to broadcast from the satellites by turning on the "Active constellations" setting in the settings screen on the upper right of the tablet application. Also, the Active constellations cannot be none.

4. Tap "Start Broadcasting"

		Miha 1 / Japan Plane rence: JGD2011				Project info
	Config	ure Base S	Stati	on Mode settir	igs.	
GCP3 (Known point)						Lat./Lon.:DMS
X(N)	Y(E)	Z		Latitude	Longitude	Ellipsoid Height
-234341.779	6178.539	37.244		33.531476173	139.455953073	37.244
		LTE	Wi-Fi	External Radio		
Format	CMR		•	Satellites used for distribution	Number of satellites	Usage Setting
Serial communication speed (bps)	38400		•	GPS	10	
Data flow Control	OFF	ON				
Transmission Interval	1		•	GLONASS	6	
(seconds)				Number o	f satellites in use:	35
Pole Height (up to 3 decimal places)		meters	•			
Measuring method of the pole height						

When you want to stop broadcasting, tap "Done"

Tips

You don't need to input Pole Height If you select to use Network RTK positioning, because it directly measures the antenna height.

5. Configure the NTRIP setting of receivers (rover) side.

Please follow the instruction of the receiver (rover) manual.

Make sure to set the same channels on both receiver and EdgeBox.

USE WI-FI BROADCAST

45 2月7日(水)									(î~	94%
Base Station Mode	•	C!	$t_{\perp}^2 t$	E		500	173GB /198GB	Û	100% 99%	۵
÷			ima d PSG: WGS							
	(ポイント1	Configure Base	e Statior	n Mode s		S. :./Lon.:DMS				
		Latitude	Longi	tude	Ellipso	id Height				
		35.36100118	140.0505	0191		40.034				
		LTE	Wi-Fi	External F	tadio					
		Number of	satellites	in use: 0						
		GPS:		0						
		QZSS:		0						
		GLONASS:		0						
		Galileo:		0						
		BeiDou:		0						
		Format	RTCM3.2 M	ISM4	*					
		O GNSS	receiver is	s not read	<i>.</i>					

If the mobile station side (construction equipment, drone, GNSS rover) can receive compensation data from WIFI, compensation data via WIFI at the EDGE2 is available.

The mobile station side should connect to the EDGE2 SSID (ED2JB000000) pass default (edge2-ap)

Supported formats: CMR, RTCM3.2, MSM7, MSM4, MSM3, RTCM3.0

Setting up reference points, broadcast, setting pole heights, etc., are the same as other procedure.

DELETE DATA

Data in EdgeBox can be deleted in two ways:

Delete a project and its contents together

Base Station Mode	•	C: 4		Œ	• 4	B RE	133GB /198GB	100% 100%	۵
	B	ase Sta	ation	Мос	de				
Select a projec	:t.								
	Create a new project								
	20230718ATOS								
		20230718-2	ATOS				i /		
		Test atos0	0718				• /		
	2	20230802-Miham	a-007-epsg				• /		
	ź	20230803-Miham	a-007-epsg				Î /		
	:	20230804-Miham	a-007-epsg				Î /		
		Test20230	808				i /		
		Test					Î /		

2. Tap the "Delete" icon at the right end of the project list.

Delete the following project: Test20230808	
Cancel	ок

3. Tap "OK" in the confirmation dialog.

Tips	
When you delete data in this way, all data associated with the project are deleted.	

Select and delete data

 Tap the Settings icon in the upper-right portion of the tablet app. Go down to the bottom of the page.

0 10E A09 22					100 A
Settings		-th 440 mm		🤌 n 13368	n 100% 🚓 X
	Bas	ic Settings			
UI Language				English	-
Order of coordinates		ENZ			
Latitude / Longitude				DMS	
GNSS Usage Settings					_
Satellites		Nun	nber of satellites		Status
GPS					
QZSS					•
GLONASS					•
Galileo					

2. Tap "Delete Data".

5:37 Tue Aug 22		•••				ବ ଜ 100% 😽
Prove Chatine Made	<i>a</i> ,	,t . 🕰	m 🔺	1 0	133GB	n 100% 🚓
Settings						×
	Net	work Settin	ıgs			
LTE Settings						
isp.docomoiot.net						
SMART CONSTRUCTIO	ON Edge's Wi-Fi Passphr	ase Settings				
Ethernet Proxy Settin	gs					
		Change				
	Informat	ion and Ope	erations			
	Shutdown S	MART CONSTRUCT				
		Delete Data				
	Display SMART C	ONSTRUCTION Edg	ge Information			

