Industrial Smart Controller

GS5 Tenso-F3

User Manual Ver. 2.1

Be sure to read this manual before using the product.

Table of Contents

1. Legend

What the markings mean

⚠ Warning	Ignoring this warning and handling the product incorrectly may result in death or serious injury.
⚠ Note	This indicates that ignoring this warning and handling the product incorrectly may result in personal injury or property damage.

- This product is manufactured in accordance with Japanese law.
- This product is designed to operate and receive data from small unmanned aerial vehicles for industrial use. Do not use it for any other purpose.
- Please note that we cannot be held responsible if the product case is opened or if unauthorized modifications are made to the software.
- If you notice any abnormalities, immediately stop using the product and contact your retailer.
- When disposing of this product, please contact your retailer.

2. Package contents

(1) Main unit of the controller × 1
(2) Antenna × 2
(3) Strap × 1
(4) Charger × 1
(5) USB-A to USB-C cable × 1

3. Performance specifications

Depending on the type of radio device used, the model names differ: Hedwig-T5, and Tenso-F3.

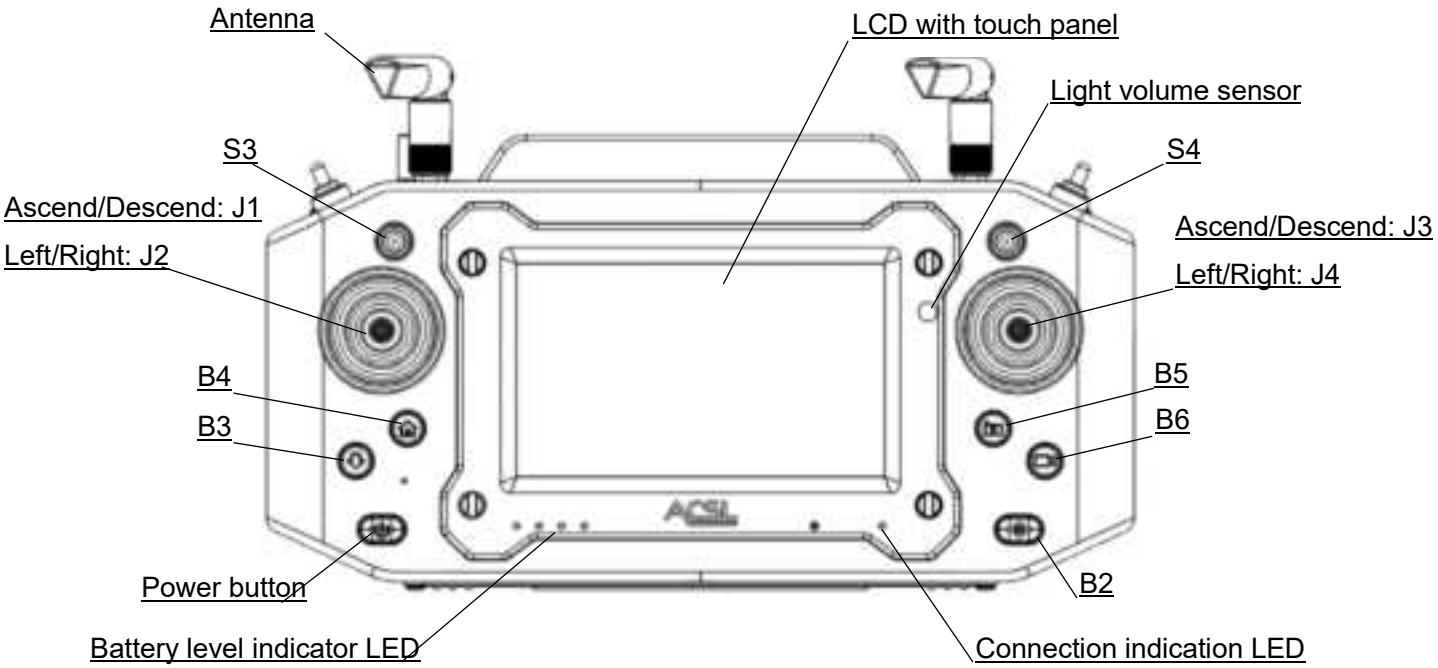
The model name is indicated on the label on the back of the controller.

Item		TENSO-F3
Dimensions	-	269 × 165 × 69 mm
Weight	-	1.05 kg
Display	Size	5 inches
	Resolution	1920 × 1080
Operation	-	2-axis control stick × 2 Camera gimbal wheel × 2 Photo shooting button Video shooting button Go Home button Automatic landing button Pause/Start button Power button Force stop button Flight mode switch Optional equipment switch × 2
Mounted indicator	-	Buzzer Vibration motor Connection indication LED Battery level indicator LED
Mounted sensor	-	Barometric pressure sensor Temperature sensor Humidity sensor Light volume sensor Microphone GNSS module
Battery	Type	LiPo
	Capacity	12,100 mAh
	Rated voltage	3.7 V
Operating time	Typ.	3 hours
Charging time	-	5 hours
Drone communication radio	Frequency	2.4 GHz band
	Maximum	4 km

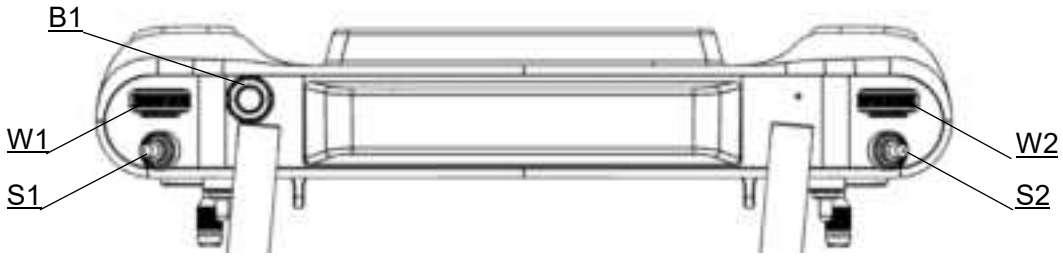
	communication distance	
Network radio	-	Wi-Fi, 2.4 GHz Bluetooth 4.1
Protocol	-	MAVLink
OS	-	Android
Operating temperature range	-	-10°C to +40°C
Storage temperature range	Within 1 month	-10°C to +60°C
	1 month or more	Around 25°C
Temperature range when charging	-	5°C to +40°C
IP Protection rating	-	IP43
Interface	-	Ethernet USB-C USB-A 2.0 HDMI microSD SIM card 3.5 mm audio jack Threaded hole for tripod
Included accessories	-	Strap Charger and cable

