SenseTime

SenseStorm 2.0 User Manual

(English Version)
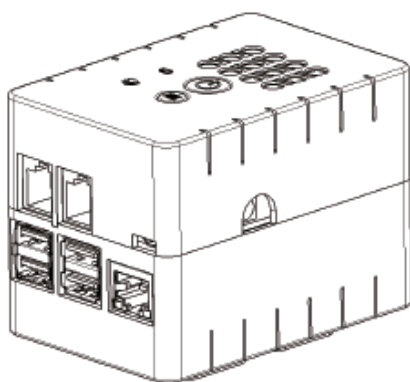
www.sensetime.com

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Directory

1. Getting to Know SenseStorm

1.1 List of Items

- Main Control Board   ×1
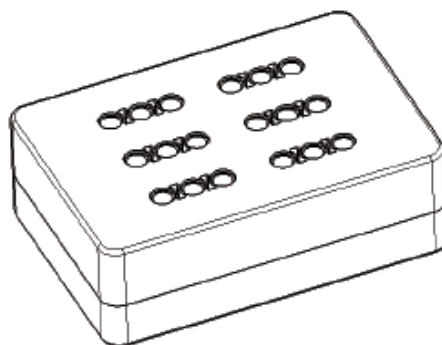- Battery   ×1
- Power Charging Cable   ×1
- Ultrasonic Sensor   ×1
- Color Sensor   ×1
- Speaker   ×1
- Speaker Charging Cable ×1
- Audio Cable   ×1
- Camera   ×1
- Instruction Manual   ×1
- Assembly Guide   x1
- TF card   ×1

Main Control Board

Battery

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Ultrasonic Sensor
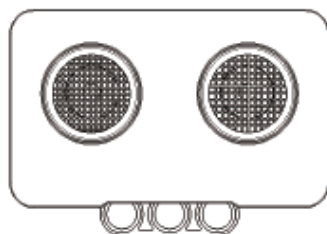
Speaker

Speaker Charging Cable
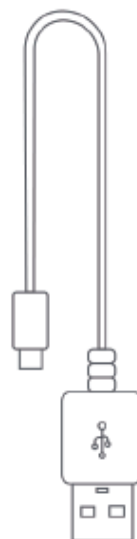
Color Sensor

Audio Cable
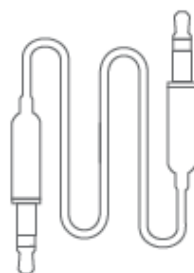
Power Charging Cable
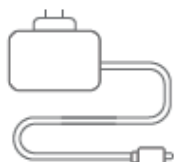
TF Card

Camera

Instruction Manual

Instruction Manual
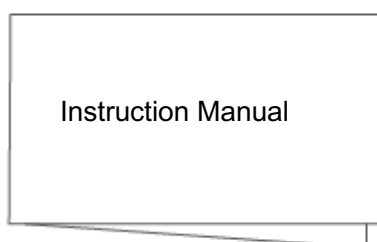
Assembly Guide
(Scan QR code to download)

