

Smart Construction Edge 2 User Manual

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

Firmware Version: v7.7.1

Update date 2024/10/29.

How to use EdgeBox

TABLE OF CONTENTS	
Before USING	8
Name of each part	8
EdgeBox Body Part Name	8
Name of each part of the status bar	10
Preparation IN ADVANCE	
Charge batteries	
Turn on EdgeBox	16
Connect EdgeBox to the tablet (iPad)	16
Start/Stop Using	17
Install EdgeBox on the tripod	
Enable tablet apps	17
Create a project	
Create in a public coordinate system (using ESPG code)	
Create in local coordinate system (using localization file)	19
Create A new project by connecting to smart construction	24
Turn Power Off	
drone Survey function	
UsING Network RTK	
Import from a CSV file	31
INPUT manually	35
 Inherit points from dashboard 	38
Start PPK logging	39
End PPK logging	40
Generating Point Clouds	
When we use GCPs to iMproVE the accuracy	
View the generated point cloud	56
Point Cloud Viewer Screen Part Names	57
Drone Flight Path Display (only when ortho imagE WAs generated)	59

UNWANTED OBJEcT REMOVAL from tHE Point Cloud	59
Point Cloud Accuracy Validation	60
3D accuracy check	64
Sending Point Clouds to a SMART CONSTRUCTION Dashboard	71
Exporting Data	72
EXPORT GNSS logs to USB memory	72
Exporting Point Cloud Data to USB Memory	74
Load GNSS logs	
Exporting drone flight data	
Send GNSS logs to SMARTCONSTRUCTION Dashboard (Cloud SFM)	79
RTK CORRECTION DaTA BROADCASTING FUNCTION	80
Set the location of EdgeBox	80
Import from a CSV file	80
INput manually	
INPUT using Network RTK	
•inherit points from dashboard	89
Broadcast RTK Correction Data	
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	
EdgeBox Information and Operations	
Appendix	
Install and configure certificate	

	Add a tablet app to	vour home screen	106
--	---------------------	------------------	-----

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 require 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, Mintato-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.
	Indicates content that, if mishandled, could result in minor or
	moderate injury to a person.
NOTIOE	Indicates content that may result in product failure or property
NUTICE	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 an ignition or an injury.

Always wear a hard hat during the work.

If you dropped 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 hot place (beside the fire, heater, inside a vehicle with a high temperature) with the battery in it.

The batteries may damage and resulting 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 get wet, it may cause a short circuit and resulting an ignition or an injury.

A WARNING

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

If any rain comes inside, it may cause a short circuit and resulting 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 resulting an ignition or an electrical shock.

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

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

A WARNING

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

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.

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 to 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 a cloth while charging.

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

NOTICE

If the main unit interferes with 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 hot place (beside the fire, heater, inside a vehicle with a high temperature) with the battery in the product.

The batteries may damage and resulting 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 a heat generation, an explosion, or an ignition.

A WARNING

DO NOT let the battery get wet.

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

If the battery leaks, keep it away from fire.

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

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

If it damage the protective function, it may cause an 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 resulting 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 other power cable 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. In particular, when winding the cord around the AC adapter, wind it loosely rather than tightly wrap 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 distributer. If you insert tweezers and try to forcibly remove them, there is a risk of a short circuit.

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)

NAME	OF EACH PART OF THE STATUS BAR								
Drone	e Survey Mode								
	1 2 3 4 5 6 7 8 9 10 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.								
$\overline{\mathcal{O}}$	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.

Tips

Please confirm all ②Running job ⑤Exporting data and ⑥Uploading data before you turn off the unit. Those jobs could cancelled if it 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 adaptor :



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

 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.
- Enter your EdgeBox pas 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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				Test0829)						i	1			

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 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 file should be in CSV format and saved in the root directly of the USB memory. For more information on the format of localization files, see P.21.

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"

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3. Select "Local" in the project coordinate system.



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

5. Files are saved once loaded to the edge and

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

Тар	''OK''	after	se	lecting	a	file.
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Files in the USB memory														
		File name												
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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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Example of the format above

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Unit of XYZ and Elipsoidal height are in feet.

6. Select the file and tap "Next".

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O ATOS_0627_WGS.csv
O 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 Next

- 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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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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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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		Project Name	Start Date and Time	End date & time
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Turn Power Off

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 resulting an ignition or an electrical shock.

- 1. Tap Settings icon¹² on the upper-right portion of the tablet app.
- 2. Scroll down to tap "Shut Down SMART CONSTRUCTION Edge" in "Information and Operations" section of the Settings screen.

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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

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

- \cdot Point cloud creation
- PPK logging
- Data Transmission
- $\cdot\,$ Exporting data

DRONE SURVEY FUNCTION

USING NETWORK RTK

Before setting 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 place 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 \bigotimes and select a project of the work site to survey.

If the project is not listed, create a new project. For details, please see from P.18.

