

ScienceCube



sciencecube.com

Wireless Barometric Pressure & Temperature (WL134AP) User Guide



Rev. WL134AP-10-2025

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

 **KOREADIGITAL**

The Science Cube Wireless Barometric Pressure & Temperature Sensor Explore the relationship between pressure and temperature in real time.

The wireless Barometric Pressure & Temperature sensor measures atmospheric pressure and temperature simultaneously, allowing students to observe how these two variables change together.

With real-time data collection, learners can explore scientific principles such as Boyle's Law, cloud formation, and other weather-related experiments, linking classroom theory with real-world phenomena.

Wireless connectivity and the Science# app make it easy to set up experiments and analyze results interactively.

Barometric pressure and temperature are essential parameters in meteorology, physics, and environmental science. By using this sensor, students can observe Boyle's law, weather changes, cloud formation, convection, and other scientific principles in action. Optimized for STEM (Science, Technology, Engineering, Mathematics) education, the sensor is particularly effective for project-based learning (PBL) and interdisciplinary experimental lessons. Wireless data transmission ensures mobility and convenience, creating a flexible learning environment without the restrictions of wired connections.

Key Features

- Simultaneous measurement of barometric pressure and temperature
- Real-time wireless data transmission
- Automatic graph generation and analysis with the Science# app
- Ideal for STEM lessons and experimental projects
- Portable and easy to install

Suggested experiments

- Observation of Daily Classroom Pressure and Temperature Changes
- Barometric Pressure Variation with Building Height (Altitude)

- Cloud-in-a-Bottle Experiment (Adiabatic Expansion and Compression)
- Short-Term Weather Prediction Using Barometric Pressure Trends

Composition

The ScienceCube wireless energy sensor consists of the following.

- Wireless Barometric Pressure/Temperature Sensor(WL134AP)
- USB-A/C cable
- Booklet

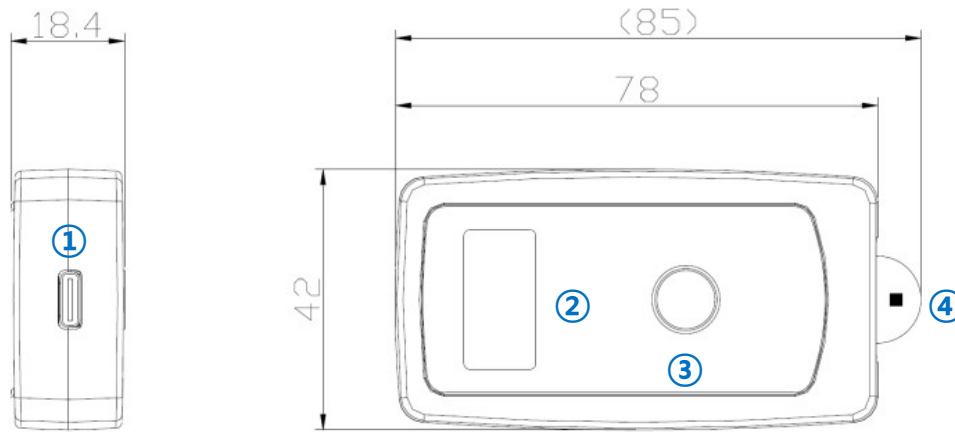
Feature

- Up to four Science Cube wireless sensors can be connected to a PC or smart device at the same time.
- It supports dual-mode Bluetooth, allowing you to connect not only smart devices but also desktop and laptop PCs to conduct experiments using the **Science#** application.
- It can be connected to a PC through a USB port and experiments can be performed using the **Science#** program.



Function of wireless sensor

Structure



- ① **USB port** : Connect the sensor to a PC and use it for experiments or charging.
- ② **OLED Display** : Displays measured sensor values, sensor type, sensor ID, and remaining battery level.
- ③ **Power/Function Button** : It has functions such as power ON/OFF, measurement sensor change and calibration, etc.
- ④ **Sensor Detection Unit**: It has a built-in sensor that detects atmospheric pressure and temperature, and is protected by a thin coating film.

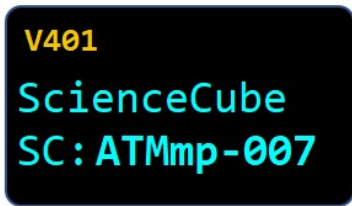
Caution : Do not measure beyond the sensor's measurement range. Doing so can reduce the accuracy of the sensor, cause sensor malfunctions, or result in permanent damage. Please use within the safe measurement range.

Power/Function Button

Status	Turn	Action	Description
When the power is off	Click once	■	A short press turns the sensor on.
	Long click	■	A long press changes the mode and turns on the sensor.

When it's on	Click once	■	A sensor with a flip function rotates the display 180 degrees to ensure that the text is always readable.
	Long click	■	Turns off.

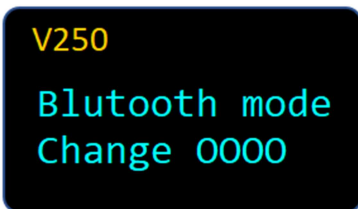
Start screen



V401 : Displays the sensor's firmware version.

SC:ATMmp-007 : When you search for a Bluetooth device, the device name will be displayed. (Sensor name and 3-digit serial number)


Mode change



When you press and hold the power button and turn it on, the Bluetooth connection mode changes to **Mobile** or **PC** with the following message.

