SOUND LEVEL SENSOR W50

USER GUIDE

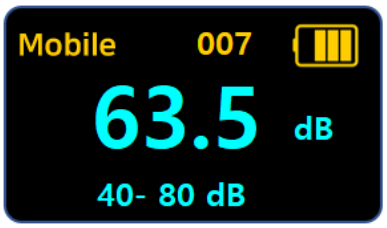
cma-science.nl

Short description

CMA Wireless Sound level sensor W50 measures sound pressure levels in decibels (dB) using a condenser microphone. The microphone converts sound waves into an electrical signal, which is processed and displayed as a sound level reading. It supports A-weighting (dBA) for human hearing response and offers adjustable measurement ranges for different environments.

The power button, located on the top of the right grip, allows you to turn the sensor on and off. The sensor is equipped with an OLED color display which shows sensor information and the measured values. This makes it suitable to use as a standalone measuring instrument.

The sensor can be used wirelessly via Bluetooth or wired via USB with the Coach 7 or Coach 7 lite programs/apps on computers (Windows and Mac), Chromebooks and mobile devices (Android and iOS).



Press the power button to adjust the measurement range. The selected range is displayed on the screen.
Press the button twice to rotate the display for easier reading when in use.

Calibration

The Sound Level sensor W50 is supplied calibrated with a factory calibration in dB. Additional calibration is not needed.

Software

You can use the Sound level sensor W50 with Coach 7 or Coach 7 Lite (free) program on computers (Windows and Mac) or Coach 7 and Coach 7 Lite (free) app on mobile devices (Android and iOS). For Chromebooks, we offer a special Android app. The support for the wireless Heart Rate sensor is added starting from Coach version 7.12.

Check the CMA website for the latest installations. https://cma-science.nl/downloads_en

Collecting data without software connection

1. Turn the Sound Level sensor W50 on by pressing its power button.
2. The sensor briefly displays its Bluetooth identification code. This ID code is also printed on the sticker located on the bottom side of the sensor box.
3. Then the display shows:
   - the Bluetooth mode, ‘Mobile’ or ‘PC’.
     Mobile indicates Bluetooth Low Energy mode which should be used when working with mobile devices (Android, iOS), Chromebook and Apple computers.
     PC indicates Bluetooth Classic which should be used for Windows computers.

- the battery level, and
- the current measured value.

4. Now you can use the sensor as an independent measuring instrument.
5. To turn off the sensor press and hold its power button for 3 sec. To save its battery the sensor automatically turns off after a few minutes of inactivity (no connection to power, no communication).

Collecting data via the Bluetooth connection

Mobile devices, Chromebooks, and Apple computers

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

1. Turn the Sound Level sensor on by pressing its power button.
2. Ensure your sensor is set to Mobile mode.
   If the display shows in the top-left corner 'PC' first you must set the sensor to the Mobile mode. 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' which means that Bluetooth Low Energy is used.
3. Start the Coach 7 or Coach 7 Lite program/app.
4. Select the Dashboard Activity 'Measurement with Wireless sensors'.
5. On opening of the Activity Coach starts searching for sensors which are turned on and in the Mobile mode. The found sensors appear in the list.
6. Select the Sound Level sensor you want to connect to. If needed check the sensor's Bluetooth ID which is located on the sensor's bottom label.
7. When the connection is established, the Bluetooth symbol will appear in the top-left corner of the sensor's display, and the sensor's icon will be displayed in Coach, showing the values measured by the sensor.
8. Now you are ready to use the Sound Level sensor for your measurement.

Windows computers

For Windows computers, Bluetooth Classic technology is used for wireless communication. Before you start to use the sensor for measurement in Coach **you have to pair it**.

1. Turn the Sound Level sensor on.
2. Ensure your sensor is set to PC mode.
   If the display shows in the top-left corner 'Mobile' first you must set the sensor to the PC mode. 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' which means that Bluetooth Classic is used.
3. Pair your sensor.
   - Go to the Windows Settings **Bluetooth and other devices** and select **Add Bluetooth or other devices**. Select **Bluetooth device**.