1.2 Product Overview

Function Button
Mode Indicator
Battery Level Indicator
On/Off Button

S1
S2
Battery Port

TF Card Port
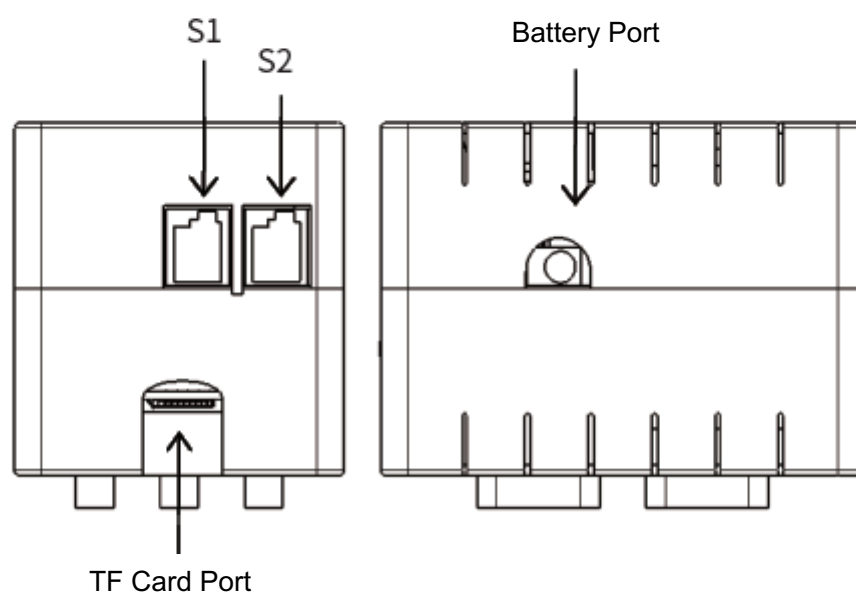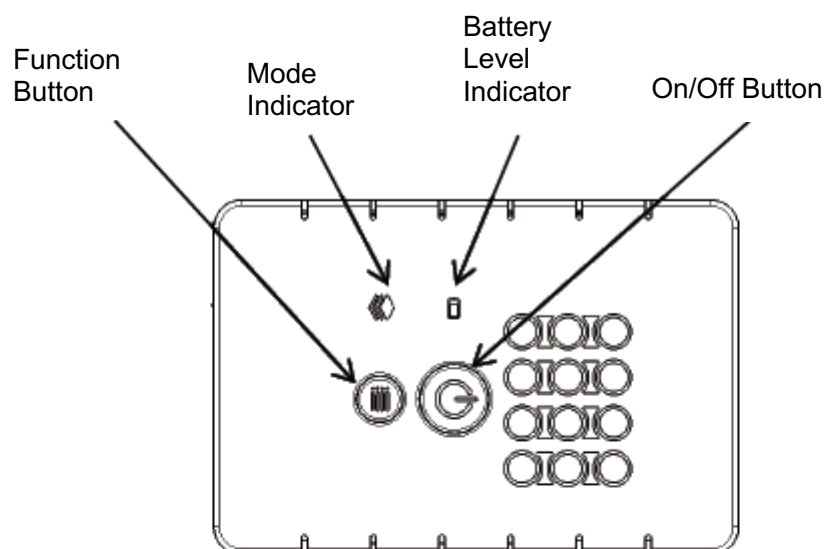
Note: The testing port is reserved for internal testing purposes only.