Drone Survey Mode 🔻	<mark>C</mark> ! ‡	a •	⊿ «	🌮 🖿 133GB /198GB	61% 🍄
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	220721_0921_34_ATOS	_EPSGwG		i /	
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3. Tap "PPK Loggin"

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

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	EPSG: JGD2011 / Japan P	Plane Rectangular CS IX	, Vertical Datum: JGD2011 (ve	ertical) height
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	PPK Logging	点群 2022-7-14	2022/07/14 20:52:22	✓ Generated
Gene	erate Point Cloud			
Generated	d Data Management			
Send	d Generated Data			
Export Ge	enerated Data to USB			
Ma	anage PPK Log			
vou have s	et the EdgeBox on o	one of these point	s, you can just tap it to	o select it.(If not, go to 4.)
	ng Installation Po	ints" or you car	n import with a CSV	/ file (Go to next chante
39 8月1日(月)	ng Installation Po	ints" or you cai	n import with a CSN	/ file (Go to next chapte २७ ७४ छ
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9 8月1日(月) Drone Survey M	ng Installation Po	ints" or you car @ \$ Test0	n import with a CSV	/ file (Go to next chapte © 74% 1226B 100% /1986B None
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с Drone Survey I	ng Installation Po Mode - EPSG: JGD2011 / Japan R Select or add a base static	ints" or you can で 中 Test0 Plane Rectangular CS IV on installation point. ion Points ポイン ポイン	n import with a CSV 714 C, Vertical Datum: JGD2011 (v Import Point Files	/ file (Go to next chapter

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	tallation po	pint inform	ation and	tap "Add'	1			al, neigi			
Point Name	Point 3										
Sing netw	ork RTK										
Services to use	Jenoba 👻		Execu	ite Position	ing						
Coordinates (Er	nter Known Coorc	dinate System.)									
x											
Z											
U			J								
		Cancel	Ac	ld							

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

9.

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 the work.

If you dropped 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. For details, please see p.18

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			Test2	20230808					î,	*		
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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	
Generate Point Cloud	Point Cloud 2023-8-12	08/12/2023 09:52:01 AM	✓ Generated	
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 b	ase station ins	tallation p	oint of	SMAR	T CONS	STRUCTI	ON Edge.				
	Addi	ing Installation Poi	nts				Import	Point Files				
				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 th	et 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 setting" in the setting menu.										
Cancel		0	к							

If you tap "Reflect the change here ti "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 the work.

If you dropped 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. For details, please see p.18

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	Select a project.											
	Create a new project											
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			230802-Mi	hama-007	7-epsg				• /			
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5. Tap "PPK Logging"

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Generate Point Cloud		Point Cloud	2023-8-12		08/12/202	3		~	Generated			
Reservation of the point-cloud generation					09:52:01 A	194						
Generated Data Management												
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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Select or add	a base station in	stallation p	point.								
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8. Enter the point name and coordinates of the EdgeBox location, and tap "Add".

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	Enter the install	ation point info	rmation and	tap "Add".					
	Point Name Poin	t 3							
	Using network I	атк							
	Services Je	noba 🔻	Exec	ute Positionin	g				
	Coordinates (Enter K	nown Coordinate C							
	x		Y						
		Cancel	A	bt					
Tips									
The coordinates y	ou enter mus	t be in the s	same cool	rdinate s	system y	ou cre	ated tl	he proje	ct.

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 coordinate data registered on the Dashboard can be inherited.

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÷	グループZ Local coordi	美浜テスト inate system(meter	現場 ^{s)}		(Smart Construction Dashboard
Select or add	a base station installat	ion point of SM	ART CONST	RUCTION EC	lge.	
		Add Base Statio	n points			
		Import Point	Tiles			
	Import the po	ints from SMART CC	INSTRUCTION	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 point and press OK.

					101	Smart Constructi
	H'	リープ7 羊近テフト刊	目十里		9	Dashboard
Import the	e points from SMART CON	ISTRUCTION Dashboard.				
					Unit of leng	th : meters
					Residu	als
	Point Name	X(N)	Y(E)	Z H	Horizontal	Vertical
	Α	-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			ок		

Start PPK logging

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

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	Select c	or add a base s	tation insta	llation	point.								
		Adding Insl	allation Point:	s				Import I	Point Files				
					No	1							
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2. Check the point data and the number of satellites used, and tap the "Start PPK Logging" button.

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	x			Latitude	Longi	itude	Ellipso	oid Height		
	119472.280	30522.601	417.831	37.076238226	140.1	.76615700		461.001		
			Number	ofsatellites	in use: 7					
			GPS:		5					
			GLONAS	5S:						
			Galileo: BeiDou:		0 0					
	-									
	P	ole Height (up 1	to 3 decimal	places) 1.6		meters	•			
			5	itart PPK Loggin	g					

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.

39

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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			Р	PK logging No1					
	x			Latitude	Longitude	e Elliç	osoid Height		
	119472.280	30522.601	417.831	37.076238226	140.17661	5700	461.001		
			Number	of satellites in	use: 10				
			GPS:						
			QZSS:						
			GLONASS	S:	3				
			Galileo:						
			BeiDou:						
Be sure to	o end drone l	ogging and t	turn off th	e power befor	e pressing	PPK log ac	quisition end	button.	
			s	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 force to insert, may damage SD card or this product.

If 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				
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 Name	Point Cloud 2024-10-29	
Generation Method	O Use PPK only O Use RTK flight data	+GCP
Send to the cloud	グループZ 美浜テスト現場	-

*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 Name	Point Cloud 2024-10-29	
and the Marked	Use PPK only	+GCP
eneration Method	O Use RTK flight data	+GCP
Send to the cloud	□ グループZ 美浜テスト	-現場 ▼

"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 see P.48

Using RTK flight data will be the same except 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									
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The imported data will be listed. You can also select and import multiple data.

Flight data can be imported from SD or USB.

