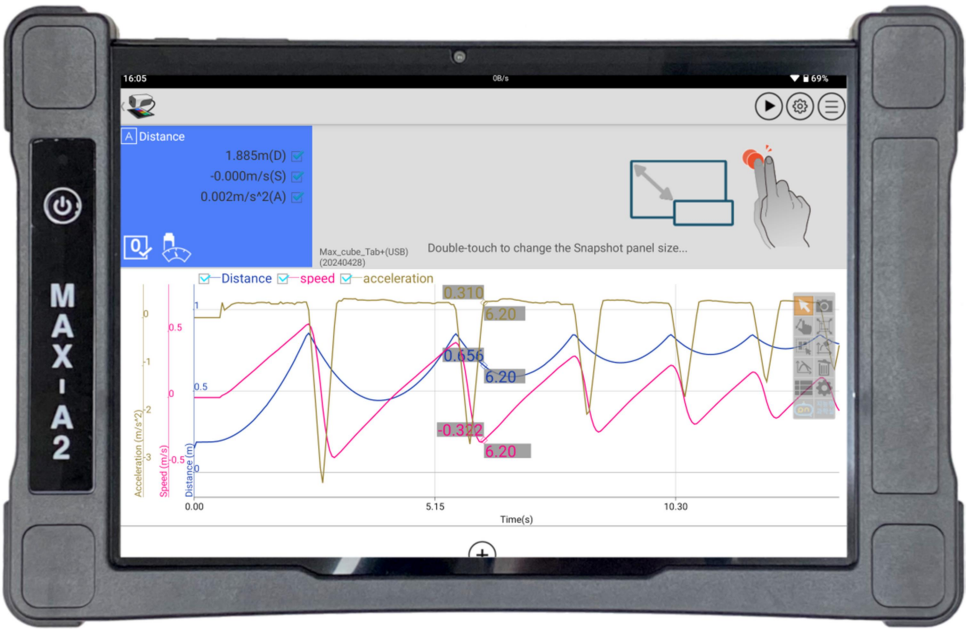
ScienceCube

ScienceCube MAX-A2

USER GUIDE



July 2024

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ScienceCube® is a registered trademark of Korea Digital.
The contents of this manual are provided for informational purposes only, and product specifications and functions may be changed without prior notice to improve performance.

This product is designed for science education. No warranty is provided and no liability is assumed for errors in industrial testing or manufacturing process controls, medical analysis or controls, or commercial design applications. In consequence we cannot assume responsibility for any consequential or other damage resulting from the use of this instrument.

For more information about installing MAX-A2, using other applications and getting the feedbacks, contact : ScienceCube international distributor.

July 2024

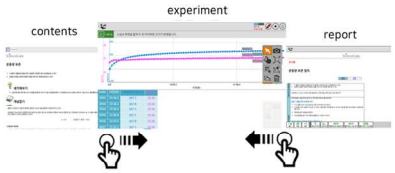
Printed in Korea

MAX-A2

sciencecube.com

All in One type Interface!

Acquisition	Sampling rate Max. 500 KHz (sweep mode only) Analog input 4Ch, Digital I/O 1Ch
Analysis	Calculating formulas to drawing graphs by touching the icon.
Result & Report	Students can write a report which is made for a subject of experiment.
High Performance	10.5” Big screen 2.0 GHz Octa-core



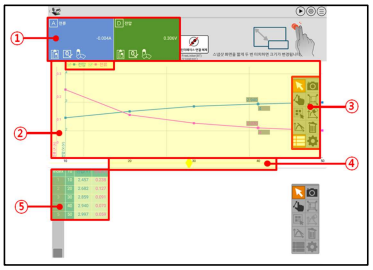
■ Features & Benefits

- MBL interface and smart device consist of one, so you can make an experiment more easily and quickly.
- Science#™ logging program is built-in(pre-install), it enables experimentation, analysis and report by using various built-in contents.
- Enables more efficient laboratory operation by utilizing experiment and report sharing through the network.

- You can make an experiment by connecting various sensors of ScienceCube® using 4 channels of sensor ports and 1 channel of digital in/out ports.
- It is a perfect ICT device for educational environments, because it supports network enabling teacher to monitor student.

■ Science# Logging Application

- Analysis base on Contents.
- A variety contents for Physics, Chemistry, Biology and Earth Science.
- Experiment environment Auto-configuration.



It is possible to connect all ScienceCube® interface and data logger.