Output

Input

Direction for TF Card Insertion

Speaker

AUX Port

Indicator
Light

On/Off

Charging Port

Ultrasonic Sensor
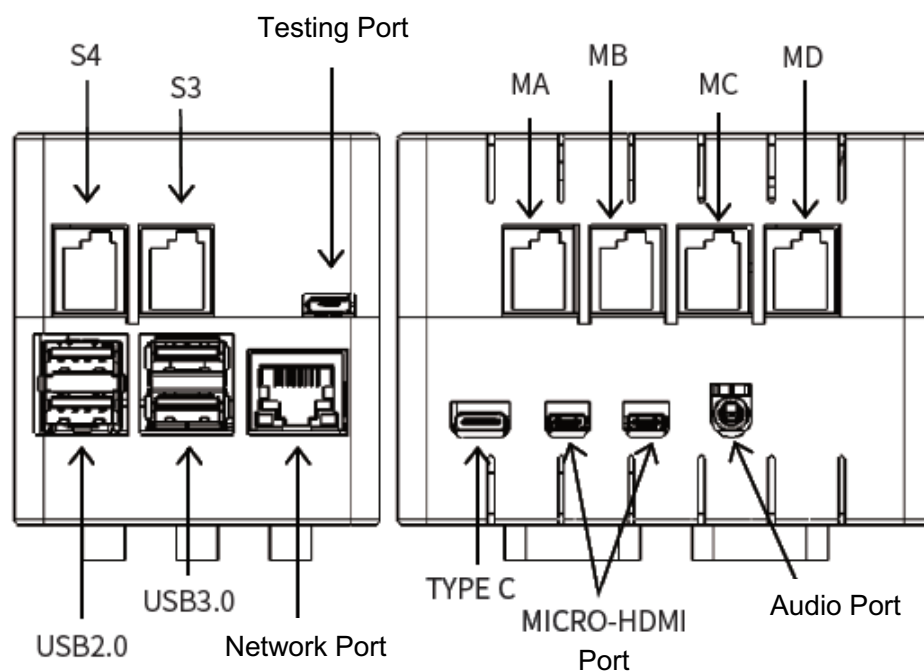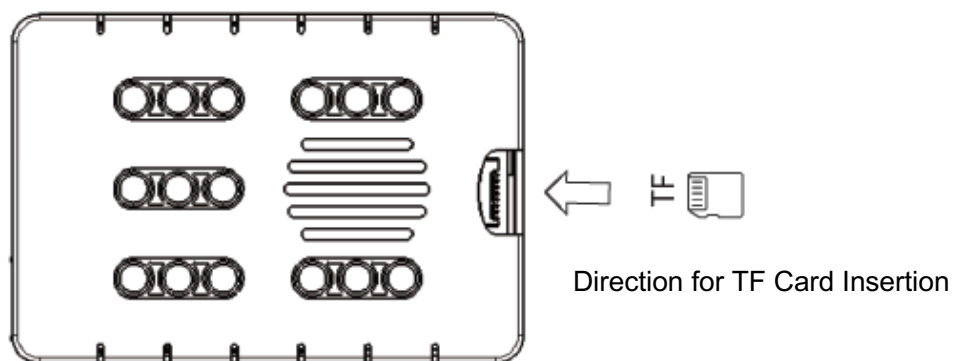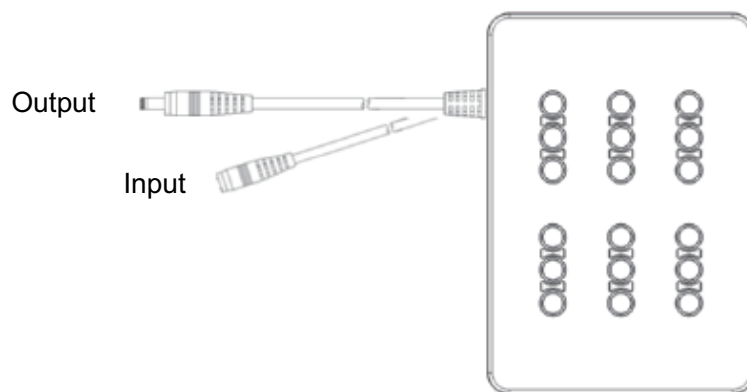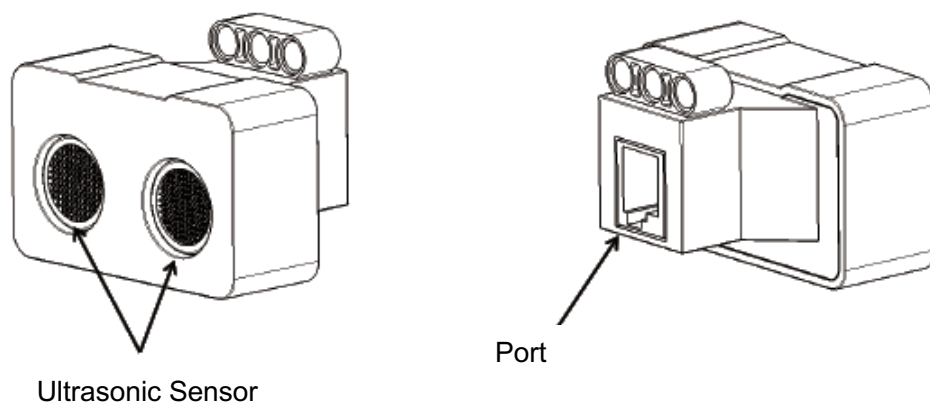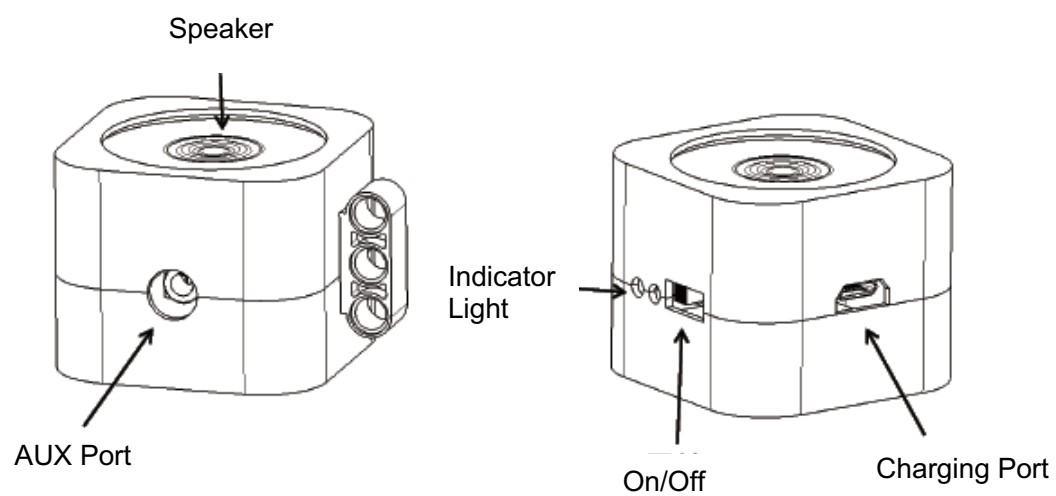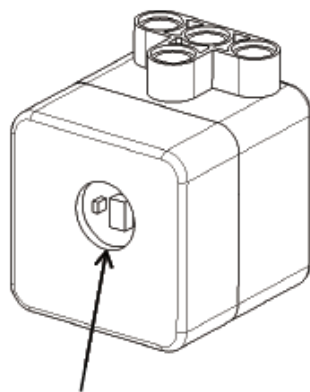
Port