- Windows looks for Bluetooth devices and after a while lists discovered devices. The wireless sensors are listed with their Bluetooth IDs.
- Select the sensor you want to connect to. If needed check the sensor's Bluetooth ID which is located on the bottom label of your sensors.
- When the connection is successfully established Windows indicates that the sensor is paired and ready to go.
- Click **Done** to accept it. The sensor appears in the list of paired Bluetooth devices.

4. Start the Coach 7 or Coach 7 Lite program.
5. Select the Dashboard Activity 'Measurement with Wireless sensors'.
6. Coach starts searching and displays the list with detected sensors, even if they are not paired.
7. Select the Sound Level sensor you want to connect to. If needed check the sensor's Bluetooth ID which is located on the sensor's bottom label. If the sensor was not paired yet Coach will force you to pair the sensor first via Windows Settings.
8. When the connection is established, the Bluetooth symbol will appear in the top-left corner of the sensor's display, and the sensor's icon will be displayed in Coach, showing the values measured by the sensor.
9. Now you are ready to use the Sound Level sensor for your measurement.

Collecting data via the USB connection

The Sound Level sensor can also be used as a USB sensor for both Windows and Mac computers.

1. Turn the Sound Level sensor on.
2. Use the provided USB cable to connect the sensor to a USB port.
3. Start the Coach 7 or Coach 7 Lite program.
4. Select the Dashboard Activity 'Measurement with Wireless sensors'.
5. The connected Sound Level sensor should be detected automatically, and its icon appears on the first empty sensor position in the Wireless sensors panel.
6. When the connection is established the USB symbol appears in the top-left corner of the sensor's display and the icon shows measured data.
7. Now you are ready to use the Sound Level sensor for your measurement.

Charging a battery

An internal rechargeable battery (Li-Poly 3.7 V, 700 mAh) powers the sensor. The battery symbol located in the top-right corner of the sensor's display shows the battery level. When the battery level becomes critical, the battery gauge shows an empty battery. Use the provided cable to connect the sensor to a USB port for charging. A fully discharged battery requires up to 2 hours of charge time to become fully charged again. To prolong battery life, automatic power down turns the sensor off after a few minutes of inactivity.

To replace the battery, use **only** the approved rechargeable batteries provided by

CMA.

Suggested experiments

The Sound Level Sensor can be used in a variety of experiments, such as:

- Measuring sound levels in different environments
- Investigating the effect of distance on sound intensity
- Comparing sound levels of different sound sources
- Testing the effect of sound insulation
- Investigating the effect of frequency on sound intensity
- Investigating the logarithmic nature of the decibel scale.

Technical Specifications

Measurement range	40 ~ 80 dB 60 ~ 100 dB 80 ~ 120 dB
Resolution	0.1 dB
Maximal sampling rate	1 Hz
Condition	20 ~ 60 ℃, ~ 85 %RH
Display	OLED 0.96" (128*64 px)
Battery	Li-Poly Rechargeable Battery (3,7 V 700 mAh)
Battery life after full charge	Approximately 8 hours after full charge, battery life varies by use, configuration, temperature, and many other factors
Connection	Bluetooth 5, Low Energy (Mac, Android, iOS) Bluetooth 2.1, Classic (Windows) USB 2.0 (type C)
Bluetooth ID	W50SOUN-xxx

Warranty:

The Sound level sensor W02 is warranted to be free from defects in materials and workmanship for a period of 3 years from the date of purchase provided that it has been used under normal laboratory conditions. This warranty does not apply if the sensor has been damaged by accident or misuse.

The sensor battery is consumable and is warranted to be free from defects in materials and workmanship for a period of 12 months from the date of purchase.

Discard batteries according to local regulations.

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

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