GET IT ON Google Play

IMPORTANT

Please check that this product is operating properly prior to when you intend to use it for educational purposes only. Use this device and sensors for teaching and learning. Do not use device and sensors in extreme conditions which are over the operating range.

WARNING

For safety reasons and to avoid injury, read all operating guides and information in the product guide.

1. Do not attempt to modify device and sensors in any way. This may result in fire, injury, electric shock or severe damage to you or them.
2. Battery and device may become hot during prolonged use in close places subject to extremely high temperature or direct exposure to sunshine and it may results in the device malfunction.
3. Do not operate device and sensors with wet hands, this may cause an electric shock.
4. Do not use device and sensors in close proximity to flammable or explosive gases, or chemical vapors. Use this product in a well ventilated area.
5. Leaking, overheating or burst battery could result in fire, a potential hazardous situation and injury. Do not short circuit, heat or dispose of battery in fire and do not insert the battery with the polarities reversed.

CAUTION

1. Avoid exposing the device to water and refrain from using or storing it in high-humidity areas.
2. The manufacturer is not legally liable for any malfunctions resulting from user negligence or carelessness.
3. Ensure to use only the AC adapter supplied by the manufacturer and avoid subjecting the device to physical shock.
4. Do not place heavy objects on the PC as it may lead to malfunctions.
5. Avoid leaving your device in high-temperature environments, such as inside a car or under direct sunlight, as it may cause malfunction, discoloration, or deformation.
6. Only connect sensors approved by ScienceCube to channels [A], [B], [C], and [D]. The device is not compatible with IEEE 1394, and connecting 1394 devices may lead to serious internal issues.

Connecting to a power :

Because charging the battery can take a long time, you should use the included USB cable and power adapter supplied by Korea Digital. Be sure to chare the battery before using the device. If the device turns off due to low battery, the booting process resumes when the device is connected to power.

MAX-A2 Basics

Read this chapter to learn about the features of MAX-A2 or, how to use its controls, and more.

To use MAX-A2, you just need to turn on the power and then you can view the immediate snapshot mode of data logging with connected sensors.
MAX-A2 is a graphing data logger and much more for educational uses, for example, use a calculator, view web page files, store or backup files and other data using android App.

Includes the following components

- MAX-A2
- Sensor connection cables (4 pcs)
- USB-C cable
- AC/DC USB Adaptor
- Booklet

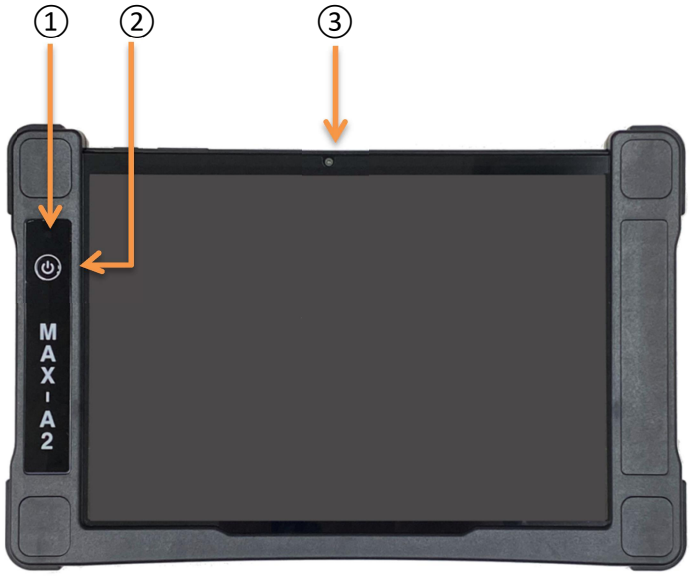
Before use

- For safety during shipping, the battery has only a minimal charge. After opening the box, please use the product after fully charging it for at least 4 hours through the USB-C charging connector.
- The film attached to the LCD screen is applied to temporarily protect the LCD during packaging and shipping, and is not a continuous protective film. Please remove it before use.

MAX-A2 at a Glance

Get know the controls on MAX-A2. The controls are easy to use.

Here are what else you can find on the front view: data logging indicator LED, interface power on/off button and front camera (so you can see the lens ring).