4. Controller part names

Front view



Top view

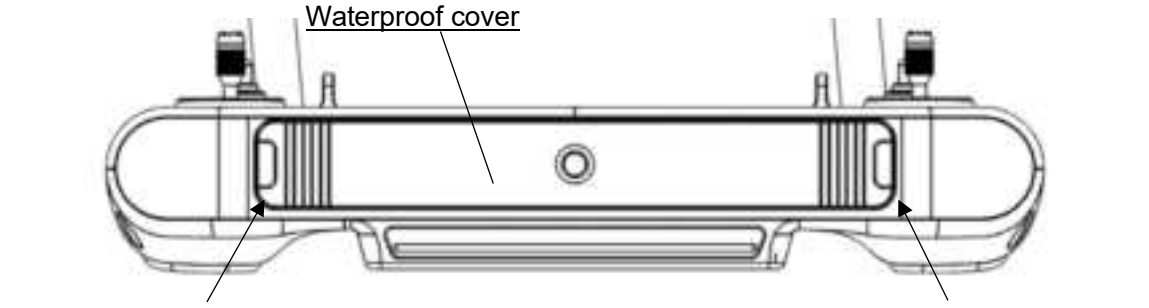


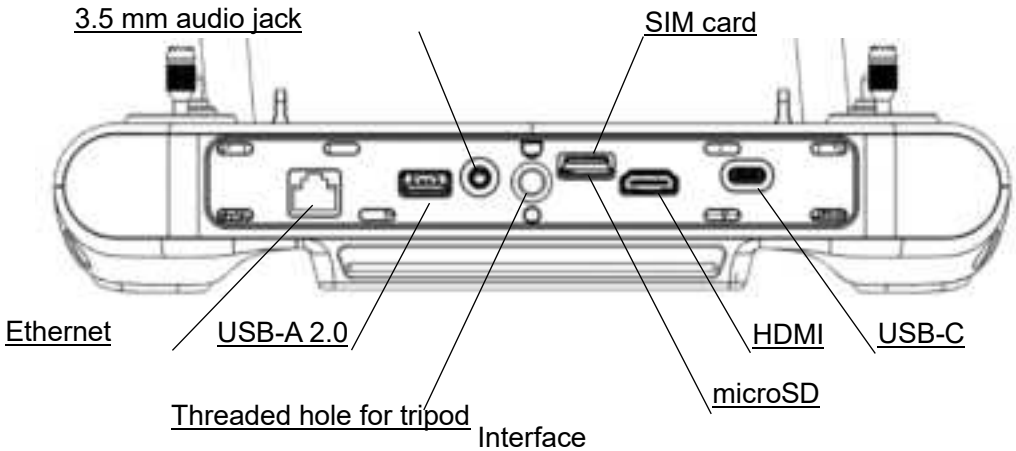
Switch

Name	Intended application	Number of steps	Remarks
J1	Elevator/Throttle	Stepless	Elevator: Forward/Backward; Throttle: Ascend/Descend
J2	Rudder/Aileron	Stepless	Rudder: Left/Right turn; Aileron: Left/Right slide
J3	Throttle/Elevator	Stepless	Throttle: Ascend/Descent; Elevator: Forward/Backward
J4	Aileron/Rudder	Stepless	Aileron: Left/Right slide; Rudder: Left/Right turn
S1	Switch flight modes	3	Front: AUT (automatic); Middle: POS (position); Back: MAN (manual)
S2	Collision avoidance	3	Front: ON; Middle: ON; Back: OFF
S3	For optional equipment	3	No functions are currently assigned
S4	For optional equipment	3	No functions are currently assigned

Name	Intended application	Number of steps	Remarks
W1	Camera/gimbal operation	Stepless	Gimbal up/down (tilt) operation
W2	Camera/gimbal operation	Stepless	Gimbal left/right (panning) operation
B1	Force stop	2	Hold down: Force stop
B2	Pause/Start	2	Push to pause the planned flight; push again to resume
B3	Automatic landing	2	Automatic landing in the current position
B4	Go Home	2	Automatic return to the takeoff point
B5	Photography (interval shooting)	3	Light push: Focus; Hold down: Start shooting, Hold down again: Stop shooting
B6	Shooting video	2	Hold down: Start shooting, Hold down again: Stop shooting

Bottom view





Interface

Name	Intended application
Ethernet	Connect to external communication devices
USB-A 2.0	Retrieve flight log files of GCS apps, etc.
3.5 mm audio jack	Audio and microphone
Threaded hole for tripod	Fix the controller to a tripod
SIM card	Not applicable for Tenso-F3
microSD	Update firmware

HDMI	Display the screen on an external monitor
USB-C	Charging, etc.

Collision avoidance

After takeoff, turn on the smart controller's collision avoidance switch to enable collision avoidance for obstacles ahead and above. (The base station app TAKEOFF (*) displays the distance to a detected obstacle.)

When the collision avoidance distance is reached, the drone stops advancing in the direction of the obstacle.

After the drone stops advancing in the direction of the obstacle, this function does not keep the collision avoidance distance constant.

* For the base station app TAKEOFF, refer to "Chapter 13. GCS (Ground Control System)" (pp.16-26).

Direction for collision avoidance	Collision avoidance distance	Sensor used
Forward	Approx. 2 m	Stereo camera
Upward	Approx. 1 m	Stereo camera/ Infrared sensor

Collision avoidance is an auxiliary function. The responsibility for collision avoidance lies with the pilot.

It may not function depending on the surrounding environment, the shape of obstacles, colors, etc. Keep an appropriate distance from obstacles when flying.

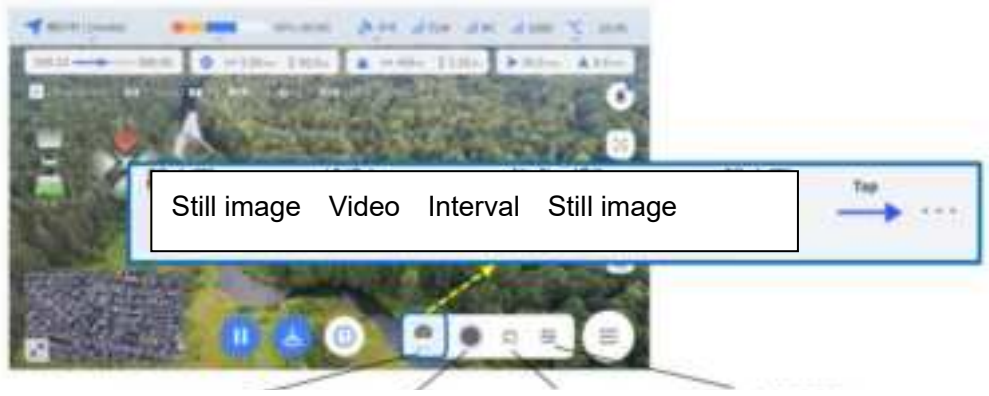
The collision avoidance function is not activated in manual mode.

To use the collision avoidance function during a planned flight, turn on the collision avoidance switch.

When the collision avoidance switch is turned on, a mark will be displayed on the smart controller.

Camera operation

You can operate the cameras and gimbals using the base station app TAKEOFF.



Shooting type switching button Shutter button Stream image button Camera settings menu button

Use the shooting type switching button to switch between video/still image/interval still image shooting.

Use the shutter button to start and stop shooting.

Use the stream image button to start and stop shooting stream images.

Use the camera settings menu button to set the resolution, etc.

To face a camera straight down (90°), tap the gimbal angle operation button, and then move the displayed slider to the right so that the gimbal/camera faces down (straight down).

Go Home

Push the automatic return button on the smart controller or tap the Go Home button of the base station app TAKEOFF to return to the position 10 m above the takeoff point and make an automatic landing. If the drone is at a height of above 10 m, it maintains its current height, returns to the takeoff point, and makes an automatic landing.

- The drone returns straight from its current position. Check in advance for obstacles in the flight path.
- During Go Home flight, if you want to control the drone with the smart controller, switch its flight modes.
- During Go Home flight, you can pause/resume the flight by pushing the pause button on the smart controller.
- During Go Home flight, you can operate the drone using commands from the command menu button of the base station app TAKEOFF. For details, refer to "2.3 Operation using commands" in the TAKEOFF User Manual.

