



Wireless Thermocouple (P4523-TH) User Manual



Rev. WL123TC-04-2023

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

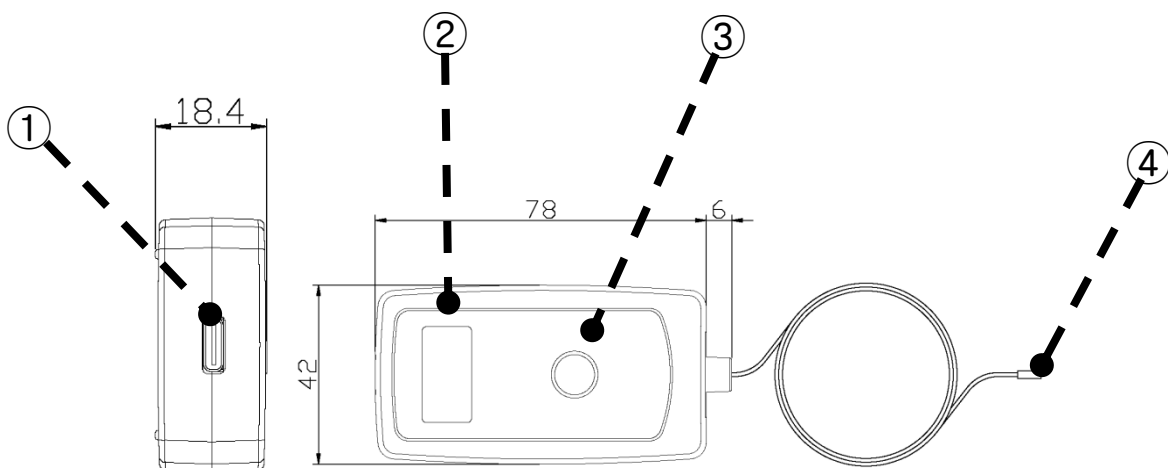
Introduction

A wireless thermocouple temperature sensor measures the change in electromotive force caused by the temperature difference between the two ends of a wire and converts it to temperature and displays the measurement. At the end of the sensing part that measures temperature, there is an element whose resistance to electromotive force changes with temperature, and the resistance change of the element is converted to temperature change and the measured value is displayed. It can be remotely connected to a smart device or PC via wireless or wired to measure without an interface.

Composition

The Wireless Thermocouple Sensor product configuration is as follows

- Wireless Thermocouple Sensor (P4523-TH)
- USB-A/C cable
- User manual



- ① USB port : Used to connect to the USB port of a PC for experiments or to charge the sensor.
- ② Display : Displays the measured sensor value and battery level.
- ③ Power button : Press the button to turn on the power, and press for about 5 seconds to turn off the power.
- ④ Sensor : Where the micro voltage signal comes out when measuring the temperature to an object

Caution : Do not use the sensor in close proximity to open flame, explosive gases. High contaminants can cause permanent damage to the sensor.

Power/Function Button

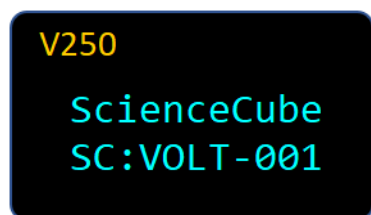
Status	Turn	Action	Description
When the power is off	Click once	■	A short press turns the sensor on.
	Long click	■	A long press changes the mode and turns on the sensor.
When it's on	Long click	■	Turns off.

Specifications

Item	Description
Range	-200 ~ +1,200 °C
Resolution	0.6 °C
Sampling Rate	100 Hz (1/100 sec)
Operating Environment	-20 ~ 60°C, ~ 85% RH
Wireless Connection	Bluetooth v5.0 or Classic 2.1
Wired Connect	USB 2.0 (Type-C)
Battery	700mAh Li-poly rechargeable battery
Charging Time	within 2 hours
Operation Time	Approximately 8 hours after full charge (depending on usage conditions)

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.