Color Sensor
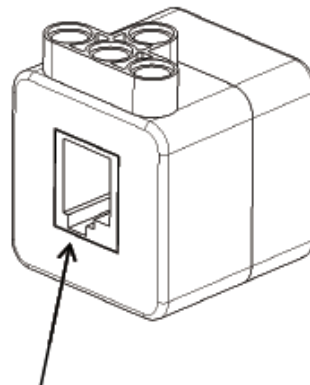
Port

Camera
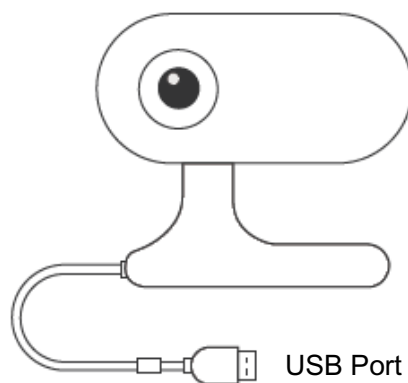
USB Port

1.3 Product Specifications

	Specifications
FUNCTION	With motor and building blocks for face recognition and gesture recognition, human tracking and other artificial intelligence courses
SIZE	92 × 62 × 73mm
CPU	Raspberry Pi 4, 2G RAM
POWER SUPPLY	3000mAh, 12V output
USAGE TIME	2 hours
INTERFACE	USB × 4 MICRO-HDMI × 2 DC Power Supply × 1 Audio Interface × 1 Crystal Head Interface × 8 (Can Be Connected to 4 Motors and 4 Sensors) Gigabit Ethernet Port × 1 Micro USB × 1 (for Arduino Firmware Upgrade)
SENSOR	Color Sensor × 1 Ultrasonic Sensor × 1
MOTOR	Medium Motor × 1 Large Motor × 3

MAIN CONTROL BUTTON	On/Off Switch Button × 1 Function Button × 1
LED	RGB Light × 2 Red and Green Double Color Light × 1
CONNECTING CABLE	Micro USB 0.5m × 1 AUX Cable 0.6m × 1 (3.5mm TRS Male to 3.5mm TRS Male)

2. How to Safely Operate SenseStorm

Please read the following information carefully and note that SenseTime will not be responsible for liabilities including any direct or indirect damage caused by improper use.

1. Do not put your hands or any foreign objects on the air outlets of the upper and lower fans of the SenseStorm main control to avoid damage to the product due to overheating.

2. Do not use the Type C interface to supply power to the master! Supplying power through this interface for a long time may cause circuit damage.

