

uno[®] next

Temperature Calibration Manual

VER 0.2



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Summary

Note: This document is for reference by engineering personnel only. Please do not distribute.

This document explains how to perform temperature calibration on UNOnext.

Bluetooth-enabled models such as UNO-6SW, UNO-7HW, and UNO-9SW are recommended to perform temperature calibration using the UNO APP. However, calibration can also be carried out using Modbus commands.

For BACnet-enabled models like UNO-7TB, it is recommended to use the BACnet tool for temperature calibration. However, calibration can also be performed using Modbus commands.

[Note] Performing a factory reset will clear the temperature calibration values. If necessary, after performing a factory reset, it is recommended to perform temperature calibration again.

Performing Temperature Calibration using the UNO APP

[Step 1] Verify that the UNO APP has been updated to the latest version.



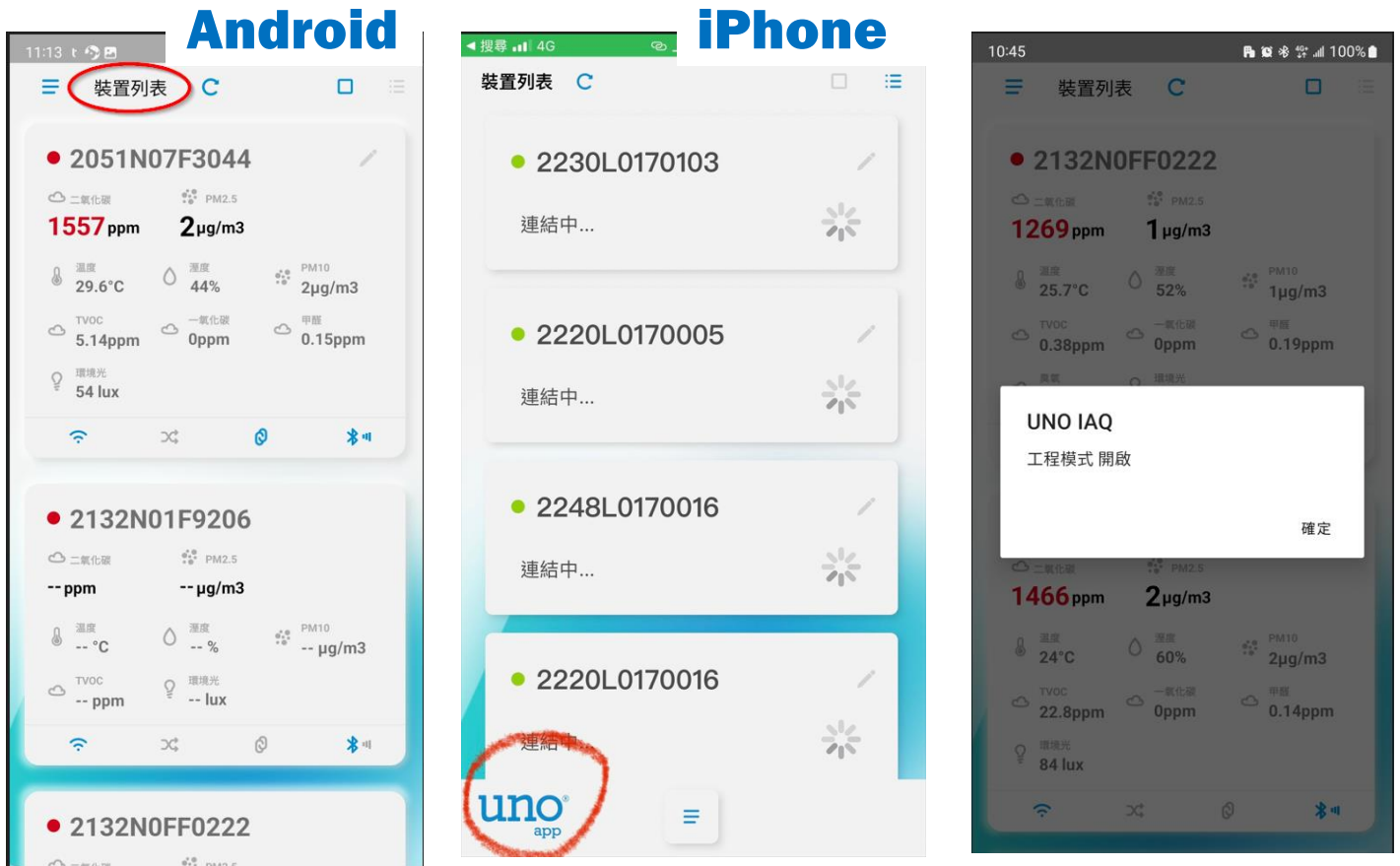
If you have not installed the UNO APP yet, please go to the market and search for "uno iaq" to install the UNO APP. If you have already installed it, please go to the market and ensure that the currently installed version is the latest one.