Select fight 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	ta in the USB memory	
Flight data name	Flight date and time	Number of photos
The USB flash drive is not inserted in SM	IART CONSTRUCTION Edge.	
Cancel		

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

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Configure point cloud You need to turn Unwa If you turn Removal of removed.	Pc to be generated. anted Object Remov Unwanted Objects	oint Cloud val [ON] to ge [ON], check t	2024- enerate I the setti	8-22 DEM (Digi ngs for ob	tal Elevatio Þjects that c	n Model) Ion't nee	images. ed to be		
Unnecessary Item Removal					OFF		ON		
					(i) Catego	Select ories to be	categories retained: Soi	il	
Point Cloud Density	Standard: 16points/m ² (64,750points/ac)	16points/m ² points/ac) Medium: 100points/m ² (404,686points/ac)		High: 16 (647,49	0points/m² 7points/ac)	Extreme High: 280points/m ² (1,133,120points/ac)			
		4	0	Each densi	ty has a differe	ent maximu	um area limit		
Ortho Image and DEM Image Creation					DFF		ON		
and DEM Image Creation					OFF		ON		

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

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.

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

Category	Remove or retain
Soil	-•
Short grasses	•••
Road surface	•
Curing sheet	•
✓ Overwrite the ab	oove settings as project default
Cancel	OK

"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.

		N	laximum pr	ocessing are	ea
level	density	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 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 any more.

Please turn 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 (p.38) of "Generating Point Clouds".

Point Cloud Name	Point Cloud 2024-10-29
Generation Method	O Use PPK only +GCP O Use RTK flight data

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 Plane	T Rectang	est0	714 X, Vertic	al Datu	m: JGD	2011 (v	ertical) height			
	After loa	ading the fli	ght data froi	m the SD	card, se	lect the	flight d	ata to s	start the	e process.			
					Import Flig	ght Data							
	Importe	ed Flight Data											
		100_1550											
				s	itart PPK pr	rocessing							

- 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.

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	Po	oint Cloud 2024	4-8-22			
Configure point clo	ud to be generated.					
You need to turn Ur	nwanted Object Remov	val [ON] to generat	e DEM (Digital	Elevation I	Model) images.	
If you turn Removal	l of Unwanted Objects	[ON], check the se	ttings for obje	cts that do	n't need to be	
removed.						
Unnecessary				_		
Item Removal			OFF		ON	
				<	Select categories	
				0		
				(i) Categorie	oc to be retained. Si	011
				C constant	es to be retained. 5	
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Point Cloud	Standard: 16points/m ²	Medium: 100points/m ²	High: 160pc	pints/m ²	Extreme High: 280points/m ²	
Point Cloud Density	Standard; 16points/m² (64,750points/ac)	Medium: 100points/m ² (404,686points/ac)	High: 160pa (647,497pa	pints/m ²	Extreme High: 280points/m ² (1,133,120points/ac)
Point Cloud Density	Standard: 16points/m ² (64,750points/ac)	Medium: 100points/m ² (404,686points/ac)	High: 160pr (647,497po Each density l	oints/m ² ints/ac) has a different	Extreme High: 280points/m ² (1,133,120points/ac) it.
Point Cloud Density	Standard: 16points/m ² (64,750points/ac)	Medium: 100points/m² (404,686points/ac)	High: 160pr (647,497pa	pints/m ² iints/ac) has a different	Extreme High: 280points/m ² (1,133,120points/ac maximum area lim) it.
Point Cloud Density Ortho Image	Standard: 16points/m ² (64,750points/ac)	Medium: 100points/m² (404,686points/ac)	High: 160pr (647,497pc	oints/m ² ints/ac) has a different	Extreme High: 280points/m ² (1,133,120points/ac maximum area lim) it.
Point Cloud Density Ortho Image and DEM Image Creation	Standard: 16points/m ² (64,750points/ac)	Medium: 100points/m ² (404,686points/ac)	High: 160pu (647,497po Each density l	pints/m ² ints/ac) nas a different	Extreme High: 280points/m ² (1,133,120points/ac maximum area lim) it.
Point Cloud Density Ortho Image and DEM Image Creation	Standard: 16points/m ² (64,750points/ac)	Medium: 100points/m ² (404,686points/ac)	High: 160pi (647,497pa Each density l	pints/m² ints/ac) nas a different	Extreme High: 280points/m ² (1,133,120points/ac maximum area lim)

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

7. 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.

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

Category	Remove or retain
Soil	
Short grasses	•
Road surface	•
Curing sheet	•
Overwrite the al	pove settings as project default
Cancel	ок

"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.

		N	laximum pr	ocessing are	a
level	density	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 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 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
- 9. Tap the "Import Point File" button and specify a CSV file from displayed dialog, which containing coordinates of GCP. You may select "Add Control Point" if you manually add a control point.

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	Associate mark the point is not	er coordinates w selected, only P	vith the p PK will b	hoto ar e used t	nd select to genera	the poir ate point	nt to gene t cloud.	erate p	point cloud.	If	
	Point Nan	ne					lmage Asso	ciating			
	No coordinates o	f control point availa	able.								
									Next		

- 10. Set the file format parameter according to the file and tap "OK".
- 11. 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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Add coo	ordinates of con	trol point mar	ually or from	point files.					
	Add Con	trol Point			Import Poin	t Files			
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	No10	119149.200	30614.940	393.570	Done)	
	No2	119467.800	30685.521	409.554	Done		• /		
	No9	119147.560	30519.380	403.560	Done		• /		
	Nol	119472.280	30522.600	417.831	Done		Next		

13. 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.