During Go Home flight, if the base station app TAKEOFF displays an error message "GPS accuracy low" or the behavior of the drone becomes unstable, the drone may not return to the landing point correctly. Monitor the behavior of the drone during Go Home flight, and if you find any abnormalities, switch the smart controller's flight mode to manual mode and land the drone in a safe place immediately.

5. Indicators

Battery level indicator LED

Four LEDs are lit: 90% to 100%

Three LEDs are lit: 60% to 90%

Two LEDs are lit: 30% to 60%

One LED is lit: 0% to 30%

⚠ Warning

- If the battery runs out during a flight, you will lose control of the aircraft. Please pay attention to the remaining battery level。
- Lithium-ion batteries have a characteristic called “self-discharge”, which means that the capacity of the battery gradually decreases even when it is not in use.
- When the remaining battery capacity reaches 0%, the battery is in a state of “over-discharge” and it may take longer to recharge.
  □Trickle charge

Connection indicator LED

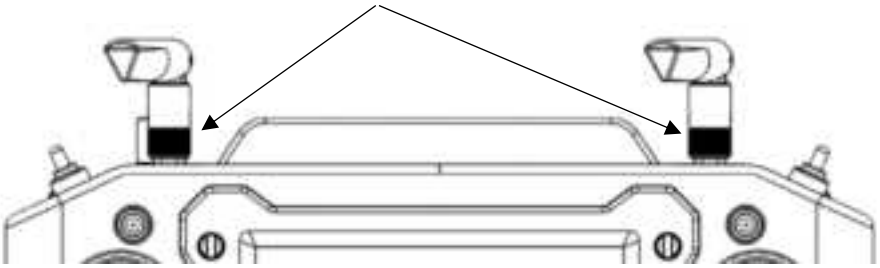
Lit: Communicating in pilot mode (both operation and monitoring possible)

Blinking: Communicating in observer mode (operation not possible; only monitoring possible)

* Observer mode is only available for Tenso-F3.

6. Mounting antennas

The smart controller employs a screw-in mounting method.
Hold the base and screw in the antenna tightly.

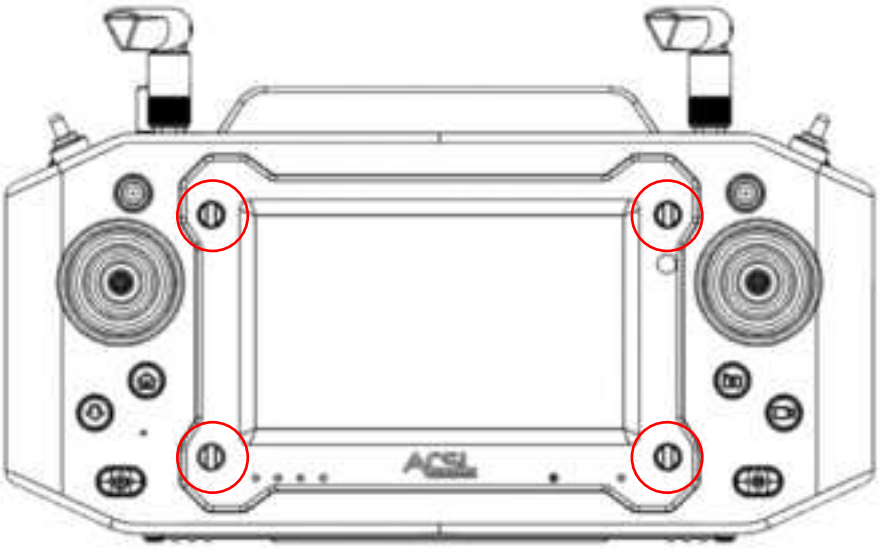


⚠ Warning

If the antenna comes off during flight, radio signals will be lost and the drone may become uncontrollable. Please make sure the screws are securely tightened before flight, and do not touch the antenna carelessly during flight.

7. Attaching a strap

You can attach the included strap if you prefer.
Attach the metal fittings to the four places circled in red in the figure below and adjust the strap to a convenient length.



⚠ Warning

When using a strap, be careful not to accidentally hook it onto the switch, as this may result in incorrect operation.

8. Charging

How to charge the battery

(1) Connect the included USB-A to USB-C cable to the included charger.

(2) Open the waterproof cover on the underside of the smart controller and connect the charger cable to the USB-C port.

(3) Plug the charger into a 100 V AC outlet.

Additional note

- Charging stops automatically when the battery becomes full.
- During charging, briefly push the power button to display the remaining battery level.

⚠ Warning

- Do not use the battery or charger when wet. Also, do not use them with wet hands. Doing so may cause an electric shock.
- Do not charge the battery in direct sunlight, on the dashboard of a car or in other places where it is hot, or near fire.
- Charge the battery in an environment between 5° C and 40° C.
- The battery can be charged while the controller is in use, but the remaining battery capacity may decrease when power consumption is high. Please pay attention to the remaining battery charge when using the controller while charging.

⚠ Note

- The controller is compatible with QC3.0 and USB standards , but please note that we cannot be held responsible for any problems that arise when using a charger other than the one provided.
- You can charge the controller while it is in use, but the battery level may decrease if the power consumption is high. Please be careful of the battery level even when using the controller while charging.
- There is a very small amount of leakage current even when the power is turned off. If the battery is left low for a long period of time, it may become unable to be turned on due to over-discharge, so we recommend that you check the battery level about once every six months.

9. Startup and shutdown

Hold down the power button for three seconds to turn on.

To shut down, hold down the power button for 1.5 seconds.

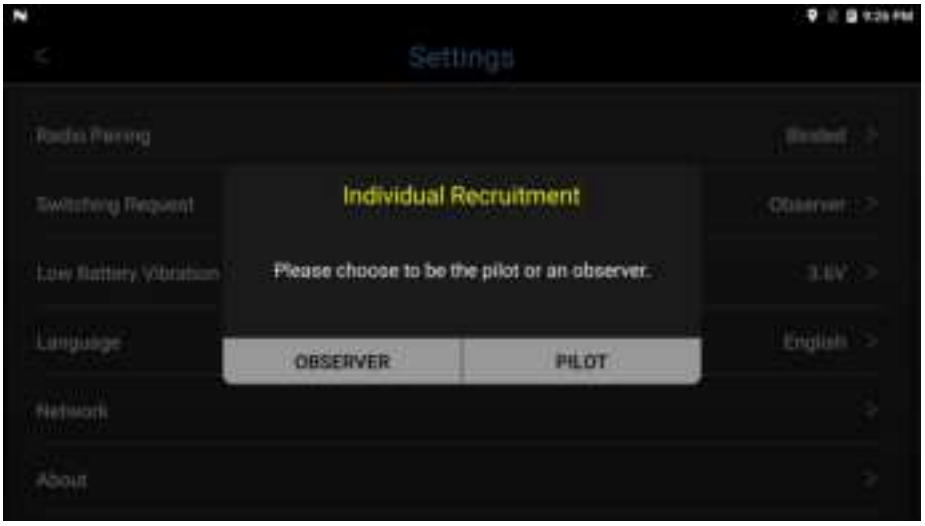
10. Pilot mode and observer mode

For Tenso-F3, you can switch between pilot mode (both operation and monitoring possible) and observer mode (operation not possible; only monitoring possible).