3. From the Delete Data dialog, select the data you want to delete and tap the "Delete" button.

Tue Aug 22			२ 0
~ ···			
Delete Data			>
Generated Data	Project	Point Cloud	Processing Start Time
Flight Data	20230803-Mihama- 007-epsg	点群 2023-8-3 P4R PPK	08/03/2023, 04:20:51 PM
PPK Log Installation Point of	20230803-Mihama- 007-epsg	点群 2023-8-3 P4R RTK	08/03/2023, 04:57:07 PM
SMART CONSTRUCTION Edge	20230803-Mihama- 007-epsg	点群 2023-8-3 M3E PPK	08/03/2023, 05:23:36 PM
	20230803-Mihama- 007-epsg	点群 2023-8-3 M3E RTK	08/03/2023, 05:45:41 PM
	20230803-Mihama- 007-epsg	点群 2023-8-3 aerobo PPK	08/03/2023, 06:03:12 PM
	20230803-Mihama- 007-epsg	点群 2023-8-3 m300 PPK	08/03/2023, 06:32:47 PM

Tips

You cannot delete the generated data while displaying the point cloud. Please go to a different screen before the deletion

Tips

In the left-hand tab, you can select the type of data to delete:

- · Generated data
- Imported flight data
- Captured PPK logs
- Base station position data

BASIC SETTING

Tap the "Settings" icon in the upper-right portion of the tablet app to change your EdgeBox settings or to perform specific EdgeBox actions.

Language setting

You can switch between languages by selecting from the drop-down list. Language settings are saved for each tablet app. And also possible to change the color of the UI display.

Drana Suniou Mada	🕐 👘 🖾 רום 🔺 🔊 💼 108GB 🌪 100% 🚓
Settings	×
	Basic Settings
	Dasic Settings
UI Language	English
Appearance mode	Use the same mode as the…
GNSS Usage Settings	Use the same mode as the device.
Satellites	Number of satellit Light mode
	Dark mode
GPS	10

13:16 Mon Aug 21	000				奈
Base Station Mode 🗸	C! 🕈 🗂	Ū 🌢	- 580	133GB /198GB	10/ %
	Base Station	Mode			
Select a project.					
	Create a new proje	ct			
	20230718ATOS			ī /	
	20230718-2ATOS			ī /	
	Test atos0718			î /	
	20230802-Mihama-007-epsg			i /	
	20230803-Mihama-007-epsg			i /	
	20230804-Mihama-007-epsg			Î /	
	Test20230808			i /	
	Test			i /	

GNSS Settings

You can set the consteration used by EdgeBox and the mask angle of the satellite acquisition.

Se	ttings			×
		Basic Settings		
	UI Language		English	•
	GNSS Usage Settings			
	Satellites	Number of satellites		Status
	GPS	2		
	QZSS	0		•
	GLONASS	1		•
	Galileo	0		•
	BeiDou	٥		
	Mask Degree		10	

Tips

Changing the mask angle changes the position accuracy using the EdgeBox.

Setting GNSS epoch number and Mask angle setting

1:28 8月22日(木) ED2JB000007 6.9.2-dis												€ 5%	
Drana Cunior Mada	CI	t.	1	[¹]			Dec.		122GB /198GB	0	100%	\$	
, Settings												×	
GNSS Usage Settings													
Satellites				Number	r of satel	lites			:	Statu	s		
GPS						10				•			
QZSS						3				•			
GLONASS						6				•			
Galileo						9				•			
BeiDou						8				•			
Mask angle setting Mask angle: 10 Change Epoch numbers when we do sett-positioning Current setting: 10 times Change													
			~~	nı	umber	-		-	-	-	-		

In the setting menu will adjust epoch number here when self-positioning.

Can be set between 0 and 30.

Mask angle setting		
Mask Degree	10	
	Input any value	between 0 and 30
Cancel		Change

Can be set between 1 and 60

Epoch numbers settir	ng	
Epoch numbers (times)	10	
Input any i	number of time	s from 1 times to 60 times.
Cancel		Change

Interwork (Linked) Service Settings

You can configure network RTK service setting. Normally, Host, Mount Point, Port, User ID and Password. The password will be hidden.

SMART CONSTRUCTION Account Settings are ID and password.

%When you log in to your account, you will see your login ID.



Network Settings

You can configure APN, change the password when you connect Wi-Fi to EdgeBox, and configure proxy server when you connect to a wired LAN with a proxy server.

Settings			×
	Network Set	ttings	
LTE Settings			
isp.docomoiot.net	Delete Edit		
SMART CONSTRUCTION	Edg 's Wi-Fi Passporase Setting	s	
	Change		
Ethernet Proxy Settings			
	Chang		
LTE Setting:			
LTE Setting Deletion		LTE settings	
Delete spmode.ne.jp.		APN	spmode.ne.jp
Cancel	Delete	User Name (optional)	
		Password (optional)	
		Authentication Type	PAP 👻
		Cancel	Apply

WiFi Passphrase Settings: (Default: edge2-ap)

Wi-Fi Passphrase Settings	
Passphrase	
Passphrase (confirm)	
Reboot is required to	apply the settings.
Cancel	Change and Shutdown

Ethernet Proxy settings:

Ethernet Proxy Settings	
Use Proxy Server	
Address	
Port	
Reboot is req	uired to apply the settings.
Cancel	ОК

Tips

After changing the Wi-Fi passward and the Proxy settings, the EdgeBox must be restarted. After shutting down, press and hold the power button for about 4 seconds to start.