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



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

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EPSG: J	220720 GD2011 / Japan Pla	_0919_ ane Rectangu	_ 34 _ Ilar CS I	X, Verti	cal Datı	ım: JGD201	1 (vertical)	height			
AeroboPPK_0521wGCP Configure point cloud to be generated. Unnecessary Item Removal must be ON to generate DEM (Digital Elevation Model) images.											
Unnecessary Iter	m Removal					OFF	40	I			
Point Cloud Den	sity				St	andard: 16 points/m²	High: 100 p	oints/m²			
Ortho Image and	DEM Image Creation					OFF	40	1			
		Cancel		Start							

18. 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 the 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.

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÷	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		2024/07/02	
Reservation of the point-cloud generation	Point Cloud 2024-7-2	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. Please see P.52 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 use 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 Accu	uracy Check		
Poin		Import Check Point File		
	If you import the file again, the	currently visible Check Point is cleared.		
	0719_ATOS_CHP.csv			
	Point Name			
	Nol	119472.278	30522.600	417.831
	No2	119467.797	30685.521	409.554
	No3	119404.028	30596.961	413.818
	No4	119314.115	30573.892	406.492
	No5	119306.052	30530.651	408.822
	No6	119292.556	30648.141	394.978
	No7	119230.239	30584.115	414.363
	c	ancel	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 <u>а</u>
Cancel	<	01		

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

Vertical Acc	uracy	/ Check		
Radius of point cloud Range	(cm) 30 -			
	5	Import Check Point File		
Vertical accuracy check can l	pe run 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			
	Can 40		Start	

The results shown in the screen.

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

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← EPS0	2(5: JGD2011 / Jap)230803- an Plane Rectan	- Miham gular CS IX, Ve	a-007	-epsg n: JGD2011	(vertical)	height	
Point cloud information			Vertical Ac	curacy C	heck Res	ult		
Point Cloud	Validation Result red, if the error was o	S Check point in red lett ut of +/- 5cm.	ers is out of range of p	oint cloud and no	ot used by vertical	accuracy check	. Characters will	be displayed in
Vertical Accuracy Check					The V	ertical Differe		
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 v	vertical difference fo	r all Check Point: (0.009				
		Redo Validatio	on		Export the	e accuracy ch	eck result to	USB.

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.

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 Point Cloud		3D	Point accur	Cloud acy che	2024-7-2 ck result	S		• /
3D accurac	cy check							- 45
Assign the check points to	do the 3D accuracy chee	Import Cł	neck Point	File	>			
Verti	Cancel							
3D accuracy check								

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.				
If you select the fi	les in USB memory, the selected file will be	copied to SMART CONSTRUC	TION Edge before reg	istering points to it.	
	Files	in the SMART CONS	TRUCTION Edg	e	
	File name				
U	iocaiProject1.csv				-
0	mihaK[Project1.csv				1
0	検証.csv				1
		Files in the USB	memory		
	File name				
0	0510_GCP_XYH.csv				
0	0513_Kijyun.csv				
\sim	nons Mikama TC CCI/				
	Cancel		6	36	

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.

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3D acc	uracy checl	k		
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If you import the	e point data again, the Chec	Import Check Point Fi	leared	
mihaK[Project1.	.csv	in one copie jes contenti j ini oc ci		Lat./Lon.:DD
	Point Name	Latitude	Longitude	Ellipsoid Height
	HT.8	35.602954000	140.085044000	39.608
ti				
31	Cancel			



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 .

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Point Cloud		30) acc	uracy	che	ck re	sults						
	Validation Results	Characters will be displayed in r	ed, if the	error was o	ut of +/-	5cm.					Li	at./Lon	.:DMS
Ortho Photo										Error			
DSM	Point Name	Latitude		Longitud	e	Ellips Hei	oid ght	X	(N)	Y(E)		z
DTM	HT.8	35.361063440	140.0	05061584	0	39.	608						
Unnecessary Item Removal			_	_		_		_					
	Re	select the check point file	N				Confirm	n and e	dit the	check po	oints		
ertical Accuracy Check	Export t	he accuracy check result t	o USB.			Up	load th	e valida	tion re	sult to th	e clo	ud	
2D assurance sharely					J								

· USB exporting

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

Mihama demo EPSG: WGS 84 @ Project info Exporting data Point cloud data Accuracy check report 3D accuracy check report ① You can export 3D accuracy check report only when the point cloud was generated in Ultra high density and executed a 3D accuracy check. Select point cloud you want to export to the USB flash drive. Generated data Vertical accuracy check 3D accuracy check	Mihama demo EPSG: WGS 84 Exporting data Point cloud data Accuracy check report 3D accuracy check report Image: Complete strength of the strengt of the strength	Drone Su	rvey Mode 🔹	C!	ψ	Ū 🌰 🦼	4 🤌 🖿	178GB 100%
Exporting data Point cloud data Accuracy check report 3D accuracy check report ① You can export 3D accuracy check report only when the point cloud was generated in Ultra high density and executed a 3D accuracy check. Ultra high density and executed a 3D accuracy check Select point cloud you want to export to the USB flash drive. Vertical accuracy check 3D accuracy check Generated data Vertical accuracy check 3D accuracy check	Exporting data Point cloud data Accuracy check report 3D accuracy check report ① You can export 3D accuracy check report only when the point cloud was generated in Ultra high density and executed a 3D accuracy check. Select point cloud you want to export to the USB flash drive. Generated data Vertical accuracy check check check Vertical accuracy 3D accuracy check Vertical accuracy Do accuracy check Vertical accuracy Do accuracy check	÷		Mihama der EPSG: WGS 84	no			Project information
 You can export 3D accuracy check report only when the point cloud was generated in Ultra high density and executed a 3D accuracy check. Select point cloud you want to export to the USB flash drive. Generated data Vertical accuracy check 3D accuracy check 	You can export 3D accuracy check report only when the point cloud was generated in Ultra high density and executed a 3D accuracy check. Select point cloud you want to export to the USB flash drive. Generated data Vertical accuracy check 3D accuracy check Point Cloud 2024-7-2 Incomplete Complete		Exporting data	Point cloud data	Accurac	y check report	3D accuracy che	ck report
Select point cloud you want to export to the USB flash drive. Generated data Vertical accuracy check 3D accuracy check	Select point cloud you want to export to the USB flash drive. Generated data Vertical accuracy check Point Ckrid 2024-7-2 Incomplete		(i) You can export 3 executed a 3D ac	D accuracy check report only whe curacy check.	n the point clou	d was generated in	Ultra high density	and
Generated data Vertical accuracy check 3D accuracy check	Generated data Vertical accuracy check 3D accuracy check Point Cleid 2024-7-2 Incomplete Complete		Select point cloud	you want to export to the I	JSB flash dr	ve.		
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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 site you want, and tap send to save the report to your Dashboard site

