Application Note AN020

Hub 2 Meter RS485 Wiring Guide

Connecting the Levelise Hub 2 to the Hub 2 Meter using RS485

Overview

Hub 2 monitors the output of the battery inverter using the Hub 2 Meter – a custom Eastron SDM230-NMI-2 single-phase energy meter supplied with Hub 2. The Hub 2 Meter must be installed in series with the battery inverter and connected to Hub 2 over RS485 for Hub 2 to function properly.

The SDM230-NMI-2 has two independent RS485 ports, which share a single six-way terminal block (terminals 5–10). Hub 2 must be connected to **terminals 8, 9 and 10 only**, using the Hub 2-Meter RS485 cable supplied in the box.

This note explains how to install the Hub 2 Meter in the battery inverter's AC supply and how to wire the Hub 2-Meter RS485 cable between the meter and Hub 2.

Important: Hub 2 and the Hub 2 Meter must be installed by a qualified electrician.

What You'll Need

- Hub 2 Meter (included with Hub 2)
- Hub 2-Meter RS485 cable (included with Hub 2)
- Suitably-rated enclosure with 35 mm DIN rail
- Small flat-blade and Pozi hand screwdrivers
- Wire cutters and strippers
- Bootlace ferrules and ferrule crimp tool (Recommended)
- Multimeter or cable tester (Recommended)

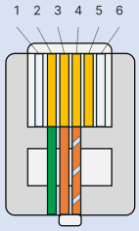
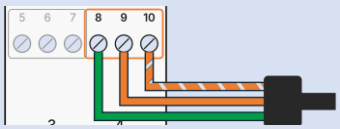
Compatible Models

- Levelise Hub 2 (LEV0002)
- Hub 2 Meter (Eastron SDM230-NMI-2 – supplied with Hub 2)

Quick Summary for Experienced Users

If you're confident, install the Hub 2 Meter in series with the battery inverter's AC supply and connect the 'Meter' end of the Hub 2-Meter RS485 cable using the tables below.
Do not modify the RJ11 (Hub) end:

RS485 connections

Wire	Hub End (RJ11 Connector – do not modify)	Hub 2 Meter End (Terminals)
		
Green (Ground)	**Pin 2**	**Terminal 8 (GND)**
Orange (RS485 B)	**Pin 3**	**Terminal 9 (B)**
Orange & white (RS485 A)	**Pin 4**	**Terminal 10 (A)**
Any other cores	Unused by Hub	Do not connect
–	Not present (pins 1 & 6)	Terminals 5, 6 & 7 – do not use

AC connections

Terminal	Function	Connect to
1	L-in (line in)	Line from the distribution board
2	L-out (line out)	Line to the battery inverter
3	N-in (neutral in)	Neutral from the distribution board
4	N-out (neutral out)	Neutral to the battery inverter

Confirm the Hub 2 Meter's Modbus settings match the values below (see AN010 Configuring the Hub 2 Meter):

Setting	Value
Modbus Address	**1**
Baud Rate	**19200**

Warning: Never use an impact driver or other power tool to tighten the Hub 2 Meter's terminal screws. The force can strip the screws or crack the terminal block and meter housing, damaging the meter. Tighten all terminals by hand using a correctly sized screwdriver.

Important: Terminals 5, 6 and 7 are the Hub 2 Meter's second RS485 port. Hub 2 will not communicate with the meter if the cable is connected to these terminals. Terminals 7 and 8 are both marked GND – the green wire must go to terminal 8.

Important: The meter's power reading must be positive when the battery charges and negative when it discharges. If the line (1, 2) or neutral (3, 4) connections are reversed, the Levelise app will report an issue with the battery meter.

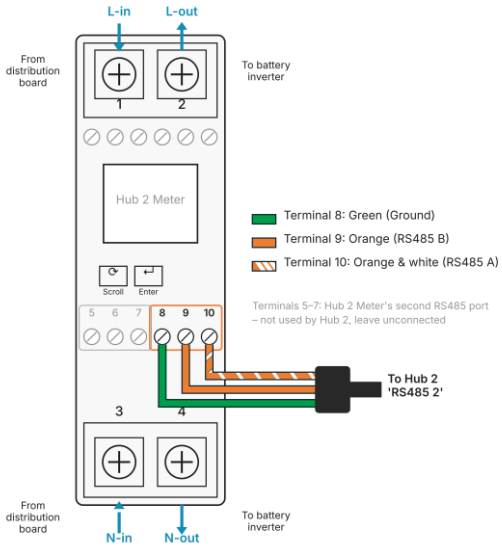
Important: Do not unwind the twisted orange and orange & white pair further than necessary, as this reduces its noise rejection and increases the likelihood of communication problems.

