# Delta Electronics, Inc.

UNOnext UNO-7TB

Troubleshooting: RS485

V20220225

RS485

UNOnext UNO-7TB supports Modbus RTU and BACnet MS/TP via RS485, and these two protocols run simultaneously. Following the document: UNOnext BACnet use guide, the *Building Management System* (BMS) system retrieves the UNOnext data RS485 interface. If there is any trouble, please check the items below to verify the environment and device settings in the RS485 bus. All referred documents can be found at https://isdweb.deltaww.com/resources.
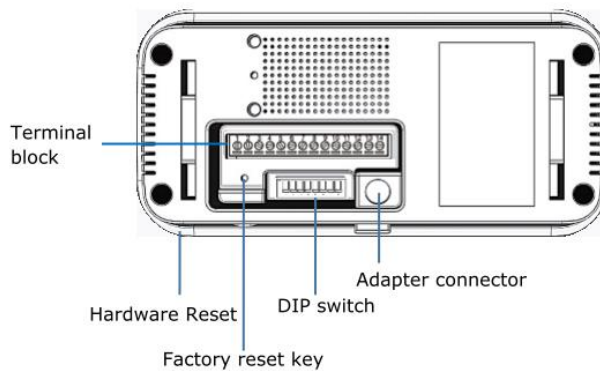
Terminal Block		
Pin	Name	Definition
1	GND	Ground
2	AI1	NTC
3	AI2	Reserved
4	NO4	Reserved
5	NO3	Reserved
6	NO2	Reserved
7	NO1	Reserved
8	B2	Modbus slave B
9	A2	Modbus slave A
10	B1	BACnet MS/TP B
11	A1	BACnet MS/TP A
12	GND	Ground
13	Vin	9-24 V DC input
14	Vout	9-24 V DC output

Dip Switch			
Num	Definition	ON	OFF
1	RS485 terminator resistor		■
2	Modbus/BACnet slave position[3]		■
3	Modbus/BACnet slave position[2]		■
4	Modbus/BACnet slave position[1]		■
5	Modbus/BACnet slave position[0]		■
6	BACnet baudrate [1]		■
7	BACnet baudrate [0]		■
8	Night mode		■

1. The above are the default states of the DIP switches
2. Modbus and BACnet use the same dips to set the address. Refer to the address table for more information
3. Set Dip [1] ON will enable the 120 ohm on RS485
4. The dips must be adjusted to properly position in power off state
5. **Night mode 'ON' will turn off the IAQ indicator and OLED sensor panel**

Environment Settings

1. Check for correct power from the 9-24V DC input or adapter is correct. The requirement of Adapter is output

   12VDC/1A. Please refer to Quick start guide about the mechanical specification of mechanical.

   If the power supply is normal and the UNOnext hardware is normal, the power led is on. If the power supply

   is normal but the power led is not on, **please send UNOnext back for repair.**
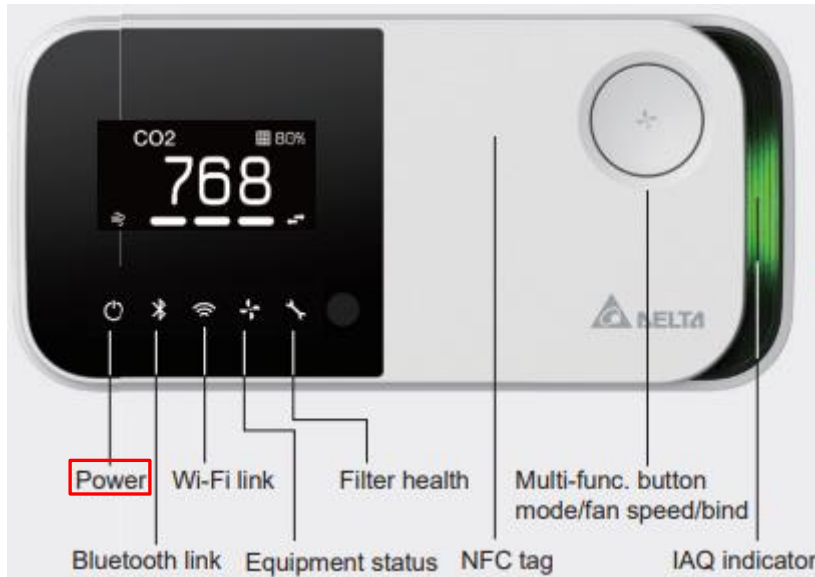
2. For Modbus RTU, check that the A2 (+) and B2 (-) are properly connected to Modbus RTU client.

