

uno[®]
lite

BACnet User Guide

VER 0.2



【Revision】

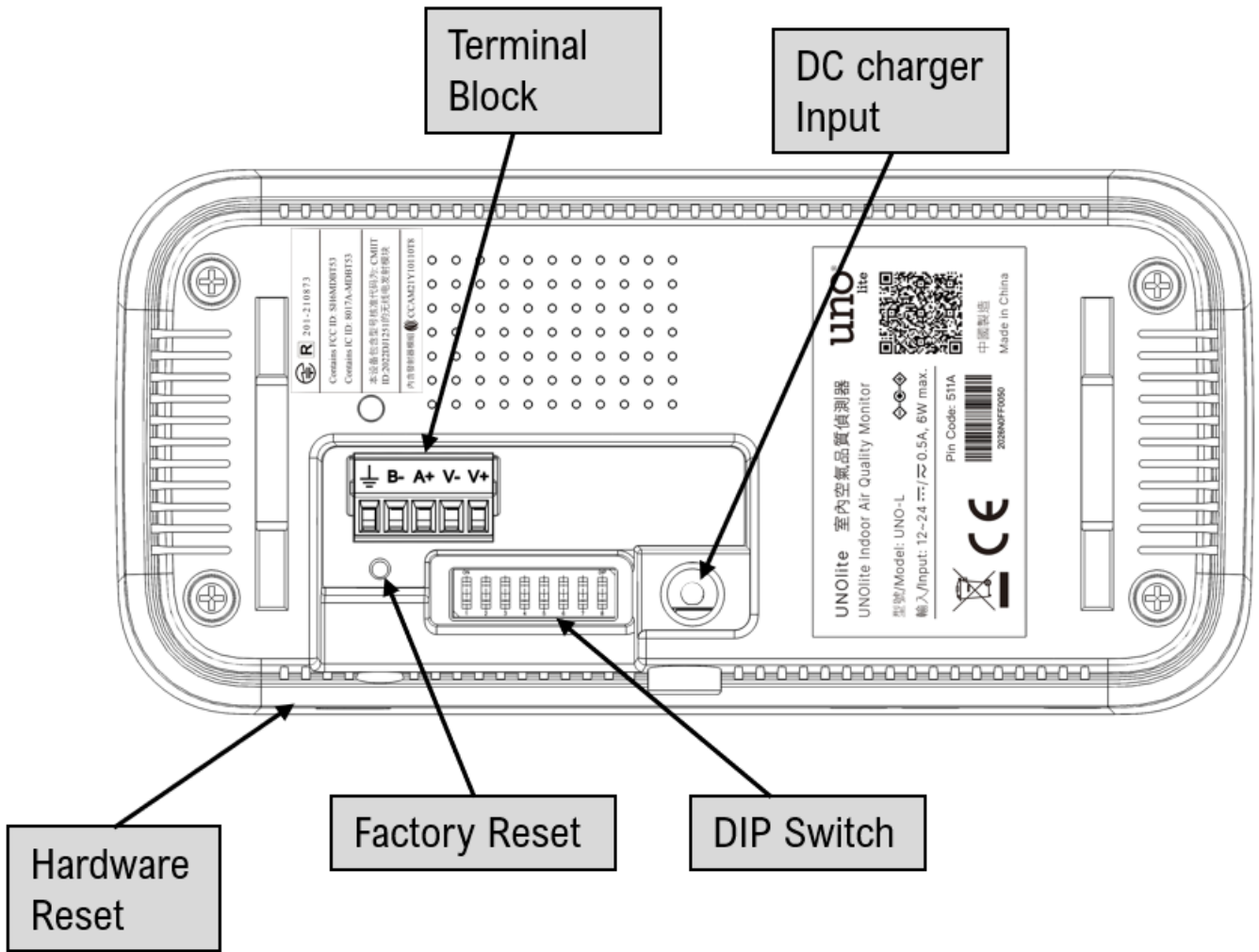
Date	Version	Description
2022/ 11 / 11	0.1	Initial Version
2022/ 02 /08	0.2	1. Add Particle Matter sensor calibration 2. Add Customized IAQ LED threshold

【Overview】

unolite is an indoor air quality monitor to measure the space temperature / humidity / CO2 / PM2.5 / PM10 / PM1 / TVOC and expose the measurements directly onto a BACnet MS/TP or Modbus RTU network. Moreover, the measurements are also accessible with UNO apps through BLE or UNO web through Wi-Fi (Wi-Fi model). Please refer to unolite official website for more information.