① Logging indicator LED(Blue)

② Interface power on/off

③ Front view camera

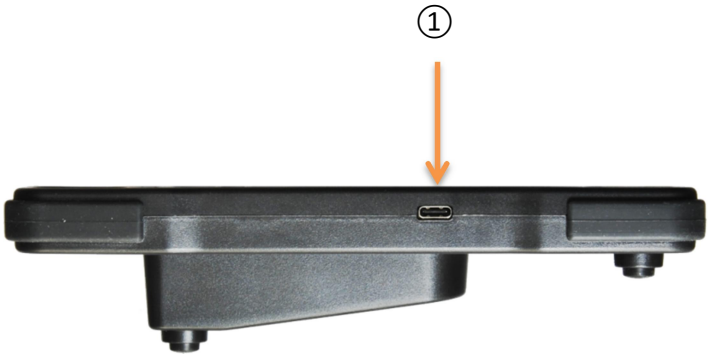
On the rear view : On the back there is a rear view camera. Science#'s AR function allows real-time display of experimental scenes and measurement values.

① Rear view camera

② Volume button

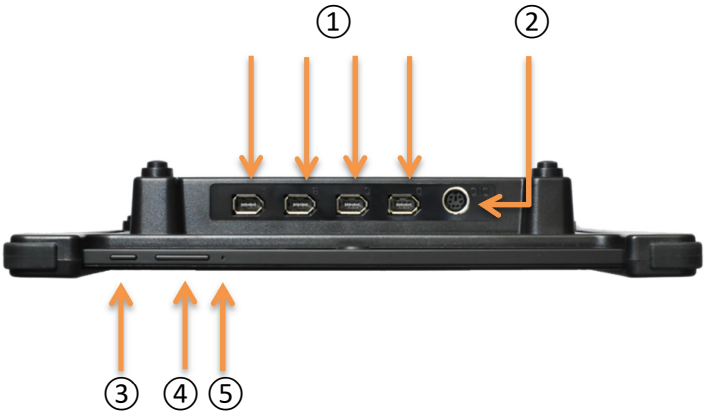
③ Power button

On the left side view : you can find a main USB-C charging connector.



① USB-C charging connector

On the top side view : there is a port for connecting the sensors. It has 4 sensor connection channels, a digital sensor port.
And on the front there is sleep/wake button, volume button and small hole of the RESET.



① Sensor connection channels [A], [B], [C], [D]

② Digital sensor port (weather sensor, digital balance etc.)

③ Sleep/wake button

④ Volume up/down button

⑤ Small hole of the RESET

You can use the power switch (sleep/wake button) on the top side to power on MAX-A2, boot Android OS and start ***Science#*** application from display.

Connecting to a power

The Max A2 works by integrating an Android-based display-integrated computer with an interface for data collection.
Therefore, two power sources and batteries are built-in as the main power for driving the display and the auxiliary power for the interface.

1. Charging sequence

Charge the mains power using the USB-C charging connector.
At this time, if the charging amount of the interface is insufficient, it is automatically charged using the power of the main power (display unit).
Charging may be slower or longer because the interface is charged first and then the main power is charged. Turn off the main power for faster charging.
Note: The MAX-A2 can be used while the battery is being charged by the USB power charger. However, the USB ports on most computers do not provide enough power for simultaneous use and charging.

2. Power on

If you press and hold the button on the top, the Android system boots up, and when booting is complete, a standby screen is displayed. Slide the screen from here to enter the home screen where you can use the application. In this state, only the screen can be turned on and off with the top button. However, the system will continue to work even when the screen is off.
In order to collect sensor data, the interface power button on the Max A2 interface at the top must be turned on separately.

3. power off

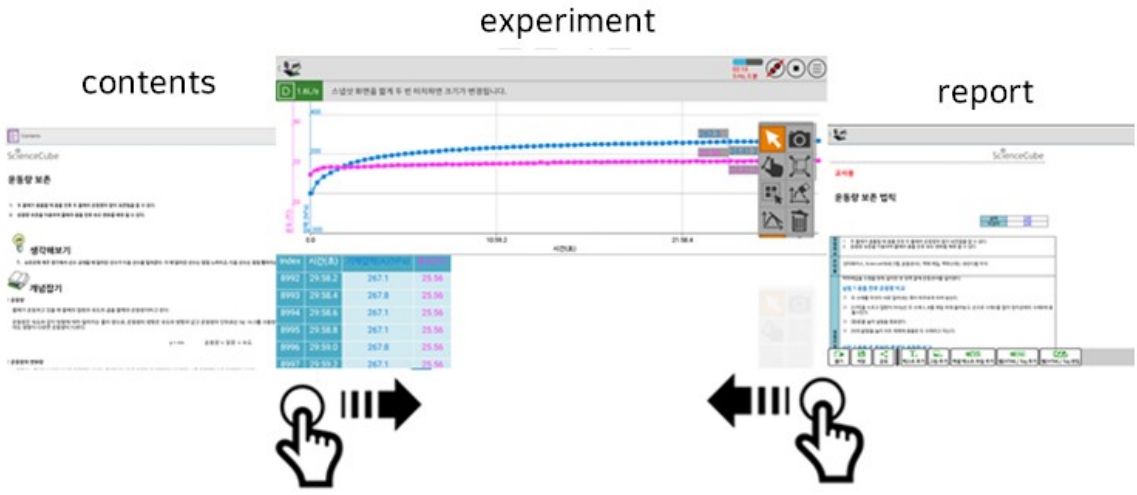
The top button only turns off the display, and the system is still running.
To save power, please shut down power off. If you press and hold the side button, the exit icon appears.
Note: When the Android system shuts down, the interface powers off automatically after about 10 seconds.