3. For BACnet MS/TP, check that the A1 (+) and B1 (-) are properly connected to BACnet MS/TP client.

4. Check the cable specifications.

   It is recommended to use **a 22AWG/24AWG multi-core shielded twisted pair cable** or above to achieve the

   best performance for UNOnext.

5. Check that the signal and power wire are in the same conduit or not.

   It is recommended to **separate the signal and power wire into separate conduit**. Or use the individual power

   supply for UNOnext.

   Please refer the following suggested RS485 wire specs:

Twisted Pair Cable

● 22-24AWG twisted pair, shielded jacketed communication cable.
● Characteristic impedance of 100-120 ohms.
● Capacitance of 17 pF/ft conductor-to-conductor or less. 18AWG cable does not meeting this specification.
● Braided or aluminum foil shield.
● Velocity of propagation of 66% or higher.

Example compatible cable products are Belden 9841, Belden 82841 and Windy City Wire 42002-S

Device Settings

1. Check the Modbus RTU slave address and BACnet MAC address settings.

   The Modbus RTU slave address and BACnet MAC Address are set by DIP switch from [2] to [5] in the back of UNOnext. The DIP definition of address is shown as below table.

Modbus Salve Address		BACnet MAC Address		PIN No. of DIP switches			
Decimal	Hexadecimal	Decimal	Hexadecimal	2	3	4	5
208	0xD0	0	0x00	↓	↓	↓	↓
209	0xD1	1	0x01	↓	↓	↓	↑
210	0xD2	2	0x02	↓	↓	↑	↓
211	0xD3	3	0x03	↓	↓	↑	↑
212	0xD4	4	0x04	↓	↑	↓	↓
213	0xD5	5	0x05	↓	↑	↓	↑
214	0xD6	6	0x06	↓	↑	↑	↓
215	0xD7	7	0x07	↓	↑	↑	↑
216	0xD8	8	0x08	↑	↓	↓	↓
217	0xD9	9	0x09	↑	↓	↓	↑
218	0xDA	10	0x0A	↑	↓	↑	↓
219	0xDB	11	0x0B	↑	↓	↑	↑
220	0xDC	12	0x0C	↑	↑	↓	↓
221	0xDD	13	0x0D	↑	↑	↓	↑
222	0xDE	14	0x0E	↑	↑	↑	↓
223	0xDF	15	0x0F	↑	↑	↑	↑

2. For Modbus RTU, check the UART settings.

   The UART settings for UNOnext as:

   - Baud: 9600 by default, also supports 38400, 57600, 115200 modified by Modbus RTU protocol. (See UNOnext BACnet use guide or UNOnext Modbus RTU)

   - Data-bit: 8

   - Parity: None

   - Stop-bit: 1

3. For BACnet MS/TP, check the UART settings.

    The baud rate of BACnet MS/TP UART settings is set by DIP switch [6] and [7]. Refer to the below table.

BACnet MS/TP Baudrate		
Baudrate	DIP	
	6	7
76800	↓	↓
9600	↑	↓
19200	↓	↑
38400	↑	↑

4. If the UNOnext daisy-chained for longer distances, please pull up the DIP switch [1] to enable RS485 terminal resister to try.

5. Try a factory reset.

    If the problem is still not solved after checking and modifying the above device settings, please try to restore the factory settings.

    METHOD: After booting, press the reset key three times duration one second to execute factory reset. After factory reset, all settings will be cleaned.

Note. If all actions do not resolve the problem, please contact your dealer for assistance.