When paired (bound) with the drone using one controller, it will be in pilot mode. When paired (bound) with multiple controllers, one will be in pilot mode and the others will be in observer mode.
Due to the specifications of the radio device, only one pilot-mode controller and up to seven observer-mode controllers can be connected to the drone. However, the larger the number of connected controllers, the longer it takes to check the number of connections at the time of startup or switching, so the number may be limited to less depending on the settings of the drone.

The screen to select between pilot mode and observer mode appears at the following time:

- After setting up paring with a communication device
- When communication is started, such as after the drone and the controller are started
- When you use the [Request switching] in the settings menu



If no pilot-mode controller is connected, the selection screen appears repeatedly until you select a pilot.
When the setting of the selected mode is completed, a notification "Switched to pilot" or "Switched to observer" appears.

11. Home screen

There are three icons on the home screen.

Tap an icon to use its function.

⚠ Note

Please be careful as touching the display for a long period of time may cause low-temperature burns.

12. Operation icons

An operation icon as below may be displayed on the GCS screen.

Tap to display four menus.

Close:	Close the operation icons menu
Back:	Return to the previous screen
Home:	Return to home screen
Reserve:	No functions are currently assigned

13. GCS (Ground Control System)

Tap the GCS icon to go to the GCS app screen.

You can monitor the status of the drone and perform an automatic flight.

The availability and type of GCS app varies depending on the controller model and the application purpose of the drone.

For details, refer to the GCS app manual.

GCS app screen example

Setting communication link (Tenso-F3)

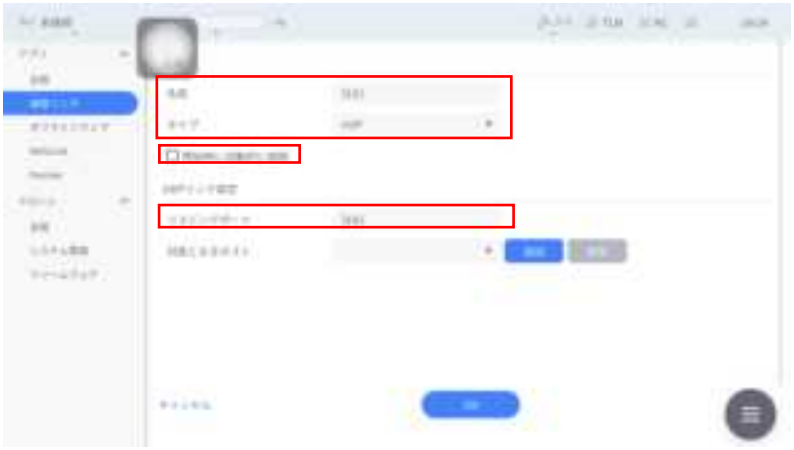
For drones compatible with Tenso-F3 (SOTEN, etc.), after the controller is paired with the drone, communication settings are required in the supported GCS (base station app TAKEOFF) to obtain telemetry information.

(1) Tap [Settings] in the TAKEOFF menu screen.

(2) Tap [Apps] -> [Communication link] in the pull-down list displayed on the left side of the settings screen

to display the following screen.

(3) Use [Communication link] to save communication settings for each combination of drone and the standard smart controller or Tenso-F3. To pair a new drone with Tenso-F3, tap the [Add] button and enter the communication settings items. A screen as below will appear.



Enter items as indicated below, check the [Connect automatically upon start] checkbox, and then tap [OK]. This completes the communication settings procedure.

Item	Information to enter/select
Name	Enter a name that is easy to identify. Example: Hedwig1+sot
Type	Select UDP.
Listening port	Enter "3101."

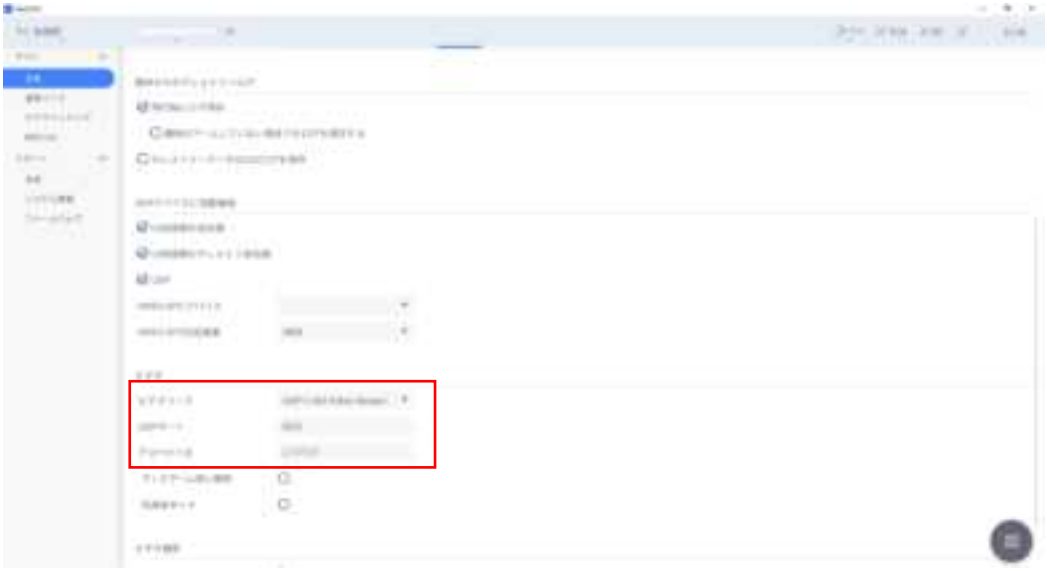
(4) When the communication settings are completed, the following screen appears. When the controller is paired (bound) with the drone, tap [Connect] to connect to the drone and start communication.

Setting for video streaming (Tenso-F3)

For drones compatible with Tenso-F3 (SOTEN, etc.), after the controller is paired with the drone, video streaming settings are required in the GCS (base station app TAKEOFF) to obtain streaming video.

(1) Tap [Apps] -> [General] in the pull-down list displayed on the left side of the settings screen to display the following screen.

(2) Enter and select items as indicated below in the [Video] at the bottom of the screen.



Item	Items to enter/select
Video source	UDP h.264 Video Stream
UDP port	8555
Aspect ratio	1.777777

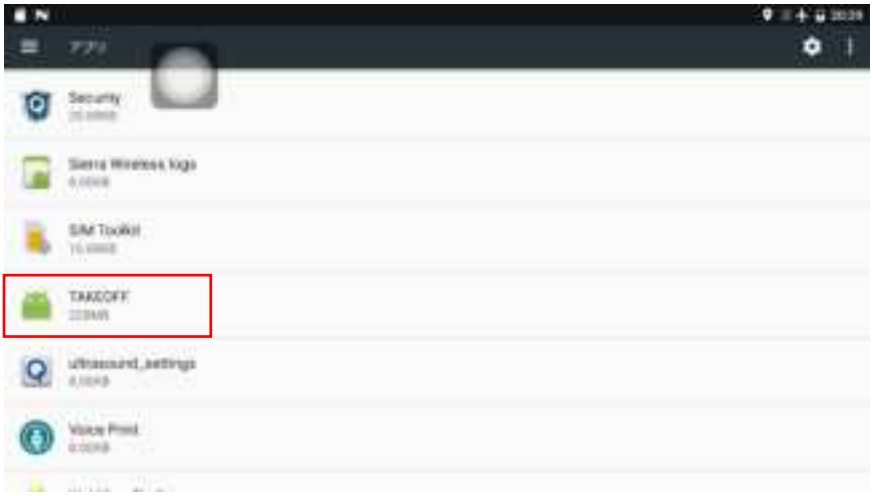
Force stop of GCS (Tenso-F3)

If the GCS freezes for some reason, you can forcibly stop the GCS by following the steps below. Restart the GCS after force stop and check how it runs.