How to use the Science# program

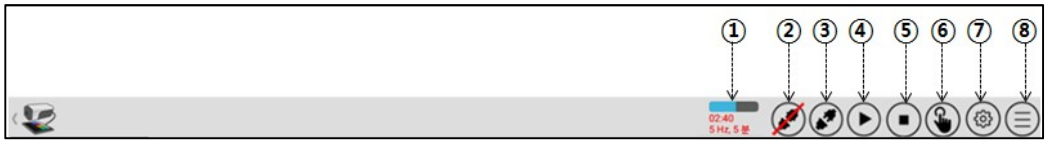
Science# is a data logging program for Android OS available in MAX-A2, that can measure, record, and analyze sensor values. You can also design and run experiments using built-in content. You can create a report of your results and share the test results through the local WiFi network.
It can be freely installed from Google Play™ , and you can keep the latest version through automatic updates.

Program Basic Configuration

The program is divided into three screens: content, experiment, and report. With the functions provided on each screen, you can check complex tasks such as recording an experiment or writing a document.



Description of the top menu



① Displays the elapsed time of the experiment.

② Release the connection (when connecting the interface or sensor)..

③ Connect the interface or sensor. (MAX-A2 is automatically connected when the power is turned on, so there is no need to press it separately.)

④ Start the experiment..

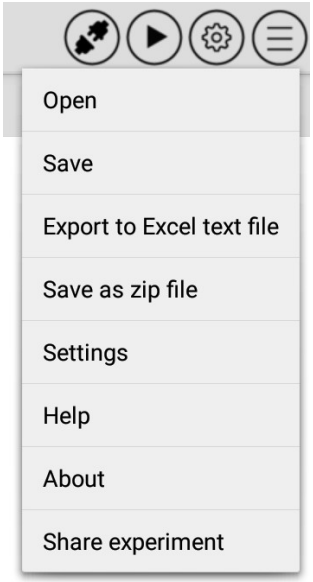
⑤ (In case of experiment) End the experiment.

⑥ (Manual collection) Collect data..

⑦ Set the experiment..

⑧ Open or save, open a subprogram or check program information. (Program menu)

Program menu description



① Open: Open the saved file

② Save: Saves both the experiment file and the report file.

③ Export to Excel text file: Save the experimented data as an Excel file.

④ Save as zip file : Export to zip files

⑤ Settings: You can add sub-programs (calculator, camera augmented reality)

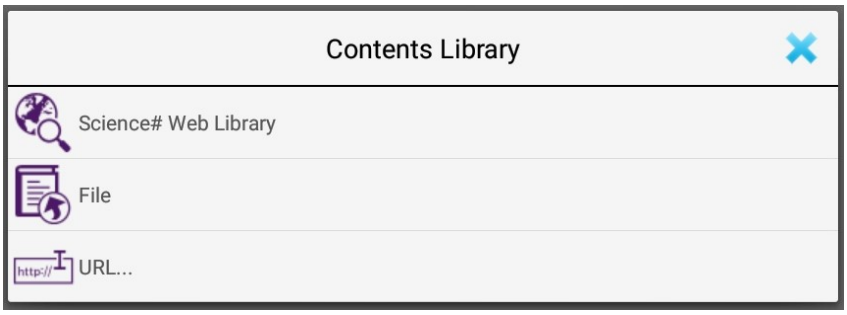
⑥ Help: Open the manual for the program. (See detailed program description here)

⑦ Program information: You can check the current program version information and the posted date of the updated version. You can choose to allow automatic content updates.