This document is primarily concerned how to add unolite to BACnet MS/TP or Modbus network.

【Hardware Interface】



Buttons

Key	Description
Hardware reset	Push this button will trigger a power cycle.
Factory reset	<p>After booting, press this button three times within 2 seconds will trigger factory reset. The values below will be restored to default:</p> <ul style="list-style-type: none"> ◆ Modbus baudrate ◆ BACnet saved mac address ◆ Wi-Fi MQTT broker setting (Wi-Fi model)

NOTE: It's recommended to use a paper clip to press the keys.

Terminal block

Terminal	Description
V+	Power input. For more information, please refer to production specification.
V-	Power input. For more information, please refer to production specification.
A+	RS485(+) data pin. For Modbus/BACnet network.
B-	RS485(-) data pin. For Modbus/BACnet network.
GND	Ground terminal. Each RS485 driver in an installation is recommended to connect to the same ground to get a common reference.

DIP switch

DIPs	Description	ON	OFF
1 - 6	Refer to the later sections for the definition of each pin	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	BACnet mode switch. ON : BACnet mode OFF : Modbus mode	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	RS485 terminator resistor (120 ohm)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

NOTE: The dips should be adjusted to proper position in power off state. **Adjust the dips, then power on device.**

【BACnet mode】

unolite will run on BACnet MS/TP mode if the 7th pin is set to ON state.

The definition of the dips in BACnet mode as listed below:

DIP	Description	ON	OFF
1	BACnet slave position[3] <i>(check address table)</i>		■
2	BACnet slave position[2] <i>(check address table)</i>		■
3	BACnet slave position[1] <i>(check address table)</i>		■
4	BACnet slave position[0] <i>(check address table)</i>		■
5	BACnet MS/TP baudrate[1] <i>(check Baudrate table)</i>		■
6	BACnet MS/TP baudrate[0] <i>(check Baudrate table)</i>		■
7	BACnet mode switch. ON : BACnet mode OFF : Modbus mode	■	
8	RS485 terminator resistor (120 ohm)		■

NOTE: The definitions of dip are different from Modbus mode. Please make sure which mode is chosen.

BACnet MS/TP address and baudrate :

BACnet Address Table

Dip				BACnet MAC address
1	2	3	4	
↓	↓	↓	↓	0x00 [0]
↓	↓	↓	↑	0x01 [1]
↓	↓	↑	↓	0x02 [2]
↓	↓	↑	↑	0x03 [3]
↓	↑	↓	↓	0x04 [4]
↓	↑	↓	↑	0x05 [5]
↓	↑	↑	↓	0x06 [6]
↓	↑	↑	↑	0x07 [7]
↑	↓	↓	↓	0x08 [8]
↑	↓	↓	↑	0x09 [9]
↑	↓	↑	↓	0x0A [10]
↑	↓	↑	↑	0x0B [11]
↑	↑	↓	↓	0x0C [12]
↑	↑	↓	↑	0x0D [13]
↑	↑	↑	↓	0x0E [14]
↑	↑	↑	↑	0x0F [15]