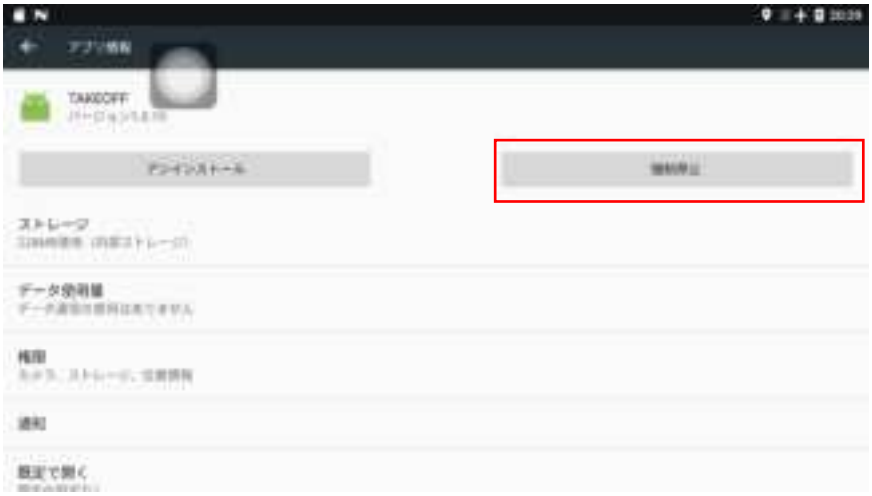
(1) Touch the top edge of the screen of the GCS (base station app TAKEOFF) and swipe down the screen to display the menu bar. Then swipe it again to display the following system message window.
The home screen of Tenso-F3 displays the menu bar by default, so the system message window will be displayed with a single swipe.

(2) Tap the settings icon (gear icon) displayed in the upper right corner of the system message window to go to the Android settings screen.

(3) Tap [Apps] to display a list of installed apps.



(4) Tap [TAKEOFF] in the list to display GCS app information, and then tap [Force stop]. When the app stops, the [Force stop] button is grayed out and cannot be tapped.



Installation of GCS app (Tenso-F3)

The latest GCS (TAKEOFF) installation uses a microSD card with a required app that was stored in advance.

Download the app (apk file) from the ACSL website (https://product.acsl.co.jp/product/post-369/) by going to Product list > Small Aerial Photography Drone (SOTEN) and clicking the blue part in the red box.

(1) When the system message window is displayed with the microSD card inserted into Tenso-F3, the following message is displayed, where you can confirm that the microSD card is recognized.

(2) Tap the settings icon and tap [Storage] that appears.

(3) You will be taken to a screen like below. Tap [SD card] to check the list of files stored in the microSD card. Move to the folder where the distributed GCS app file is saved as "TAKEOFF.apk."

(4) When you tap [TAKEOFF.apk], the following pop-up appears. Tap [Install] to start the installation.

(5) When the app installation is complete, the following pop-up window appears.

Download and install the app in a similar way as TAKEOFF from the ACSL website (https://product.acsl.co.jp/product/post-369/) by going to Product list > Small Aerial Photography Drone (SOTEN) and clicking the blue part in the red box.

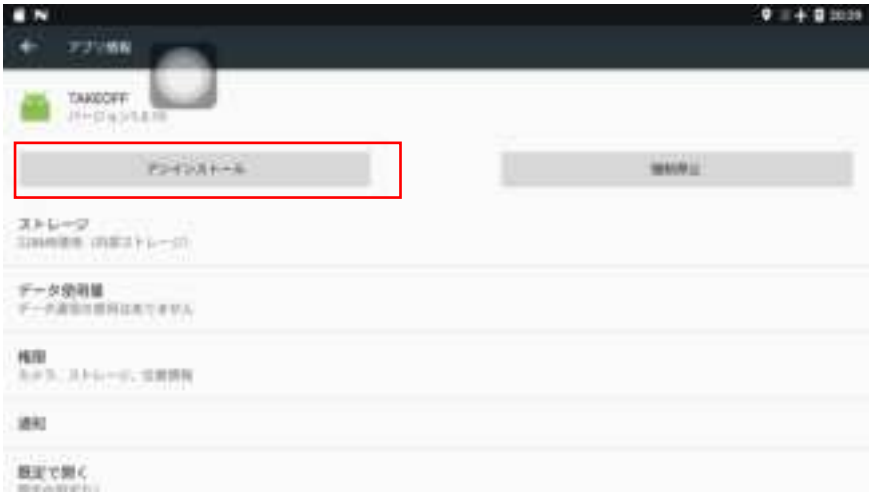
⚠ Warning

Do not install firmware during flight.

To download "TAKEOFF.apk" by connecting a PC with the smart controller, follow steps (1) to (5) described in "Preparation" of "17. System update" (p.40), copy "TAKEOFF.apk" to the [Download] folder in the internal shared storage, and execute the installation.

Uninstalling the GCS app

To delete the app, tap [Uninstall] in the app information screen. If the GCS (TAKEOFF) installation is not completed successfully, use the uninstallation procedure and perform the installation procedure again.



⚠ Warning

The App contains the FW of the airframe and standard remote control. To ensure version consistency between the airframe/remote control FW and the Tenso-F3 app, please update the airframe and takeoff FW using the airframe, standard remote control and smartphone before updating the Tenso-F3 GCS app.

⚠ Note

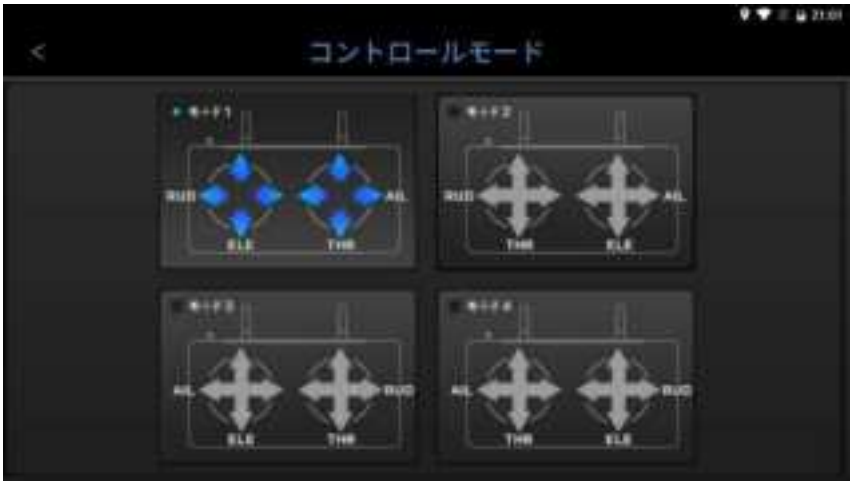
If you use the GCS application without reading the instructions, accidents may occur due to incorrect operation, so please read the instructions carefully before use.

14. Settings

Tap the settings icon to go to the settings screen.

Tap the menu to set items.