[Step 2] Ensure that UNOnext is installed at the intended location and powered on for at least 60 minutes.

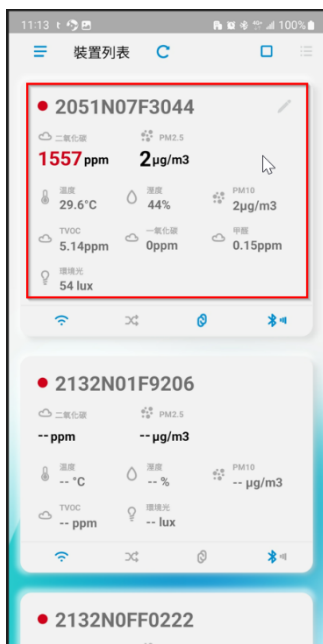
Before performing temperature calibration, it is necessary to install UNOnext at the intended location and power it on for at least 60 minutes. This ensures that the UNOnext device reaches a thermal equilibrium state.

[Step 3] Launch the UNO APP and enter Engineering Mode.

If you are using the Android version, open the UNO APP and tap the "Device List" five times to access Engineering Mode. A prompt message will appear upon successful activation of Engineering Mode. [For iPhone users, tap on the UNO APP icon in the lower-left corner. Please refer to the illustration below.]



[Step 4] Select the UNOnext device for which you want to perform temperature calibration.



[Step 5] Within Engineering Mode, navigate to the "Sensor Calibration" page and select the calibration option.

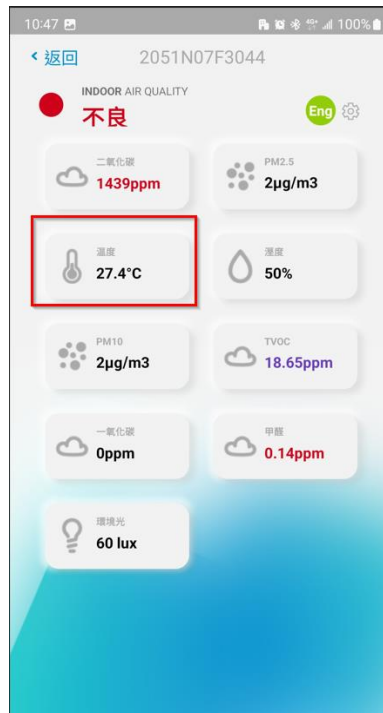


[Step 6] In the temperature calibration field, enter the reliable and accurate measured temperature value in Celsius (°C).

As shown in the following illustration, the reliable temperature measurement value is 27.4°C. After entering 27.4 in the temperature calibration field, click on "Sensor Calibration."



[Step 7] Wait for 1 minute for the temperature calibration to be completed.



After waiting for 1 minute, you will notice that the temperature calibration is completed. Return to the device interface, and you will see that the temperature is set to the calibrated value.

Performing Temperature Calibration using BACnet:

[Step 1] Please refer to the UNOnext BACnet User Manual for proper wiring instructions.