	Mihama de EPSG: WGS 8	emo ³⁴		0	Project informat
Data to be sent	Point cloud data	Accuracy	check report 3D	accuracy check report	
 You can export 3D executed a 3D acc 	accuracy check report only w uracy check.	hen the point cl	oud was generated in	Ultra high density and	
Select point cloud ye	ou want to send to SMA	RT CONSTRU	CTION Dashboard	1.	
Generated data	Verti	cal accuracy check	3D accuracy check	Sending in progress	
Point Chud 202	4-7-2 Ir	ncomplete	Complete		
Destination SC+R	- FD Simulation				
Jestination Je Ja					

Groupware \rightarrow In the SC	APP folder→It	will be saved in	the	SCEDGE folder

Smart Construction Groupware						© R
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ත Favorites	Name	Author	Last Updated 💲	Last Modified By	Size ‡	No selection Select a file or folder to see its details
	asBuilt	亮小林	01/29/2024	亮小林	-	
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	📷 Survey	亮小林	01/29/2024	亮小林		
	🔯 Vector overlay	亮小林	01/29/2024	亮小林		
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«						

Sending Point Clouds to a SMART CONSTRUCTION Dashboard

Before sending 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 8	□ ^{133GB} 6 1% ☆					
← Test0714 EPSG: JGD2011 / Japan Plane Rectangular CS IX, 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 use 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 export is complete.

6. Remove the USB memory

Tap the USB icon 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 use 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"

29 10月22日(火)	***		3	37%	
ED2JB000007 7.7.1 Drone Survey Mode 🔹	Ci 4	iii 🌢 🔺	38GB 🗎 100% /198GB 🖡 100%	\$	
÷	Mihama demo EPSG: WGS 84		Project inform	natio	
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		2024/07/02			
Reservation of the point-cloud	Point Cloud 2024-7-2	12:50:20	 Generated 		
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 to USB/SD memory. You can also select multiple point clouds.

brone 5	urvey Mode 🖤			/19605	- 100%
÷		Mihama den EPSG: WGS 84	no	@ P	roject informatio
	Exporting destination		USB memory	SD card	
	Exporting data	Point cloud data	Accuracy check report	3D accuracy check report	
	Coordinate System to Transfor	n	WGS84	*	
	Point cloud format		LAS	*	
	Select the point cloud to	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	
	□ 占群 2024-8-9		Incomplete	Complete	
				(Example)	

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 use 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"



6. Tap "Import".

5.

7 2月16日(金)								Ŷ
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	20231201T014856Z	-20231201T074034Z			05:51:38			
	(UNDEFINED)					Export		
			H					

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

Exporting drone flight data

ED2JB000007 7.7.1 Drone Survey Mode	С! 4		I 💰 ⊫ 38G8 I 100% ♥
÷	Mihama demo EPSG: WGS 84		Project informatio
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	Constant
Reservation of the point-cloud generation	Point Cloud 2024-1-2	12:50:20	Generated
Generated Data Management	点群 2024-8-9	2024/08/09 17:32:58	✓ Generated
Send Generated Data	点群 2024-8-30	2024/08/30 11:49:02	✓ Generated
Copy the generated data to recording media			
Manage PPK Log			
Flight data management			

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	7.7.1 Mode	*	C	ψ	Ū	• 4	e 🖉 🖿	38GB /198GB	100% t
÷		м	ihama dem EPSG: WGS 84	0				0	Project informat
	Select the	e flight data.					Import		l.
		Flight data name			Flight da	ate and time	Number of photos		
		2024-08-30_02-40-14- æ°è¦āāā·ā §	jā ³		2024-08-	-30 02:40:59	42	1	
		2024-07-01_07-46-36-ç¾ æ	eµ è"è"		2024-07-	-01 07:47:06	46	1	
	Exporting			U	SB memor	y	SD card		
	destination					~	Equat	5	5
		🛕 The USB flash	drive is not inser	ted in SM	ART CON	STRUCTION E	idge.		
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Send GNSS logs to SMARTCONSTRUCTION Dashboard (Cloud SFM)

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	20231201T0148	562-20231201T074034Z Send PPK LO	G		05:51:38				
	(UNDEFINED)	5				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 the 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

▲ 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 the work.

If you dropped 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 broadcast.