Otherwise, follow the detailed step-by-step instructions below.

Detailed Step-by-Step Guide

1. **Isolate the Supply**
   - Isolate the circuit supplying the battery inverter at the distribution board and prove it dead before starting work.
   - Follow the battery inverter manufacturer's shutdown procedure before disconnecting its AC connection.
     Important: Where these steps differ from or conflict with the manufacturer's instructions, the manufacturer's instructions take precedence.

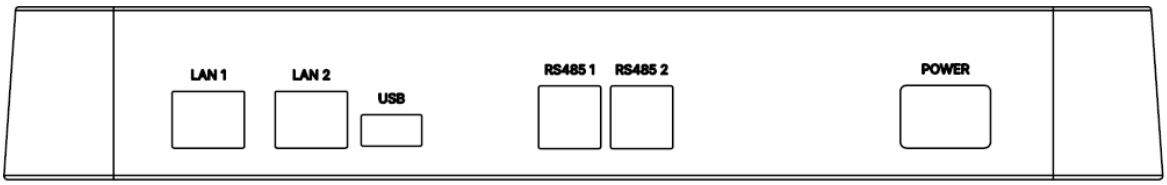
2. **Install the Hub 2 Meter**
   - Mount the Hub 2 Meter on a 35 mm DIN rail inside a suitably rated enclosure.
   - Connect the meter in series with the battery inverter's AC supply. Ensure:
     - **Terminal 1 (L-in)** is connected to the **line from the distribution board**
     - **Terminal 2 (L-out)** is connected to the **line to the battery inverter**
     - **Terminal 3 (N-in)** is connected to the **neutral from the distribution board**
     - **Terminal 4 (N-out)** is connected to the **neutral to the battery inverter**
   - Tighten terminals 1 to 4 **by hand** using a correctly sized screwdriver, then check that each conductor is held firmly and no bare conductor is visible.
     Warning: Never use an impact driver or other power tool to tighten the Hub 2 Meter's terminal screws. The force can strip the screws or crack the terminal block and meter housing, damaging the meter. Tighten all terminals by hand using a correctly sized screwdriver.
     Important: Only the battery inverter should be supplied through the Hub 2 Meter. Do not connect any other loads or generation to the meter terminals 2 and 4.



3. **Prepare the Meter End of the Cable**
   - Locate the end of the Hub 2-Meter RS485 cable labelled 'Meter'.
     Important: Only modify the 'Meter' end of the cable. Never cut, re-terminate or replace the RJ11 (Hub) end – poorly re-terminated RJ11 connectors cause unreliable communication with Hub 2. If the cable needs shortening or extending, make the change at the 'Meter' end.
   - If shortening the cable, cut it to length and strip ~30 mm of the outer sheath. Be careful not to nick the inner conductors.
   - Identify the **green**, **orange** and **orange & white** wires.
   - Strip enough insulation from each of these wires to fit fully into the meter terminals (or to suit the ferrules used).
   - Insert each stripped wire into an appropriately sized ferrule and crimp (Recommended).
     Important: Ensure any remaining unused cores are trimmed back and insulated to avoid shorting. Do not use spare cores in the RS485 cable for any other purpose.

4. **Connect the Cable to the Hub 2 Meter**
   - Route the cable into the enclosure through a suitable gland, keeping a gap of at least 50 mm between the RS485 cable and any power cables.
   - Loosen terminals 8, 9 and 10 on the Hub 2 Meter.
   - Ensure:
     - **Green wire (Ground)** is in **terminal 8**
     - **Orange wire (RS485 B)** is in **terminal 9**
     - **Orange & white wire (RS485 A)** is in **terminal 10**
   - Tighten each terminal **by hand** and gently pull each wire to confirm it is secure.
     Important: Do not connect the cable to terminals 5, 6 or 7 – these are the meter's second RS485 port and are not used by Hub 2.
     Important: Ensure the cable sheath enters the enclosure via the gland for strain relief.

5. **Connect the Cable to Hub 2**
   - Plug the unmodified RJ11 end labelled ‘HUB 2’ into the port marked **‘RS485 2’** on the underside of Hub 2.