3. Mixed use with other types of batteries is prohibited. When the battery is about to run out, please charge it as soon as possible. At the same time, in order to prevent the battery from being over-discharged because of long-term unused, the battery should be charged regularly to maintain the power, and it is recommended to charge it once a month.

4. Please use the special adapter and cable that comes with the product for charging.

5. The preferable working environment temperature of SenseStorm would be 5-35℃, and the preferable humidity would be 20-60% RH. Please keep SenseStorm away from open flames and other relevant heat sources, including areas under direct sunlight for a long period of time. Also, please do not cover the sensor or its normal operation might be negatively affected.

6. If SenseStorm does not operate normally (i.e., making unusual sounds, emitting strange smells or producing smoke), please unplug the cables, turn off the power supply and contact our customer service hotline immediately. Furthermore, please note that all maintenance activities should be carried out under the guidance or supervision of technicians.

3. Operation Guide

3.1 Software Installation

Please log onto https://lab.cuhkjc-aiforfuture.hk/download to install the SenseStorm software tool.

✧ Download the **Robot Assistant** mobile application on a mobile device for SenseStorm to connect to the designated network.

✧ Download the **SenseTime Edu (PC Client)** on a computer for SenseStorm to be connected to SenseStudy for tasks that involves data transmission.

3.2 Battery Installation and Charging

✧ The DC port of the SenseStorm main control can supply power to the main control, and the usage time is about 2 hours. If SenseStorm is needed to be used for a long period of time, you can also directly connect the male connector of the power charger to the DC port of the main control board to maintain continuous power supply.
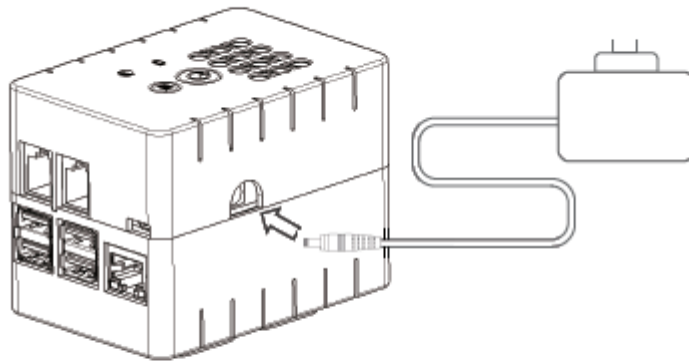
Connecting charger to Main Control Board
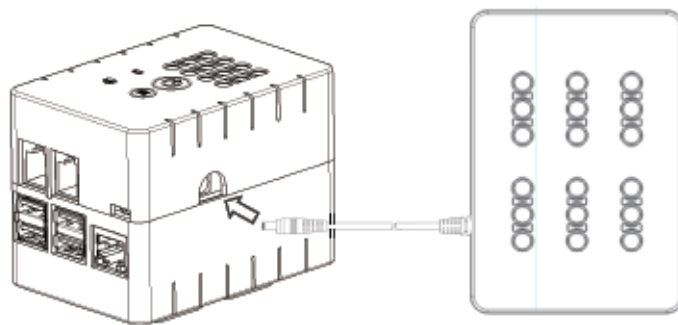
Connecting battery to Main Control Board

✧ The battery indicator on the main control of SenseStorm will indicate the battery level through changes in colors for the blinking lights.

✧ If the battery is fully charged, the battery indicator light turns green.

✧ When the battery is low, the battery indicator light turns red. The buzzer will produce an alert tone when the battery is about to run out.

✧ Once the battery charge indicator lights flashes red, we recommend you to charge the battery as soon as possible. To charge, please insert the charger into the female head of the battery.

✧ The indicator light on the power charger will indicate the charging status. For instance, when the indicator light on the charger is red, it means that it is charging. If the indicator light is green, it means that the charging has been completed.

3.3 Accessories

3.3.1 Sensor Connection

✧ Color and ultrasonic sensors can be connected to any port of S1-S4.

✧ In the experiment, you are required to specify a specific port to obtain sensor data.

3.3.2 Motor Connection and Use

✧ Motor can be connected to any port of MA-MD.

✧ In the experiment, please use the specified port to get the sensor data.