BACnet Baudrate Table

Dip		baudrate
5	6	
↓	↓	76800
↓	↑	9600
↑	↓	19200
↑	↑	38400

BACnet Object Table

Type	Identifier	Name	Unit	Descriptions
Analog Input	AI-0	Temperature	°C	Range: 0.00 - 50.00
	AI-1	Humidity	%	Range: 10.00 - 80.00
	AI-2	PM2.5	µg/m³	Range: 0 - 1000
	AI-3	PM10	µg/m³	Range: 0 - 1000
	AI-4	PM1	µg/m³	Range: 0 - 1000
	AI-5	CO2	ppm	Range: 400 - 5000
	AI-6	Temperature_F	°F	Range: 32.00 - 122.00
	AI-7	TVOC	ppm	Range: 0 – 30.00
	AI-8	IAQ index	-	<p>Give an index according to current PM and CO2 concentration. The index also be referenced by IAQ LED:</p> <ul style="list-style-type: none"> ♦ GREEN: 0-80 ♦ YELLOW: 81-100 ♦ RED: 101-400 ♦ PURPLE: 400
Analog Value	AV-0	MAC Address	-	<p>Range: 0 – 127</p> <p>Set value on this object to configure the MAC address. The MAC address will be saved and overwritten the dip setting. The saved value will be cleaned by factory reset or write 255 to this object.</p> <p>Device will reboot after writing on this object</p>

Analog Value	AV-1	Temperature_Cali	°C	<p>Range: 0 – 5000</p> <p>Write the ambient temperature(°C) to calibrate unolite’s temperature.</p> <p>EX: unolite’s temperature is 23°C, write 2300 to this object will calibrate unolite’s temperature to 23°C</p>
	AV-2	CO2_Cali	ppm	<p>Range: 400 – 1500</p> <p>Writing the current CO2 value to this node to calibrate unolite’s CO2. It will take effect within 10 seconds. Write to this node will disable CO2 ASC.</p>
	AV-3	CO2_ASC	-	<p>CO2 Automatic Self-Calibration mode.</p> <p>By default, CO2 sensor ASC mode is running and the value presents “1”.</p> <p>When the CO2_Cali have been written, the ASC mode will be disabled and the value will present “0”.</p> <p>You still can activate ASC mode by this node.</p>
	AV-4	IAQ_LED_Ctl	-	<p>The switch of IAQ indicator.</p> <p>Set value to 0 to disable the IAQ indicator.</p> <p>Set value to 1 to enable the IAQ indicator.</p>
	AV-5	PM_Cali	-	<p>Range: 20 – 1000</p> <p>give a reference value of PM2.5 levels in µg/m3.</p> <p>The calibration also applies to PM1 and PM10 measurement.</p> <p>9999: reset to default</p>

	AV-6	EN_CUS_IAQ	-	Enable IAQ LED customized threshold feature. if any measurement is larger than its threshold, the IAQ LED will turn to red light.
	AV-7	IAQ_PM25	-	The IAQ LED threshold of PM2.5.
	AV-8	IAQ_PM10	-	The IAQ LED threshold of PM10.
	AV-9	IAQ_CO2	-	The IAQ LED threshold of CO2.

NOTE: The property "Out of Service" of sensor object means the health state of sensors. If "Out of service" is true, try to power cycle device to recover it.

BACnet Device information	
Object Name	Descriptions
Model Name	"UNOLite"
Max Master	127
Application Version	The firmware version of unolite version
Object Identifier	The identifier number is composed of serial number. EX: The SN of unolite is 2301L0170040. Then the BACnet object identifier number will be 3010040.
Vendor Name	Delta

【DIP example】

Num	1	2	3	4	5	6	7	8
ON	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
OFF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Here is an example to demonstrate how to configure your unolite:

The pin 8 is ON, the 120ohm terminator resistor is enabled.

The pin 7 is ON, the unolite will run on BACnet mode.

The pin 5/6 is OFF/OFF and check the baudrate table, unolite will run on 76800

The pin 1/2/3/4 is ON/ON/ON/OFF and check the address table, the MAC address of unolite is 0xE(14)

【Modbus mode】

If the DIP-7 stays on OFF state, unolite will run on Modbus mode. Please refer to unolite Modbus document for more information.