Control mode



Switch the assignment of the control sticks.

AIL: Aileron (left and right movement)

ELE: Elevator (backward and forward movement)

THR: Throttle (ascend and descend)

RUD: Rudder (turn)

Select your preferred mode and return by tapping [<] in the upper left corner.

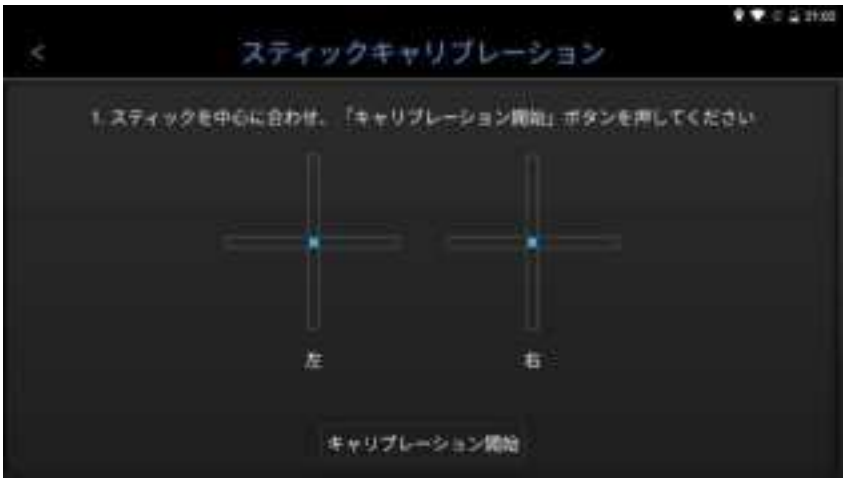
Stick calibration

Stick calibration is for correctly setting the value when a stick is tilted to the middle or maximum point.
The minimum and maximum values may deviate slightly while using the controller. If you feel any abnormality in the operation of a stick, try to calibrate the stick.

When you tap [Stick calibration], a warning as shown below is displayed.
Communication with the drone will be interrupted, so confirm the safety and tap [Confirm]. If you tap [Cancel], the screen will go back to the menu.

⚠ Warning
Do not enter the stick calibration menu during flight. Communication with the aircraft will be interrupted and operation will not be possible.

Follow the instructions displayed on the screen.



When the calibration is completed, go back by tapping [<] in the upper left corner.

Monitor

You can check the status of each switch.

When you tap the monitor, a warning as shown below is displayed.

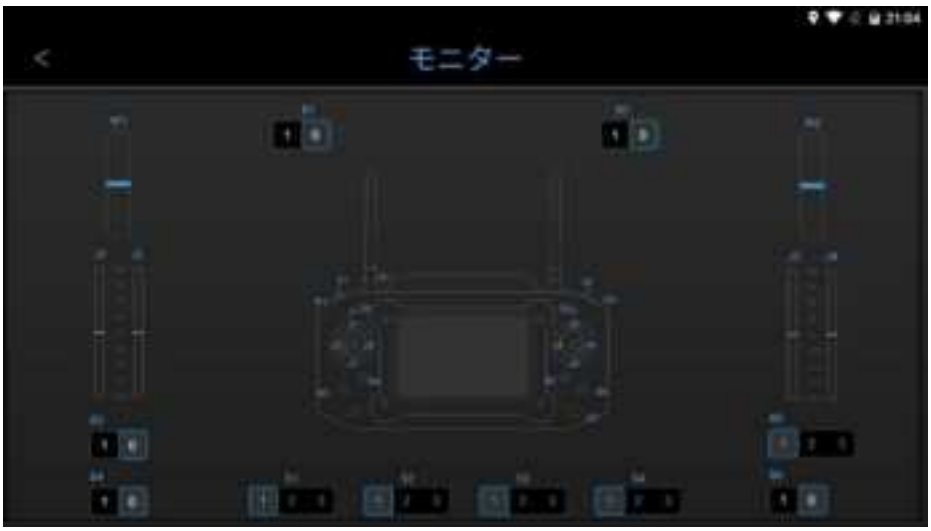
Communication with the drone will be interrupted, so confirm the safety and tap [Confirm]. If you tap [Cancel], the screen will go back to the menu.

⚠ Warning

Do not enter the monitor menu during flight. Communication with the aircraft will be interrupted and operation will not be possible.

You can check the operation of each switch on the screen as shown below.

Check the screen after calibration or if you feel any abnormality.



When you finish checking, go back by tapping [<] in the upper left corner.

Wheel calibration

Wheel calibration is for correctly setting the values when a wheel is turned to the middle or maximum point. The minimum and maximum values may deviate while using the controller. If you feel any abnormality in the operation of a wheel, try to calibrate the wheel.

When you tap [Wheel calibration], a warning as shown below is displayed.
Communication with the drone will be interrupted, so confirm the safety and tap [Confirm]. If you tap [Cancel], the screen will go back to the menu.

⚠ Warning

Do not enter the wheel calibration menu during flight. Communication with the aircraft will be interrupted and operation will not be possible.
Follow the instructions displayed on the screen.

When the calibration is completed, go back by tapping [<] in the upper left corner.

Pairing with a communication device (Hedwig-T5)

This section describes pairing with the communication device of the drone.

Enter the key set for the communication device to be paired and tap [Confirm].

To return to the menu screen without changing the current setting, tap [Cancel].

When you enter the key and tap [Confirm], a warning as shown below is displayed.

If there is no problem in proceeding, tap [Confirm].

To return to the menu screen without changing the current setting, tap [Cancel].

When you tap [Confirm], a notification as shown below is displayed.
Tap [OK] to dismiss the notification. This completes the pairing procedure.

⚠ Warning

The Hedwig-T5 must be paired one-to-one with a controller. Due to the specifications of the radio, multiple controllers can be paired to a single aircraft, but if they are used simultaneously, the aircraft will receive signals from multiple controllers. Please note that this may cause malfunctions.

Pairing with communication device (Tenso-F3)

Follow the procedure below for pairing with a drone compatible with the Tenso-F3 (SOTEN, etc.).

(1) Put the drone in pairing mode (bind mode). For SOTEN, hold down the button on the side of the drone. Blinking four aviation lights shows that bind mode has been activated. For details on the operation of the drone, refer to the SOTEN user manual.

(2) In the Tenso-F3 setting screen, tap [Pair with communication device]. Unlike the Hedwig-T5, the key entry screen is not displayed and no entry is required.

(3) When a warning to confirm the start of pairing is displayed, tap [Confirm].

(4) With the following screen displayed, the pairing will begin.

(5) When the pairing is completed successfully, the status of [Pair with communication device] will be displayed as [Binding complete] as shown below.

(6) This completes the pairing procedure. Proceed to the pilot/observer switching process below. Refer to the explanation (2) of "Request switching" below and after.

Request switching

For Tenso-F3, you can switch between pilot mode (both operation and monitoring possible) and observer mode (operation not possible; only monitoring possible).

This function is used to switch between pilot mode and observer mode, i.e. to hand over control to another observer-mode controller connected to the same drone.

(1) When you tap [Request switching] in pilot mode, a warning as shown below will be displayed.

(2) Tap [Confirm] to start checking for other controllers paired with the same drone.

(3) During this operation, the other controllers in observer mode display a selection screen as shown below.