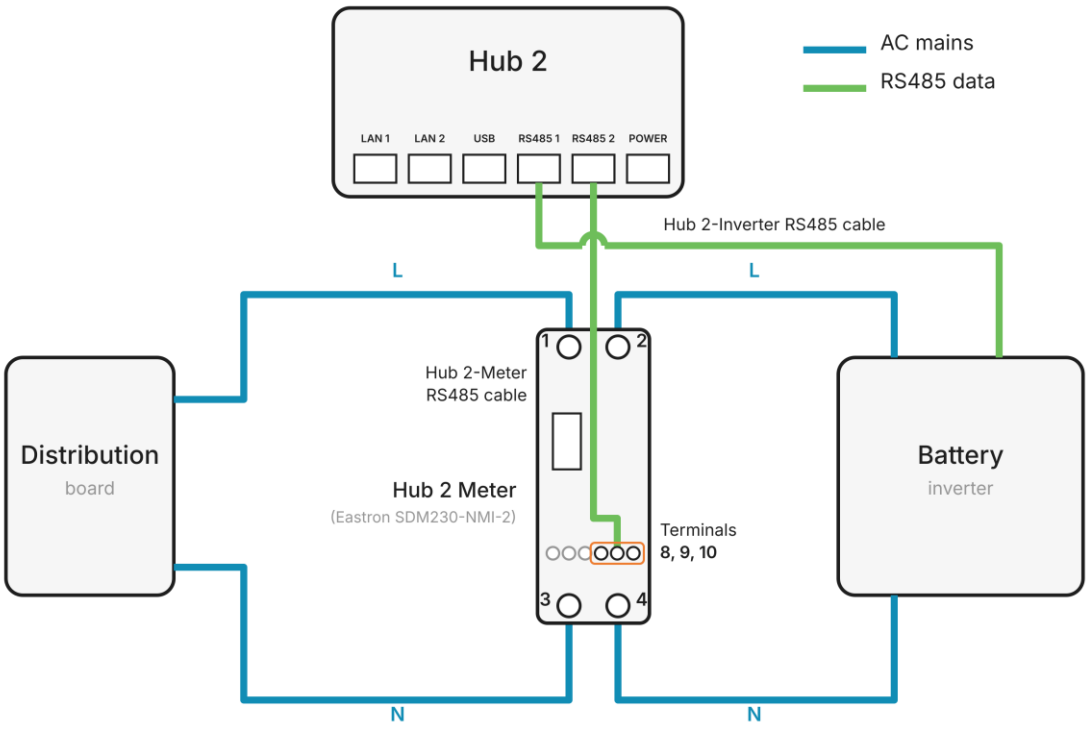


   - If using the Outdoor Kit, ensure all cable glands are properly sealed and the RS485 cables are not bent at the port.

6. **Check the Meter Settings**
   - Restore the supply. After initialisation and self-checking, the Hub 2 Meter briefly displays its settings and then the total kWh.
   - Confirm the Modbus address is **001** and the baud rate is **19.2** (19,200 bps). If either value is different, follow AN010 Configuring the Hub 2 Meter to correct it.

7. **Verify in the Levelise App**
   - Power on Hub 2 and complete installer commissioning in the Levelise app.
   - Confirm that the app shows Hub 2 communicating with the Hub 2 Meter.
   - Confirm the meter’s power reading is **positive** while the battery charges and **negative** while it discharges.

Example Wiring Diagram



Troubleshooting

Levelise app indicates Hub 2 cannot communicate with the Hub 2 Meter

- Check the RJ11 end is fully inserted into the Hub 2 port marked ‘RS485 2’ (not ‘RS485 1’).
- Check the cable is connected to terminals 8, 9 and 10 (not 5, 6 and 7), and that the orange and orange & white wires are not swapped.
- Check the continuity of the cable using a multimeter or cable tester.
- Check the meter’s Modbus address is 1 and baud rate is 19,200 (see AN010).
- If the meter still does not communicate after the checks above, RS485 channel 2 on the meter (terminals 8, 9 and 10) may be faulty. **Isolate the supply**, then

move the meter end of the cable to RS485 channel 1 (terminals 5, 6 and 7), ensuring:

- **Orange & white wire (RS485 A)** is in **terminal 5**
- **Orange wire (RS485 B)** is in **terminal 6**
- **Green wire (Ground)** is in **terminal 7**

- Note that the A/B order is reversed compared with terminals 8–10: RS485 A is on the **left-most** terminal of channel 1 but the right-most terminal of channel 2. Tighten the terminals by hand.
- Restore the supply, confirm the meter's Modbus address is 1 and baud rate is 19,200 (see AN010), then restart Hub 2 so that the meter is detected.

Levelise app indicates the Hub 2 battery meter has an issue

- Check the meter is wired with the correct polarity: terminal 1 to the supply from the distribution board and terminal 2 to the battery inverter (and likewise terminals 3 and 4 for neutral).
- Check that no loads or generation other than the battery inverter are connected through the meter.

Additional Resources

For the Hub 2 User Manual, Quick Installation Guide and other application notes, including AN010 Configuring the Hub 2 Meter, visit support.levelise.com

For more details on the SDM230-NMI-2, refer to Eastron's documentation at eastrongroup.com