Base Station Mode Ce Base Station Mode Base Station Mode Select a project Create a new project 20230718ATOS 20230718-2ATOS Create a toso718 20230802-Mihama-007-epsg 20230803-Mihama-007-epsg Test Test	Base Station Mode Base Station Mode Base Station Mode Select a project. Create a new project 20230718-2ATOS 2023002-Mihama-007-epsg 20230803-Mihama-007-epsg 20230803-Mihama-007-epsg Test	13-16 Mon Aug 21				·\$· @ 90% 🛃							
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								5					

If the project is not listed, create a new project. For details, please see p.18.

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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					C4							
ips												
^f you set t	he Edgel	Box on o	one of the	ese po	oints	s, you	can	just	tap	it to sele	ect it. (lf not

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	and and and							
Tap [OK] after changing below import setting, if importing file was not "Locale setting" in	n the setting menu.		ENZ	NE7				
Decimal Point			(point)	(comma)				
Separator	; (semicolon)	(tab)	, (comma)	Space				
Data start row				1 -				
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Reflect the change here to "Locale setting" in the setting menu.								
Cancel		0	ĸ					

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".

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					-44045.	079	22784.727		3.856	
					-44037.	855	22778.716		3.844	
					-44137.	008	22711.815		3.772	
			c	ancel			OK		1	

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 the work.

If you dropped 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 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, please see p.18.

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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÷	EPSG: JGD201	11 / Japan Plane	Test Rectangu	202 lar CS IX	30808 (, Vertical [} Datum: JO	GD2011 (ver	tical) height		
	Select or add a	base station in	stallation p	oint of s	SMART COI	NSTRUCT	ION Edge.			
	Ad	dding Installation Po	oints			Impor	rt Point Files			
				G3						
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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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	Enter the installation and tap "Add".	n point info	rmation	of SMAR	r const	TRUCTI	ON Edg	ge			
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ips											
he coordinates y	vou enter must k	be in the	same	e coord	inate	syste	em wł	nen y	ou cr	reated	the pr

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, 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 place 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 and select a project to broadcast.

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				Test20230	808					Î	1		
		<		Test		>				Î	1		

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 displayed.

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Base Station	Mode	•		ψ		œ	•	u an	133GB /198GB	9	100% 100%	۵
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	Select or add a b	ase station ins	tallation p	point of	fSMAR	T CON	STRUCT	ION Edge.				
	Addi	ng Installation Poi	nts				Impor	t Point Files				
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4. Tap "GNSS positioning". Enter the point name and select the "network RTK service" from the drop-down menu.

4:15 Tue Aug 22										? 0	100% 🚧
Base Station Mode	*		ψ	e 🗉		4			133GB /198GB	100% 100%	۵
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	Enter the installation	on point info	rmation	of SMART (CONST	RUCTIO	ON Edg	ge			
	and tap "Add".										
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	Network RTM	Service		Docomo							
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Projects and	points added	in the dr	one s	urvey m	ode	are a	also	liste	ed.		
16			1	1				01.			•

- If your network RTK service was not on the list, please see P,81 to add the service.

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

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Base Station Mode	•		ψ	—	æ	•	4		— ,	133GB /198GB	•	100% 100%	۵
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		Exec	ute Pos	itioning	>								
O Install A Coordinates X(N Z	bove Reference Po (Enter Known Coordin	int hate Susteen 1		Y(E)	Add								

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 coordinate data registered on the Dashboard can be inherited.

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	Import	Doint Files						
Import the poin	nts from SMAF	RT CONSTR	JCTION Da	shboard				
	グループZ Local coordin e station installati	Ci グループZ 美浜テ: Local coordinate system(r es station installation point o Add Base S Import the points from SMA	C: 中 の グループZ 美浜テスト現場 Local coordinate system(meters) es station installation point of SMART C Add Base Station point Locae Bain Elle Import the points from SMART CONSTRU	C 中 画 口 グループZ 美浜テスト現場 Local coordinate system(meters) es station installation point of SMART CONSTRU Add Base Station points Installation point SMART CONSTRUCTION Da	C 中 P I 中 I 中 I ー I ー I ー I ー I ー I ー I ー I ー	C: 中 画 巴 ▲ ぷ グループZ 美浜テスト現場 Local coordinate system(meters) Add Base Station points Local Data Elan Local Data Elan Local Data Elan Local Data Elan	C 中 P I L A S L I グループZ 美浜テスト現場 Local coordinate system(meters) is e station installation point of SMART CONSTRUCTION Edge. Add Base Station points Insura Device State Import the points from SMART CONSTRUCTION Dashboard	C 中 P L A S I 17868 グループZ 美浜テスト現場 Local coordinate system(meters) Restation installation point of SMART CONSTRUCTION Edge. Add Base Station points Insure Device Ether Import the points from SMART CONSTRUCTION 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 point and press OK.

					101	Smart Constructi
	H'	リープ7 羊近テフト刊	目十里		9	Dashboard
Import the	e points from SMART CON	ISTRUCTION Dashboard.				
					Unit of leng	th : meters
					Residu	als
	Point Name	X(N)	Y(E)	Z H	Horizontal	Vertical
	Α	-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
~	E	-44071.288	22619.448	3.906	0.004	0.008
		-43920.312	22743.991	3.548	0.010	-0.006
	Cancel			ок		

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 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.