⑧ Screen Sharing: You can share the experiment screen. (Up to 5 smart devices)

Content screen description

You can check the content library by tapping the content icon in the upper left.

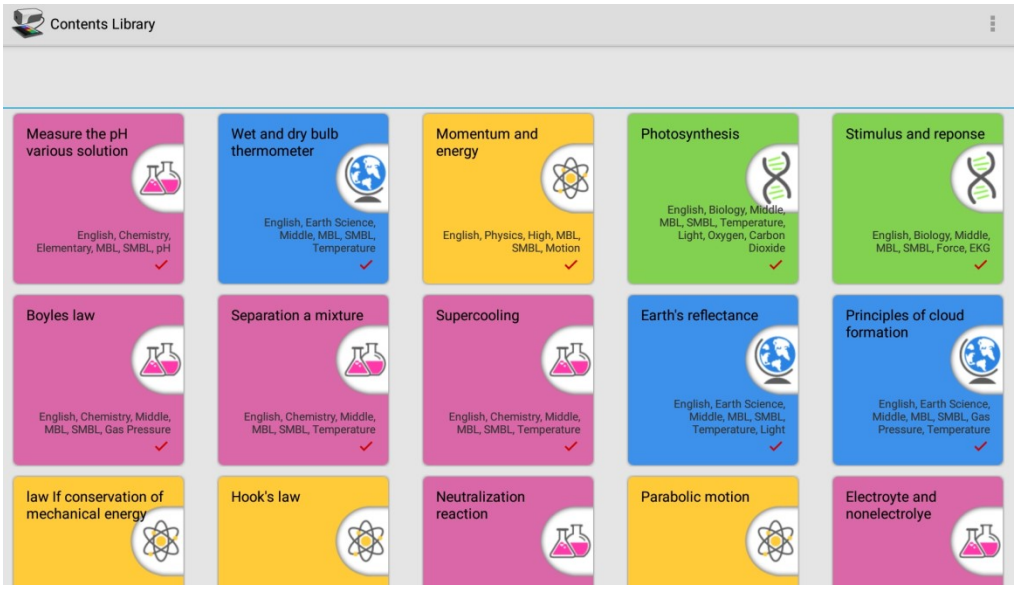


[Contents Library]

① Science # Web Library : Load content from the designated web.

② File : Open the file stored in the device.

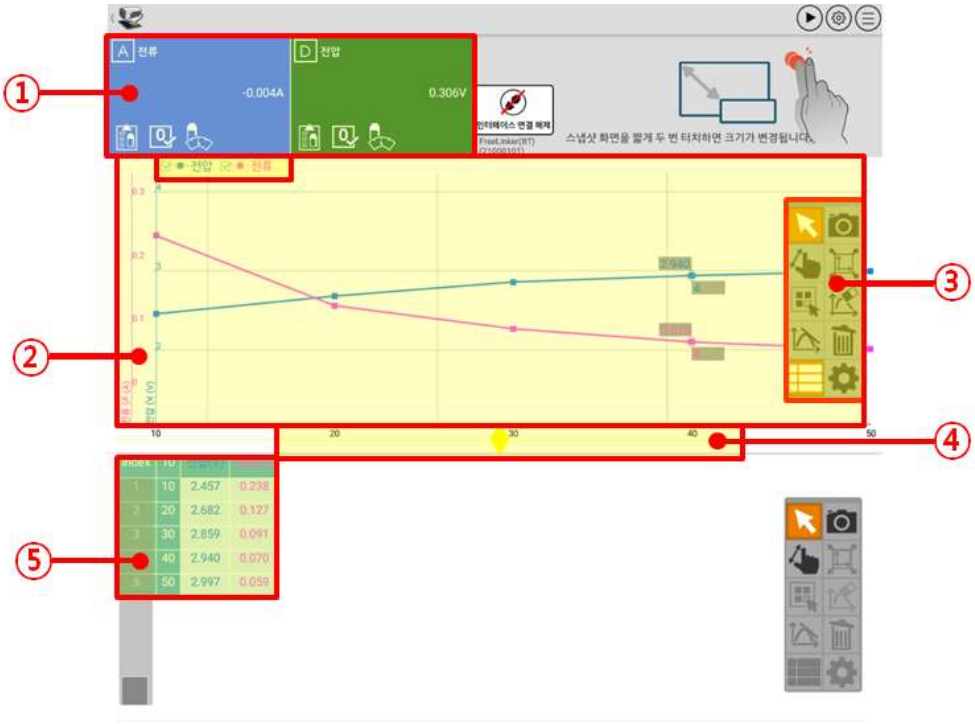
③ URL … : Enter a web address to load a web page.