(4) When [Pilot] is selected on another controller within a certain period of time, the controller originally in pilot mode displays a notification "Switched to observer" and switches to observer mode.
If [Pilot] is not selected on any of the other controllers, the controller originally in pilot mode will remain the mode.

Warning with vibration

If the voltage of the drone's battery drops below the value set here, the controller will vibrate to warn you that the drone's battery is low.

The default setting of 3.6 V is based on the assumed cell voltage of LiPo batteries.

Change the value as needed.

Language

You can switch the language displayed.

Select English or Japanese and tap [Confirm] to switch the display to the selected language.

To return to the menu screen without changing the current setting, tap [Cancel].

Network

You can configure settings related to the network.

External Ethernet IP assignment mode

Use this setting to connect the controller to an external communication device using the Ethernet port. Select [Automatic] to automatically assign an IP address, or select [Manual] to enter an IP address manually.

External Ethernet IP address

If you select [Manual] in the external Ethernet IP assignment mode, enter an IP address here.

Drone connection IP address

You can edit it for development purposes only. It is the IP address set for connection with the drone.

Video source IP address

You can edit it for development purposes only. It is the IP address set for video transmission.

Video transmission protocol

You can edit it for development purposes only. It is the protocol set for each model. You can select RTP (multicast) or RTSP: RTP (multicast) is set for Tenso-F3 and RTSP for Hedwig-T5/AS. You cannot change them.

Video decoding method

You can change the decoding method of the video function.

The appropriate decoding method may differ depending on the type of cameras mounted on the drone, so change the video decoding method as necessary.

Wi-Fi

You can connect the controller to a network using Wi-Fi.

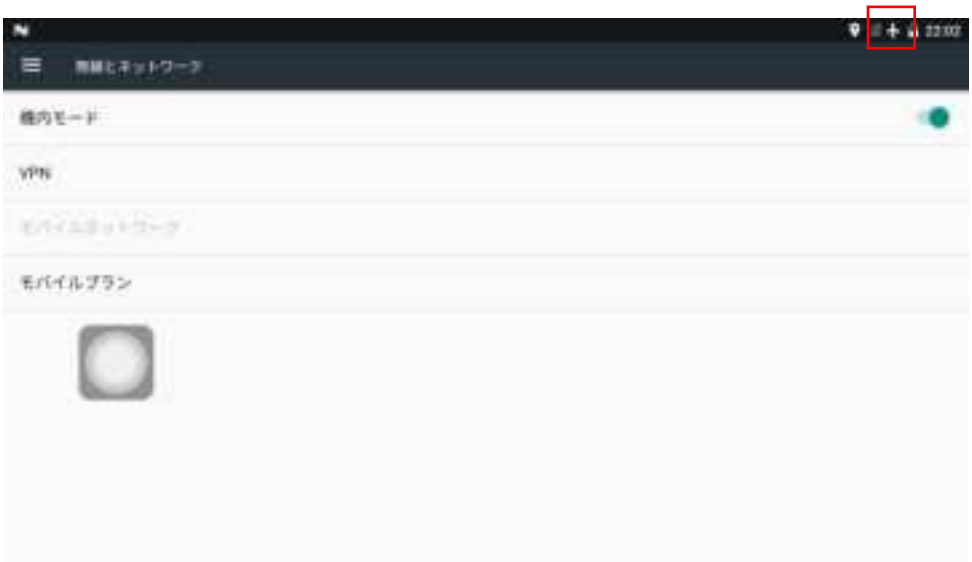
It is mainly used to import map data of GCS apps.

Tap [Wi-Fi] to display the following screen. Tap the switch in the upper right corner of the screen to detect Wi-Fi access points. Tap the detected Wi-Fi access point and enter the password to start Wi-Fi communication.

To turn airplane mode on/off, follow the steps below.

(1) Open the settings screen from the system settings menu. In the image below, airplane mode is on. Select [More] to display [Wireless & Networks].

(2) To turn airplane mode on/off, slide the switch for [Airplane mode]. When airplane mode is on, an airplane icon is displayed in the upper right corner of the menu bar.



About this controller

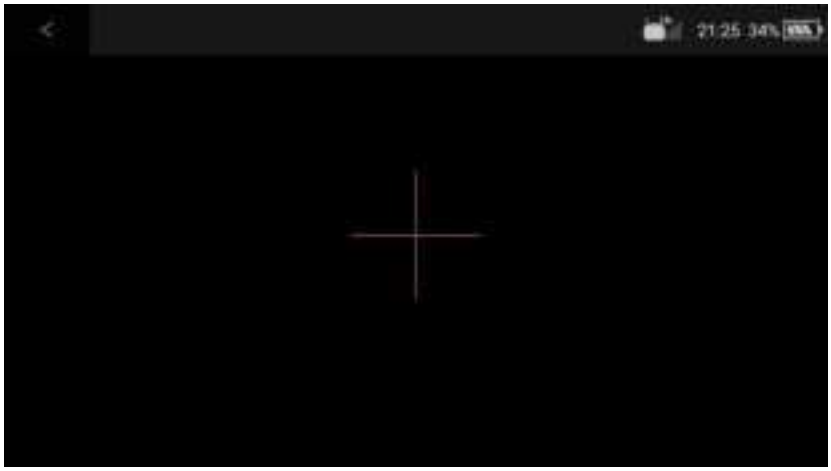
You can check the software version and serial number.

* Immediately after startup, the MCU version may be displayed as unknown until the MCU is fully started. If the version does not appear after you wait for a while, contact the distributor.

15. Video

Tap the video icon to display the screen that shows images through a camera.

To use this function, it is necessary to mount a camera on the drone and establish image communication with the controller.

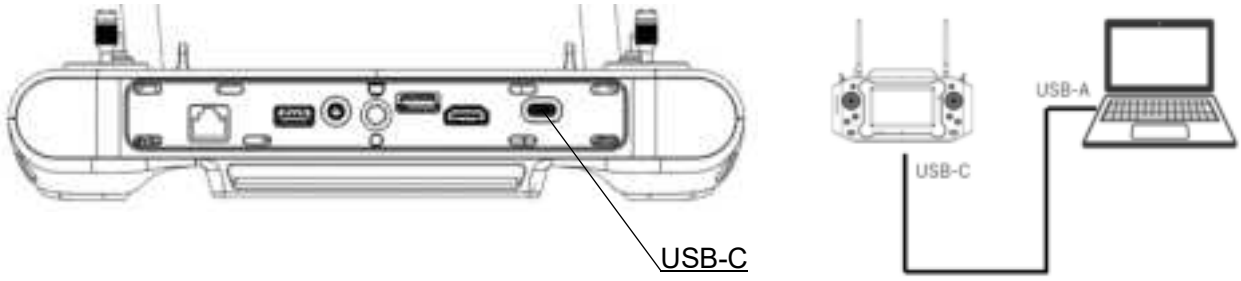


To go back to the home screen, tap [<] in the upper left corner.

16. System update

Preparation

(1) Turn on the smart controller and connect the PC and the smart controller. Connect the USB-C connector to the smart controller and the USB-A connector to the PC.



(2) When the PC recognizes the smart controller, "MSM8996" will be displayed on the PC.

(3) Swipe down on the top edge of the screen of the smart controller and tap [USB debugging connected].

Swipe down on the top edge

(4) Turn on the smart controller's USB debugging and tap [Select USB settings].