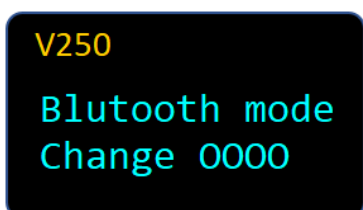
Start screen



V250 : Displays the sensor's firmware version.

SC:OOOO-001 : When you search for a Bluetooth device, the device name will be displayed. (Sensor name and 3-digit serial number)

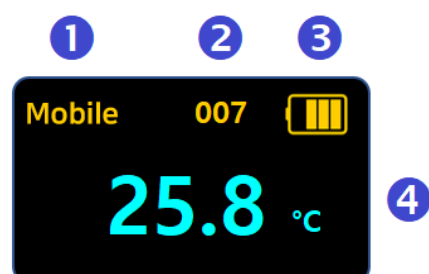
Mode change



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.

See last page for more information.

Measurement screen



① Connection mode	Mobile : Connecting Android or iOS. PC : Connecting to Windows PC 🔌 : Connected via USB cable ※ A long press changes the mode and turns on the sensor.
② Sensor-ID	This is the sensor's unique number and is displayed along with the sensor name in the device name when connected via Bluetooth.
③ Battery	Check the battery status, and when charging via USB, the display will change to charging.
④ Value	Displays sensor measurement values and units in real time.

Suggested experiments

You can use a thermocouple temperature sensor to perform the following experiments

- Measure ignition point
- Measure the temperature of the inner flame, outer flame, and flame center.

How to install Science#

● Install Windows PC version

Online installation file (approximately 39MB)

<http://www.koreadigital.com/url/updates/sciencesharppc/setup.exe>

* Internet connection is required during installation

Offline installation file (approximately 340MB)

http://www.koreadigital.com/url/updates/sciencesharppc/setup_full.exe

* Installation does not require an Internet connection, but contains large content

● Install from a mobile smart device (Smartphone or Tablet PC)

1. Download Science# to your smart device (Refer to QR codes below)
2. Connect using Bluetooth (See Science# documentation or refer to next page)
3. Run Science#
4. When you connect the sensor, the measurement is displayed on the Science# screen



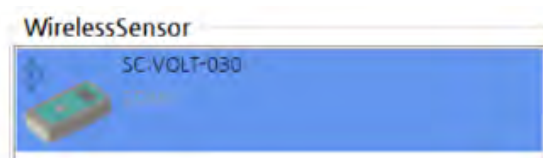
Features

- Up to four 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.

How to connect Wireless Sensor to Science# program

● Windows PC

1. Install and run Science# (Refer to previous page for installation method)
2. Power on the sensor
3. Click the  [Connect] icon and select [Bluetooth Interface] from [Select Interface]
4. [Add Bluetooth or other device] → [Bluetooth] → Add sensor number after checking the number on the backside of sensor
5. When you see like the picture, click on Wireless Sensor and connect



● Android or iOS (Smartphone or Tablet PC)

1. Install and run Science# (Refer to previous page for installation method)
2. Power on the sensor
3. Click the  [Connect] icon and select [Bluetooth Interface]
4. After selecting the device search, check the sensor number on the backside and connect



If you experience any connection issues, check Bluetooth mode on the sensor. Please refer to the next page for instructions on how to change it.

How to switch to Bluetooth mode for Android and iOS

For mobile devices (Android, iOS) Bluetooth Low Energy technology is used for wireless communication. For these devices do not pair the sensor just use it directly in the software.

Turn off the sensor. Then press and hold the power button until the text 'Bluetooth mode Change Mobile' is shown, then release the button. The mode is set to 'Mobile', meaning that Bluetooth Low Energy is used.

How to switch to Bluetooth mode for Windows

For Windows computers, Bluetooth Classic technology is used for wireless communication. Before you start to use the sensor for measurement you have to pair it. If you are asked for a PIN, enter either "1234" or "0000".

Turn off the sensor. Then press and hold the power button until the text 'Bluetooth mode Change PC' is shown, then release the button. The mode is set to 'PC', meaning Bluetooth Classic is used.

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