EdgeBox Information and Operations

You can check the information about your EdgeBox, delete unnecessary data or shut it down/restart.



Shutdown SMART CONSTRUCTION Edge :



Delete data:

Del	ete Data					×
	Generated Data		Project	Point Cloud	Processing Start Time	
	Flight Data PPK Log		2022-09-08_Verify_ with_Australia_dat a	100_0003-100_0007	2022/09/08 14:51:54	
	Installation Point of SMART CONSTRUCTION Edge		220912-1025-33-lo cal304	Point Cloud 2022-9-11	2022/09/12 13:27:38	
			GCPTest	点群 2022-9-8 exp1-1	2022/09/09 11:06:27	
			Georgeandkhim	Point Cloud 2022-11-16	2022/11/16 11:59:42	
			Georgeandkhim	Point Cloud 2022-11-16 1v2	2022/11/16 14:14:14	
	Check the data you vant to delete.		Mihama	Point Cloud 2022-11-2	2022/11/02 16:34:11	
			Mihama220914-VR S	点群 2022-9-13-GCPなし	2022/09/14 11:38:58	
					Delete	

Edge device information:

SMART CONSTRUCTION Edge Device Inform	ation
SMART CONSTRUCTION Edge Storage Usage	59 GB/198 GB (29%) Remaining 138 GB
Version	1.15.2 🗸
Close	

IMEI number display

IMEI number is displayed in the settings menu on Network settings.

3月17日(月) D2JB000007 Setti	9.3.3 ngs	₹ 71%100%X
	Network Settings	
(Settings IMEI No. 86 922304 136862 0 isp.docomoiot.net Delete Edit	
SMA	RT CONSTRUCTION Edge's Wi-Fi Passphrase Settings	
Wi-Fi	Client Mode Setting	_
	Ryo1124 Enabled Delete Edit	
	Change	
	Information and Operations	

WIFI dongle setup

From version 9 onwards, all internet communication functions can be used with a WiFi dongle without a SIM card.

%The recommended dongle model numbers as follows:



https://www.tp-link.com/jp/home-networking/adapter/archer-t2u-nano/



https://www.tp-link.com/jp/home-networking/adapter/tl-wn725n/

1. Tap the Add WI-FI Client Mode Settings icon in the Edge2 Settings menu and enter the SSID and password.



2. Confirm that the settings have been enabled

Settings		38 <u>61%</u> ×
	Natural Cattlena	_
	Network Settings	
LTE Settings		
isp.docomoiot.net	Delete Edit	
SMART CONSTRUCTION	Edge's Wi-Fi Passphrase Settings	
	Change	
Wi-Fi Client Mode Settin	3	
TP-Link_7596 Enable	Delete Edit	
Ethernet Proxy Settings		
	Change	
	Information and Operations	
	Shutdown SMART CONSTRUCTION Edge	

3. Insert the WIFI dongle into Edge 2 and wait for 30sec, after that make sure internet connection.

If you are having problems with your internet connection, please restart Edge 2.



We are planning to release v9.1 in early May . The Archer T2U Nano is not supported in v9.0 released this time. We appreciate your understanding that there is a time lag until official support is available.

Items		Specification	Remarks
Temperature Range	Operating	-20°C∼50°C	
	Charging	0°C~45°C	
	Storage	-20°C∼50°C	
Input voltage		19.5V DC	
Power consumption	Standard	13.3W	When broadcasting RTK correction 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 correction 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

A CAUTION

* Smart Construction Edge has a certain dust- / water-proof performance, but was not applicable for full submergence, high-pressure cleaning, some liquid, such as, detergent, seawater, beverages, and so on. And Power cable including AC adapter are not water-proofed.]

Hardware specificatio	n		
Items	_	Specification	Remarks
External dimensions	Width x depth : height	x300 x 300 x 150 [mm]	
Body weight	Including battery	Approx 4.0 kg	
	Excluding battery	Approx 2.7 kg	
Total weight	Including carry case and accessories	eApprox 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	Standard size
	SIM card slot	Nano SIM	
	LAN port		
SoM	Jetson Xavier NX		
	GPU	384 コア NVIDIA Volta, 48 Tensor core	
	CPU	6 ⊐ア NVIDIA Carmel ARM v8.2 64bit,6MB L2+4MB L3	
	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	LTE-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	L10F, L20F	
	Galileo	E1B/C, E5b	
	BeiDou	B1I, B2I	