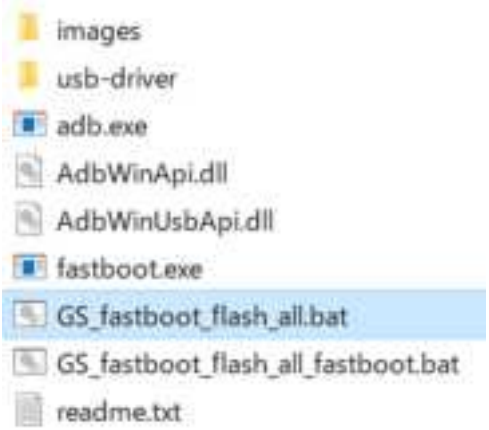
(5) Tap [MTP] on the smart controller and check that [Internal shared storage] of [MSM8996 for arm64] is recognized on the PC.

Execute a system file

(1) Decompress the system version update software on your PC and double-click [GS_fastboot_flash_all.bat] to run it.

(2) When "Flash images Successfully" appears on your PC, the system installation is complete.

* "Do you allow USB debugging?" is displayed, click [OK].



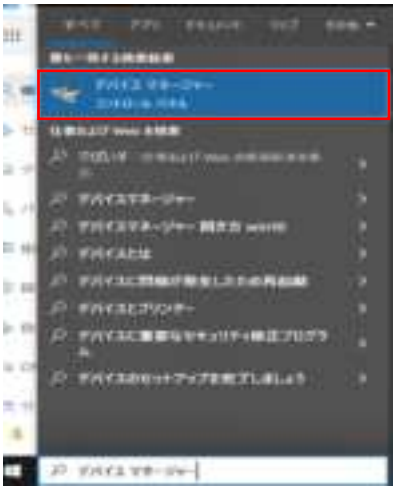
Installing a driver if the system file is not executable

(1) If the screen remains <waiting for any device> after you execute the system file, perform the following procedure.

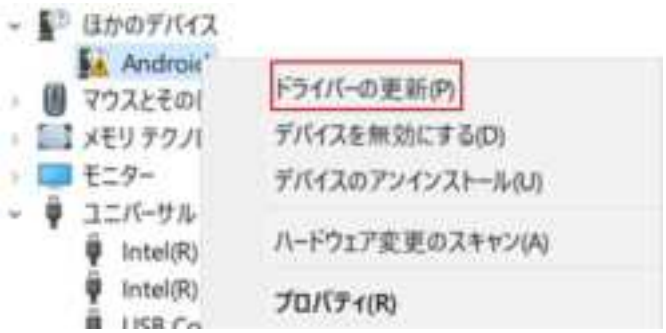
The screen of the smart controller remains "ACSL".

* If you install the driver, it will not stop. Decompress the system version update software and double-click [GS_fastboot_flash_all.bat] to run it.

(2) Start the [Device manager] on your PC, select [Other devices], and check the connection status of the devices. If the image on the right is displayed, installation is required.



(3) Select and right-click [Android], select [Update driver], and then click [Browse computer for drivers].



(4) Select [Select from a list of available drivers on computer], select [Show all devices], and click [Next].

(5) Click [Use disk] and click [Browse].

* The display of "A:¥" varies depending on the PC.

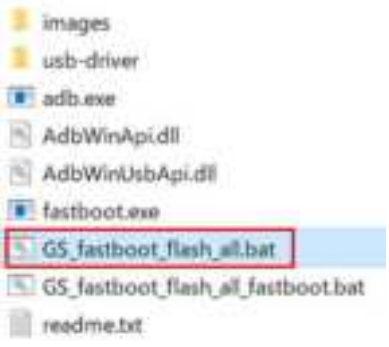
(6) Open the driver file obtained in advance, select the [android_winusb.inf] file in the decompressed folder of [usb_driver_r13-windows.zip], and click [OK].

(7) A warning of driver update appears. Select [Yes] to check that the driver has been updated successfully, and then click [Close].

(8) Select [Android Composite ADB Interface] and click [Next] to start the installation.

(9) After the installation is complete, the driver installation is complete when "Android Composite ADB Interface" is displayed in Device manager.

(10) Double-click [GS_fastboot_flash_all.bat] again to execute it. When a message "Flash images Successfully" is displayed, the system version installation is complete.



(11) Tap [Settings] on the home screen of the smart controller.

(12) Tap [About this controller] and check that [System version] is the installed version.

17. Troubleshooting

Trouble	Solution
The power does not turn on.	The battery may be dead. Charge the battery.
After plugging in the charger, the charging mark is displayed but the battery charging does not proceed.	If the battery voltage is below 3.3 V, it activates trickle charging mode where charging proceeds slowly until it switches to the normal charging mode. In some cases, it may take more than 1 hour, so keep charging for a while.
When the charger is connected, "Charging abnormal! Please check the connection of USB adapter!" is displayed.	This error message may be displayed when the connection is unstable, such as when the charger is connected slowly. Make sure that the connector is securely connected.
Tilting a control stick to the maximum position does not maximize the value.	Perform stick calibration.
Turning a wheel to the maximum position does not maximize the value.	Perform wheel calibration.

Revision history

February 14, 2022	First edition
April 13, 2022	Second edition
June 8, 2023	Third edition

Distributor

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FCC Statement

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

RF Exposure Statement：

This device meets the government's requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

The exposure standard for wireless devices employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6 W/kg. *Tests for SAR are conducted using standard operating positions accepted by the FCC with the device transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the device while operating can be well below the maximum value.

For body worn operation, this device has been tested and meets the FCC RF exposure guidelines

The FCC has granted an Equipment Authorization for this device with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR infromation on this device is on file with the FCC and can be found under the Display Grant section of http://www.fcc.gov/oet/fccid after searching on FCC ID: 2A8JK-GS5US-FALCON

ISED Statement

This device complies with Innovation, Science and Economic Development Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est confrome aux CNR d'ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RF Exposure Statement：

This device meets the government's requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the ISED

The exposure standard for wireless devices employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the ISED is 1.6 W/kg. *Tests for SAR are conducted using standard operating positions accepted by the ISED with the device transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power

level, the actual SAR level of the device while operating can be well below the maximum value.

For body worn operation, this device has been tested and meets the ISED RF exposure guidelines

Déclaration d'exposition aux radiofréquences :

Cet appareil répond aux exigences du gouvernement en matière d'exposition aux ondes radio. Cet appareil est conçu et fabriqué pour ne pas dépasser les limites d'émission pour l'exposition à l'énergie de radiofréquence (RF) fixées par l'ISED.
La norme d'exposition pour les appareils sans fil utilise une unité de mesure appelée débit d'absorption spécifique, ou DAS. La limite DAS fixée par l'ISED est de 1,6 W/kg. *Les tests de DAS sont effectués en utilisant des positions de fonctionnement standard acceptées par l'ISED avec l'appareil transmettant à son niveau de puissance certifié le plus élevé dans toutes les bandes de fréquences testées. Bien que le DAS soit déterminé au niveau de puissance certifié le plus élevé, le niveau DAS réel de l'appareil pendant son fonctionnement peut être bien inférieur à la valeur maximale.

Pour un fonctionnement porté sur le corps, cet appareil a été testé et répond aux directives d'ISED en matière d'exposition aux radiofréquences

5150~5350MHz indoor use only. It will need to connect router for indoor use in this band.

5150~5350MHz pour usage intérieur seulement. Il faudra connecter un routeur pour une utilisation en intérieur dans cette bande.