Base Station Mode		*	C	5 4 6	🙂 🌢 🖌 🦓	51GB 100%
E	PSG: JGD20	20230)11 / Japan Plan	803-M	ihama-(ar CS IX, Vertica	007-epsg I Datum: JGD2011 (ver	tical) height
L		Config	gure Base	Station Mo	de settings.	Lat./Lon.:DMS
	X(N)	Y(E)	Z	Latitude	Longitude	Ellipsoid Height
-	44007.582	22796.934	5.758	35.36110640	140.05057947	40.594
		Number of s	atellites in u	Wi-Fi Ext	ernal Radio	
		GPS:			11	
		QZSS:			4	
		GLUNASS:			8	
		BeiDou:			10	
		Pole Height (up places)	to 3 decimal	1.539	meters *	
		Measuring the pole h	method of eight			
			Sta	ort Broadcasting		

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

Base Station Mode	C: Test2 ne Rectangula		• 🔺 d ^e	133GB 1 1 /198GB 1	00% 🏟							
÷	Test2	20230808										
Test20230808 EPSG: JGD2011 / Japan Plane Rectangular CS IX, Vertical Datum: JGD2011 (vertical) height												
confi 3	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								
Number of GPS: QZSS: GLONASS: Galileo: BeiDou: You don't need to input pole height if you detect the base position by nRTK. It doesn't display any.	p to 3 decimal p	e External Radio	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 measure the antenna height.

3. Configure the NTRIP setting of receiver (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		000	
Base Station Mode 🗸	C!	₽ 🗂 🖿 🔺	N 133GB 100%
← EPSG: JGD2011 / Jap	Test2 an Plane Rectangular	0230808 CS IX, Vertical Datum: JGD20)11 (vertical) height
63	Configure Base S	Station Mode settings.	Lat./Lon.:DD
X(N)	Y(E) Z	Latitude Longit	ude Ellipsoid Height
6363923.676 3472	55.967 82.992	85.59948908 -85.12512	534 82.992
	LTE	External Radio	
Format	ТСМ3.2 MSM4	Satellites used for distribution	Number of Usage satellites Setting
Serial communication speed (bps)	800	GPS	•
Transmission Interval (seconds)		QZSS	o 🥌
Pole Height (up to 3 decimal places)	meters	GLONASS	0
You don't need to input		Galileo	0
the base position by nRTK It doesn't display any.		BeiDou	•
		Number of sate	ellites in use: 0
	Start	Broadcasting	

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 in the "Active constellations" setting in the settings screen on the upper right of the tablet application. Please see P.80

Also, the Active constellations cannot be none.

4. Tap "Start Broadcasting"

5:48 Tue Aug 2	2						🗢 @ 100% 💋				
Base Stat	ion Mode	•		ψ	•	•	- chill	133GB /198GB	8	100% 100%	\$
÷	EPSG: JGD2011	/ Japan Plane I	Test Rectangul	202 lar CS I)	30808 (, Vertical D) Datum: JO	GD2011 (ver	tical) height			
		Configu	ire Base	e Stati	on Mode	esettin	gs.	Lat./	Lon.:D	D	
	X(N)				Latitude		ongitude	Ellipsoid H	eight		
	6363923.676	347255.967	82.992	85.	59948908	-85.1	12512534	8	2.992		
				E	External Radio						
	Format	RTCM3.2 MSM	4		Satellites u distributior	ised for n	Numbe satell	er of Usa ites Sett	ing		
	Serial communication speed (bps)	4800			GPS			0			
	Transmission Interval (seconds)				QZSS			0			
	Pole Height (up to 3 decimal places)		meters		GLONASS			0			
					Galileo			0			
					BeiDou			0			
			St	art Broad	Nu casting	umber of	satellites ir	n use: 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 measure the antenna height.

5. Configure the NTRIP setting of receiver (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

5 2月7日(水)									(î-	94
Base Station Mode	•	C!	$\frac{q_{\perp}^2 g}{a}$	I	• 4	OR ^D	173G /198G	B 🖸	100% 99%	\$
		Miha	ma c	demo 84						
	(ポイント1	Configure Base	e Statio	n Mode s	ettings. _{Lat./L}	on.:DMS				
		Latitude	Long	gitude	Ellipsoid H	leight				
		35.36100118	140.050	50191	2	10.034				
		LTE	Wi-Fi	External R	adio					
		Number of	satellites	in use: 0						
		GPS:		0						
		QZSS:		0						
		GLONASS:		0						
		Galileo:		0						
		BeiDou:		0						
		Format	RTCM3.2	MSM4	•					
		() GNSS	receiver i	is not ready						

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	•		ψ		Œ	•	4	o ^{sec}	L 13 /19	3GB 8GB	100% 100%	۵
		Ba	ise S	tatio	on	Мо	de						
	Select a project.												
	Create a new project												
	20230718ATOS									Î	/		
	20230718-2ATOS									Î	1		
	Test atos0718									Î	1		
	20230802-Mihama-007-epsg									Î	1		
	20230803-Mihama-007-epsg									Î	1		
		20	230804-Mih	nama-007	-epsg					Î	1		
			Test20	230808						Î	1		
	Test									Î	1		

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 <u>49</u> rin		A 13368	* ^{100%}
	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		•••				🗢 🕞 100% 😽			
Prove Chatine Made	<i>a</i> ,	,t. 🕰	rm 🔺	1 0	133GB	n 100% 🚗			
Settings						×			
	Net	work Settin	ngs						
LTE Settings									
isp.docomoiot.net									
SMART CONSTRUCTIO	ON Edge's Wi-Fi Passphr	ase Settings							
Ethernet Proxy Settin	gs								
		Change							
	Information and Operations								
	Shutdown !		TION Edge						
	Delete Data								
	Display SMART (CONSTRUCTION E	dge Information						
						-			