- In the content library, you can search and view all content, new content, downloadable content / secondary, middle, high / Physics, chemistry, biology, and earth science menus are divided, making it easy to find content.

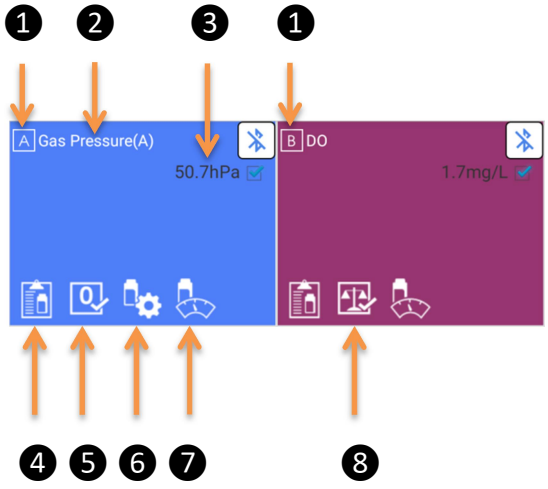
Experiment screen

The experiment screen is a screen to control data collection and analysis required for scientific experiments.



① Sensor snapshot screen

The sensor name and sensor data are displayed. Zero setting, sensor setting, and sensor manual view are possible.



❶: Sensors channel
❷: sensor name
❸: sensor value
❹ : sensor manual
❺: 0 point setting
❻: sensor setting
❼: gauge indication
❽: sensor calibration

② Chart screen : The collected sensor data is displayed in a graph.

③ Toolbar : Toolbar supports various editing.

④ Chart screen size change : You can adjust the size of the graph up and down by dragging the corresponding part.

⑤ Data legend : You can hide or show desired data by clicking the checkbox of each legend.

Tool bar

① Select the graph data. Displays the values of the x and y axes of the closest data.

② Zoom in/out/move the graph. Scroll the table.

③ Select the data area of the graph.

④ Analyze the graph.

⑤ Displays or hides the collected data in a tabular format (table).

⑥ Save the graph screen as an image file.

⑦ Automatically enlarge/reduce the experiment data to fit the screen.

⑧ Select the range and delete the experimental data.

⑨ Delete the graph.

⑩ Set the experiment

MAX-A2 Technical Data

Performance

Display	10.5" + Capacitive Touch
Resolution	1920 * 1200 FHD
Processor	
Main-Application	2.0GHz Octa Core
Sub-Acquisition	120MHz, 32bit
Storage	
RAM	3GB
Flash Memory	64GB
Expandable	MicroSD (*Factory built-in)
Operating System	Android 12
Video Camera	5M Pixel(Rear), 2M Pixel(Front)
Connectivity	Wi-Fi 802.11 a/b/g/n@2.4G+5GHz Bluetooth 5.0
Audio	Internal Speaker * 2 Internal Microphone * 1
Additional Function	FM Radio GPS

Datalogging

Measurement	
Real time	1,000 Samples/s
Sweep mode	Max. 500,000 Samples/s
AD Resolution	12bit
Sensor Ports	
Analog & Digital	4 channels
Digital I/O & Sensor	1 channel
Built-in Sensors	3-axis Accelerometer 3-axis Gyroscope Sound (Use the internal microphone)

General

Power Requirements	
USB Type-C	DC 5V, 2.0A
Rechargeable Battery	
Main System	5,300mAh, Li-poly
Sub System	Depends on order specifications
Environment	
Operating	0 .. 40°C
Storage	- 40 .. 60°C

Warranty	3 years

Mechanics

Dimensions	294 x 193 x 50mm (W x L x H)
Weight	860g (30 oz)
Housing Materials	ABS + Rubber

Accessories

Include Cables	
Sensors	1394-6P plug (1.5m) * 4
USB Charging	USB Type A/C (0.8m) * 1
Charging USB Adaptor	*Optional (Varies by country)
Input	AC100 ~ 220V, 50/ 60Hz
Output	DC5V, 2.0A (USB type A)

Notices

- This product is to be used for science educational purposes only.
- It is not appropriate for any industrial, medical, or commercial applications.

ScienceCube®

www.sciencecube.com

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