Please refer to the BACnet User Manual to configure the UNOnext BACnet device to the correct settings.

https://isdweb.deltaww.com/resources/files/UNOnext_bacnet_user_guide.pdf

[Step 2] Connect the device to the software capable of accessing BACnet objects and scan for all available objects.

In this document, DCI enteliWEB is used as an example. However, users can also use different software such as YABE to perform the operations.

The screenshot displays the enteliWEB interface. On the left, a network tree shows a hierarchy of devices, with 'UNOnext (3110044)' selected. The main panel shows the configuration for this device, including a table of BACnet objects.

Object	Name	Value
Inputs (9 Items)		
AI0	Temperature	25.1 °C
AI1	Humidity	54.77 %RH
AI2	PM2.5	1 µg/m ³
AI3	PM10	1 µg/m ³
AI4	CO2	1489 ppm
AI5	Light	66 lx
AI6	TVOC	0.207 ppm
AI7	Temperature_F	77.18 °F
AI8	IAQ	148
Values (6 Items)		
AV0	MAC Address	15
AV1	Temperature_Cali	0 °C
AV2	CO2_Cali	0 ppm
AV3	Set_OLED_Fahrenheit	0
AV4	Panel_Ctl	1
AV5	IAQ_LED_Ctl	1
Network and Device (1 Item)		
DEV3110044	UNOnext	Operational

At the bottom of the interface, it shows 'Objects: 16 | Selected: 0 | Auto Refresh: 5 Seconds'.

[Step 3] Write the desired temperature value (in Celsius) to the Temperature_Cali object for calibration.

As shown in the example below, if the reliable temperature measurement value is 24.4°C, writing 2440 to the Temperature_Calib object will calibrate the temperature of this UNOnext device to 24.40°C.

The screenshot shows a web interface for configuring a Temperature_Cali object. At the top, the object name is "Temperature_Cali (3110044.AV1)". The current temperature is displayed as "0 °C". A "Manual" dropdown menu is set to "Manual", and a text input field contains the value "2440". Below this, the "Alarm State" is "Normal". The "Configuration" section includes a "Name" field with "Temperature_Cali", "Units" set to "°C", and an "Out Of Service" checkbox that is unchecked. The "Intrinsic Alarm" section also shows an "Alarm State" of "Normal".

[Step 4] Wait for 1 minute, then confirm if the temperature calibration is completed by checking the temperature on the OLED screen of the UNOnext device.

Performing Temperature Calibration using Modbus Commands

[Step 1] Please refer to the UNOnext Modbus User Manual for proper wiring instructions.

https://isdweb.deltaww.com/resources/files/UNOnext_ModbusRTU_chn.pdf

[Step 2] Connect the device to the software capable of accessing Modbus objects.

Use software capable of operating Modbus, such as SSCOM, to connect to the device.

[Step 3] Calculate the required temperature correction value and write it to the calibration register.

The calculation method for temperature difference is as follows:

1. Read the current temperature value of the device: **T1**. (Read Reg: 0x000A - 4500)
2. Read the current temperature difference of the device: **T2**. (Read Reg: 0x000B)
3. Obtain a reliable temperature measurement value: **T3** (Read from reliable temperature measurement)
4. Calculate the temperature difference after calibration ◦
 $\Delta T = T1 + T2 - T3$ (If $\Delta T > 900$, writing is not allowed)
5. Write ΔT to Reg 0x0006 ◦ (Write Reg: 0x0006)

Example: If UNOnext reads a temperature of 22°C and the temperature difference is 440, while a third-party thermometer reads a temperature of 24°C, the steps to calibrate UNOnext to 24°C are as follows:

1. T1 : 0x0A value is 6700 – 4500 = 2200
2. T2 : 0x0B value is 440
3. T3 is 2400
4. $\Delta T = 2200 + 440 - 2400 = 240$
5. Write 240 to reg 0x0006

[Step 4] Wait for 1 minute, then check the temperature on the OLED screen of UNOnext to confirm if the temperature calibration is completed.