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

6:37 Tue Aug 22				중 ⊕ 100%
				40% A
Delete Data				×
Generated Data	Project	Point Cloud	Processing Start Ti	
Flight Data	20230803-Mihama- 007-epsg	点群 2023-8-3 P4R PPK	08/03/2023, 04:20:5	61 PM
PPK Log Installation Point of	20230803-Mihama- 007-epsg	点群 2023-8-3 P4R RTK	08/03/2023, 04:57:0	17 PM
SMART CONSTRUCTION Edge	20230803-Mihama- 007-epsg	点群 2023-8-3 M3E PPK	08/03/2023, 05:23:3	16 PM
	20230803-Mihama- 007-epsg	点群 2023-8-3 M3E RTK	08/03/2023, 05:45:4	11 PM
	20230803-Mihama- 007-epsg	点群 2023-8-3 aerobo PPK	08/03/2023, 06:03:1	.2 PM
	20230803-Mihama- 007-epsg	点群 2023-8-3 m300 PPK	08/03/2023, 06:32:4	17 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.

Drono Cupiou Mada	🔿 👘 🥮 רום 🔺 🍐 💼 108GB ត្ត 100% 🚓
Settings	×
	Decis Sattings
	Basic 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				•	••							÷?`€'	96%
Base Station M	1ode	•	C!	ţ	—	Ē	•	4	CINES.	133GB /198GB	¢	10/ % 100.	\$
		ł	Base	Stat	tion	Мо	de						
	Select a project.												
				Create a n	new proje	ct							
	20230718ATOS								• /				
	20230718-2ATOS									• /			
	Test atos0718								Î /				
	20230802-Mihama-007-epsg								î /				
	20230803-Mihama-007-epsg								Î /				
			20230804	4-Mihama-I	007-epsg					Î /			
			т	est2023080)8					1 /			
	Test								1/				

GNSS Settings

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

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

Tips

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

Setting GNSS epoch number and Mask angle setting

11:28 8月22日(木)											? 5% 💽
ED23B000007 6.9.2-0is	C	ų.		[ł]	•		OSC .	122GB /198GB	0	100%	\$
, Settings											×]
GNSS Usage Settings											
Satellites				Number	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 sen-positioning Current setting: 10 times Change											
			*B	nu	mber						

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 times	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. 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.

ntrip.jenoba.jp	115.125.189.203	JVR32L	2101 vx232s	i /
rtcmsv.smartcon struction.com	20.194.200.179	MSM4_RAW	2101 ED2JB0000	09 🔳 🖍
		Add		
SMART CONST	RUCTION Account			
Status:Logi	n Complete i@e	arthbrain.com)		
		Clear		
	_			
k RTK Service Setti	ngs	Register th	e Recipient's Account.	
vice name		Register a	ccount information req	uired for sending into S
Host		CONSTRU Go to exte	CTION Edge. rnal account authorizat	ion site.
nost				
			Cancel	OK
unt Point	•		Cancel	ок
unt Point	•		Cancel	OK
unt Point	•		Cancel	OK コグイン
Int Point	•		Cancel LANDLOGにI ルアドレス	ログイン
unt Point			Cancel LANDLOGにI ルアドレス ールアドレス	ログイン
unt Point Port Jser ID sssword Cancel	Registration		Cancel LANDLOGに ルアドレス ールアドレス ヮード	コグイン
unt Point	Registration		Cancel LANDLOGに ルアドレス ワード スワード	コグイン
unt Point	Registration	-× × × 7(Cancel LANDLOGに ルアドレス ワード スワード ログイン状態を保持する	OK コグイン パスワードをお忘れの場合
unt Point Port Jser ID sssword Cancel	Registration		Cancel LANDLOGに ルアドレス ワード スワード ログイン状態を保持する	OK コグイン パスワードをお忘れの場合
Int Point	Registration		Cancel LANDLOGに ルアドレス ールアドレス ワード スワード ログイン状態を保持する ログイン てお取引をする方は、新規愛 にお取引がある企業の方は、 い合わせください。	OK コグイン パスワードをお忘れの場合 2 録してください 既に利用されている方に

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	Settings				
LTE Settings						
isp.docomoiot.net						
SMART CONSTRUCTION	Edg !'s Wi-Fi Passporase Sett	ings				
	Chan	ge				
Ethernet Proxy Settings						
	Chan	8				
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 V			
		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 required 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 : Please also see P.76

Del	ete Data				×
	Generated Data	Project	Point Cloud	Processing Start Time	
	Flight Data	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 want 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 Information			
SMART CONSTRUCTION Edge Storage Usage	59 GB/198 GB (29%)		
Version	1.15.2 V		
Close			

APPENDIX

Install and configure certificate

 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.

Specification

Items		Specification	Remarks
Temperature Range	Operating	-20℃~50℃	
	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.]
| i la analo opcomoato | 11 | | |
|----------------------|---|---|-------------------------|
| Items | | Specification | Remarks |
| External dimensions | Width x depth x
height | 300 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 | Approx 8.3kg | |
| Housing material | Top cover | AES | |
| | Main frame | Magnesium die casting | |
| | Bottom case | Magnesium die casting | |
| External I/F | USB connector | USB3.1 x1 | |
| | | USB2.0 x1 | Waterproof
connector |
| | SD card slot | UHS-I SDR104 | Standard size |
| | SIM card slot | Nano SIM | |
| | LAN port | | |
| SoM | Jetson Xavier NX | | |
| | GPU | 384 コア NVIDIA Volta,
48 Tensor core | |
| | CPU | 6 コア 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 | İ. |
| | GLONASS | L10F, L20F | |
| | Galileo | E1B/C, E5b | |
| | BeiDou | B1I, B2I | |