3.3.3 Audio Connection and Use

✧ The provided charger is required for regular charging. When using the audio, please connect the audio cable to the audio port of the main control board and turn on the audio switch.

3.4 Switch On

✧ Press and hold the On/Off button on the SenseStorm main control once to enter the power-on state. Once the battery indicator lights up, the current battery status will be displayed.

✧ The booting process generally takes about 40 seconds and once the mode indicator on the main controller lights up blue, it means that the booting process is complete.

3.5 Shutdown

✧ Press and hold the On/Off button on the SenseStorm main control board for 5 seconds, the battery indicator will turn off, and the shutdown is complete.

3.6 Switching Modes

3.6.1 Introduction of Function Modes

Mode	Function
Teaching Mode	The teaching mode will be entered by default when it is turned on. After connecting to the Wi-Fi network, it can be connected with the SenseStudy teaching platform.
Intelligent Network Configuration	In this mode, SenseStorm can be connected to the Wi-Fi network to prepare for communication with the SenseStudy teaching platform.

3.6.2 Teaching Mode

When the teaching mode is turned on, and the blue light will become apparent with the voice alert message "Teaching Mode".

- After completing the network configuration process, SenseStorm will automatically enter the teaching mode by default and the "Mode Indicator" will switch to the blue light at this stage.

- Connect the PC to the same Wi-Fi network as SenseStorm and turn on **SenseTime Edu (PC Client).**

- Log into SenseStudy to open SenseStorm related course packages.

- Click on "Connect Hardware" located at the upper right corner, check the corresponding ID of the fuselage, find the corresponding SenseStorm, and click to connect.

- To examine the SenseStorm course package, enter the code in the coding area. Press and click "Run" to see SenseStorm takes corresponding actions.

3.6.3 Intelligent Network Configuration

- Plug the camera into any USB port and double-click the "Function

Button". The "Mode Indicator" will flash color blue with the voice alert message "Network Configured" to enter the network configuration mode.

✧ Connect the mobile phone to an available Wi-Fi network, open the **Robot Assistant** mobile application, locate the option of "SenseStorm", then generate a QR code and place the QR code in front of the SenseStorm camera. If the camera scans the QR code successfully, the alert message "Received Network Information" will be played.

✧ As shown below:

When the mobile phone is connected to the Wi-Fi network

When the PC is connected to the same Wi-Fi network

✧ The main control board will complete the network configuration, the voice will prompt the command "Connection Successful", and then the mode will return to the default teaching mode. The terminal will display "Connection Successful". If the network configuration fails or the timeout returns, the voice alert message will play "Connection Failed" and the mode will return to the network configuration mode. If you need to exit the network directly, press function button to switch back to the teaching mode.

✧ Note: The network connection can only support 2.4G Wi-Fi band.

3.7 Key Operation and Quick LED indicator

3.7.1 Key Operation Correspondence Table

Function	Mode	Instruction
Power On	On	Press On/Off Switch once
Power Off	Off	Press On/Off Switch for 5 seconds
Intelligent Network Configuration	Teaching Mode	Double-click the function button

4. How to Clean SenseStorm

- Do not use abrasives, aerosols, or any other liquid wiper because these contain flammable substances that may damage the plastic packaging.

- Do not use water or other liquid spray to drench the product.

- Please keep the sensor location clean and do not rub or cover the sensor.

- After turning the power off, please use a soft dry cloth to wipe the device clean.

5. Common Errors and Solutions

Common Error	Solutions
After pressing the power button, the blue light does not light up.	(1) Check the power supply (2) Check whether the TF card is inserted correctly
Mode switching is abnormal.	(1) Check whether the camera is connected (2) Check whether the motor port has been correctly assembled
Failure to connect to sensor	(1) Check whether the cable is plugged in (2) Check whether the port is correct.
Motor control fails	(1) Check whether the cable is plugged in (2) Check whether the port is correct
No audio coming from the speaker	(1) Check the battery level to see if the indicator flashes red (i.e. zero or low battery) or green (i.e. battery has been fully charged) (2) Check whether the audio switch is turned on (3) Check whether the connection is stable

For inquiries, please contact:

Ms Grace Hon
gracehon@sensetime.com
+852 6033 3846

WeChat ID   Weibo   Support Hotline