Wireless Optical DO
(Dissolved Oxygen)
(P4518-DO)
User manual

Rev. WL118DO-12-2023

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

The wireless Optical Dissolved Oxygen sensor measures the concentration of oxygen dissolved in solution.

The wireless optical DO sensor measures the concentration of oxygen dissolved in solution. You can express oxygen concentration in milligrams per liter (or ppm).

Wireless DO sensors use the latest optical technology, making them easier to use.

- Accurate and low maintenance optical dissolved oxygen technology (luminescent quenching)
- Integrated (probe-mounted) waterproof pressure sensor
- Automatic temperature and pressure compensation
- Automatic salinity compensation with user-input conductivity/salinity concentration value
- Convenient sensor cap replacement with integrated calibration coefficients

Measurement of dissolved oxygen is essential for water quality, biology, earth science and chemistry experiments. The DO sensor helps you experiment with topics for each subject. You can measure by remotely connecting to a smart device or PC wirelessly or wired.

Suggested experiments

- Monitor dissolved oxygen in an aquarium containing different combinations of plant and animal species.
- Measure changes in dissolved oxygen concentration resulting from photosynthesis and respiration in aquatic plants.
- Use this sensor for an accurate on-site test of dissolved oxygen concentration in a stream or lake survey, in order to evaluate the capability of the water to support different types of plant and animal life.
- Measure Biological Oxygen Demand (B.O.D.) in water samples containing organic matter that consumes oxygen as it decays.
- Determine the relationship between dissolved oxygen concentration and temperature of a water sample.

Composition

The wireless Optical DO sensor consists of the following.

- Wireless Optical DO sensor (P4518-DO)
- USB-A/C cable
- Booklet

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.

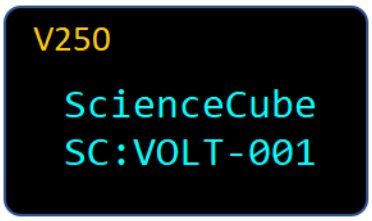
④ Sensing part : Contains sensors that detect dissolved oxygen and is protected with a sensor cap.

Caution : Do not use the sensor near fire or explosive gases. High concentrations of contaminants can permanently damage 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.

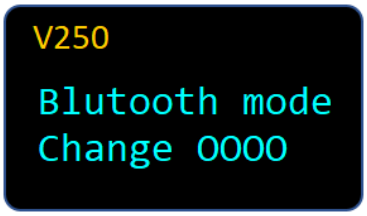
Start screen



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)

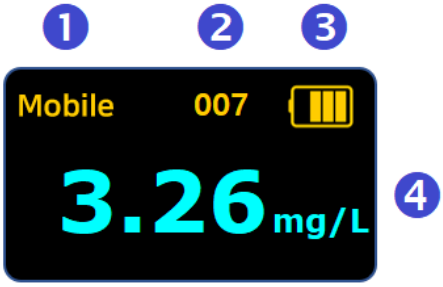
Mode change



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**	1) Displays sensor measurement values and units in real time. 2) If **user calibration** is used, **U0** or **UC** will be displayed above the units. 3) For sensors with **multiple ranges**, the current range is displayed. 4) For **multiple sensors**, the values for each sensor type are displayed.

Storage and maintenance

- Probe maintenance includes cleaning the sensor cap, as well as the proper conditioning, preparation, and storage of the test system.
- When the probe is not in use, it is highly recommended to store the probe with its sensor cap installed and the calibration/storage bottle which was included in the original packaging, threaded onto the probe. A beaker of clean water or a moist/humid capping mechanism can also suffice if the calibration/storage bottle is not available. The sponge inside the calibration/storage bottle should be kept moist for best results.
- Avoid sensor cap touching organic solvent, scratching, and abusive collisions to strengthen and lengthen the working life of the sensor cap. Special care should be taken to clean the coating of cap, to dip probe and cap in fresh water, and then to tap dry the surface with a tissue. Do not wipe the coating surface.
- Replace the sensor cap, if the cap coating is faded or stripped away. **DO NOT touch the clear window on the probe tip after unscrewing the old cap**. If any contaminants or residue are present on the window or inside the cap, carefully remove them with a powder free wipe. Then re-screw the new sensor cap onto the probe.

Specifications

Item	Description
Range	0 ~ 50 mg/L (ppm)
Resolution	0.01 mg/L
Sampling Time	Max. 100Hz (0.01 sec.), (Typical 1Hz)
Condition	0 ~ 50℃, ~85%RH
Wireless Connection	Bluetooth 5.0 or Classic 2.1
Wired Connection	USB-C
Battery	700mAh Li-Polymer rechargeable
Charging Time	within 2 hours
Operating Time	Approximately 6 hours after full charge (depending on usage conditions)
EMC	CE : EN 61326-1, EN 55011, EN 55032, EN 301

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.

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

GET IN ON Google Play

Download on the App Store

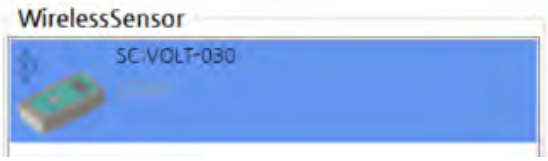
Features

- 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.

Rev. WL118DO-12-2023

Copyright (c) Korea Science Digital Co., Ltd. All rights reserved. The contents of this manual are for informational purposes only and we cannot be held responsible for errors or misleading information that may appear in this manual. The specifications and functions of the product are subject to change without prior notice.

ScienceCube and ScienceCube are registered trademark of Korea Digital Co., Ltd.

Science Cube Light, Science Cube Pro, Free Linker, and Max are trademarks of Korea Digital Co., Ltd.

Windows and Excel are registered trademarks or trademarks of MicroSoft.

All other trademarks are the property of their respective owners.