Measurement screen



① Connection mode	Mobile : Connecting an Android or iOS. PC : Connecting a Windows-based PC.  : Connected via USB cable.
② Sensor-ID	When connecting wirelessly using the sensor's serial number, this is the sensor name displayed in 'Device Name'.
③ Battery	You can check the battery status, and when you connect the USB charging cable, the display changes to charging.
④ Value	Displays sensor measurement values and units in real time.

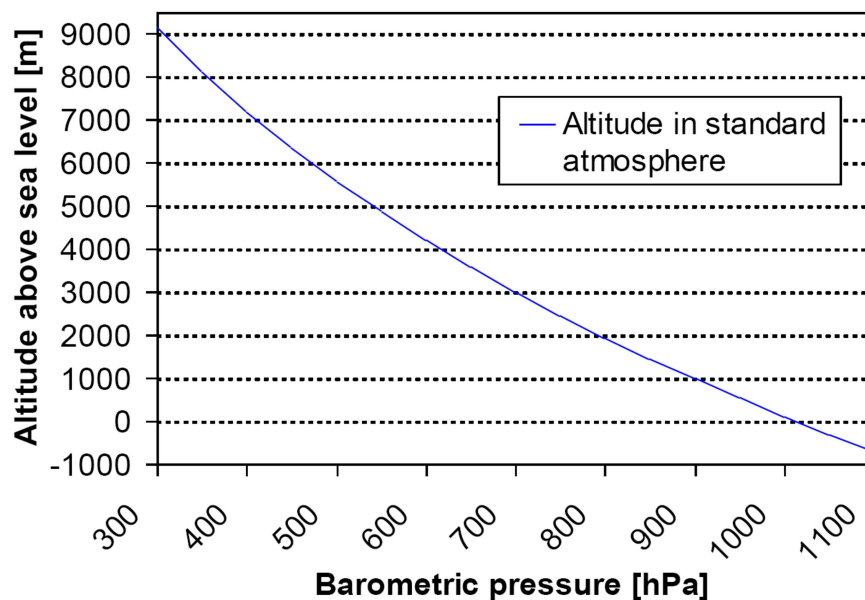
How it Works

Science Cube Wireless Barometric Pressure & Temperature Sensor uses digital chip to measure both air pressure and temperature at the same time.

Inside the sensor is a very thin silicon diaphragm that bends slightly when air pushes on it. This bending changes the resistance of piezo-resistors, and the sensor converts this change into an electrical signal.

The digital chip also includes a tiny built-in temperature sensor. It uses this temperature information, together with calibration data stored in the chip, to correct the pressure reading. This makes the measurements more accurate even when the surrounding temperature changes.

The corrected pressure and temperature values are then sent wirelessly to a tablet or computer. With the Science# app, the data is displayed in real time as graphs, making it easy to see how pressure and temperature change together.




Additionally, because atmospheric pressure decreases with increasing altitude, this sensor can be used to determine the relationship between altitude and atmospheric pressure.

This makes it a useful tool for learning about various scientific concepts, such as weather changes, cloud formation, and Boyle's Law.

Using the Sensor


The ScienceCube wireless voltage sensor can be measured in the following ways


1. Run '**Science#** ' and connect the sensor wirelessly or wired.
2. Set the **[Data Collection Interval]** and **[Experiment Time]** in **[Experiment Settings]**.
3. Click **[Start]** to start the experiment.

For more information on how to use the **Science#**  application, see the help.

Guide for scientific experiments

Cloud-in-a-Bottle Experiment

1. Pour about 5–10 mL of water into a clear 1.5 L plastic bottle.
2. Shake the bottle several times to moisten the inner air and walls.
3. Place the wireless barometric pressure and temperature sensor inside the bottle, then seal it tightly.
4. Use a hand pump or rubber stopper pump to increase the air pressure inside the bottle.
5. Monitor the pressure and temperature in real time using the **Science#**  app.
6. Once the pressure is sufficiently high, quickly release the cap to drop the pressure suddenly.
7. The temperature inside will fall rapidly, and water vapor will condense to form a visible cloud.
8. The inside of the bottle becomes foggy, showing tiny water droplets—this means success.
9. Re-pressurize the bottle to make the cloud disappear and observe the temperature returning to normal.
10. Repeat the process and compare pressure–temperature graphs to analyze when condensation occurs.

*For detailed experimental information, please refer to the **Science #**  content.

Specifications

Item	Description
Range	300 ~ 1100hPa, - 40 ~ 60°C
Resolution	0.01°C, 0.1hPa
Sampling Time	10 Samples / second (Data Update Interval) 100 Samples/second (Logging program based)
Condition	-20 ~ 60°C, Max. 85%RH
Wireless Connection	Bluetooth 5.0 or Classic 2.1
Wired Connection	USB 2.0 (Type-C)
Battery	700mAh Li-Polymer rechargeable
Charging Time	within 2 hours
Operating Time	Approximately 8 hours after full charge (depending on usage conditions)
EMC	CE : EN 61326-1, EN 55011, EN 55032, EN 301 Ⓜ202-SMD070

CAUTION: Do not use the instrument beyond the measurement range or in conditions that exceed the short-term exposure limits. Prolonged exposure beyond the maximum permissible range can cause serious damage to the sensor.

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- 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.

TEL : +82-2-2109-8839 FAX : +82-2-2109-8881

www.sciencecube.com

Korea Digital Co., Ltd.

#804 Ace Twin Tower 273 Digital-ro Guro-gu Seoul 08381 Korea