Application Note AN013

Alpha ESS RS485 Wiring Guide

Connecting the Levelise Hub to the Alpha ESS SMILE-G3-S3.6/S5 using RS485

Overview

The Alpha ESS SMILE-G3-S3.6/S5 uses a different RS485 pinout to the RS485 cable included in the box with Hub 2, requiring a custom cable configuration.

This note explains how to modify the Hub 2-Inverter RS485 cable included with Hub 2.

What You'll Need

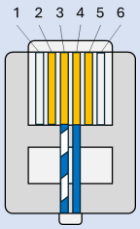
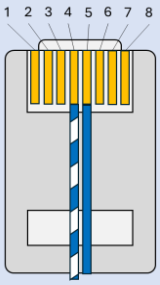
- Hub 2-Inverter RS485 cable (included in the box)
- 1x RJ45 connector
- RJ45 crimping tool
- Wire strippers
- Screwdrivers
- Cable tester

Compatibility

- Levelise Hub 2
- Alpha ESS SMILE-G3-S3.6/S5

Quick Summary for Experienced Users

If you're confident, use the following pinout reference table to make a new cable from scratch by terminating the required length of Cat5e cable with a RJ11 connector (included in the box) at one end and an RJ45 connector at the other:

Pin	**Hub End** (RJ11 Connector)	**SMILE-G3 End** (RJ45 Connector)
		
1	Not present	Unused by Hub
2	Unused by Hub	Unused by Hub
3	**Blue & white (RS485 B)**	Unused by Hub
4	**Blue (RS485 A)**	**Blue & white (RS485 B)**
5	Unused by Hub	**Blue (RS485 A)**
6	Not present	Unused by Hub
7	Not present	Unused by Hub
8	Not present	Unused by Hub

Otherwise, follow the detailed step-by-step instructions below to modify the Hub 2-Inverter RS485 cable provided.

Detailed Steps-by-Step Guide

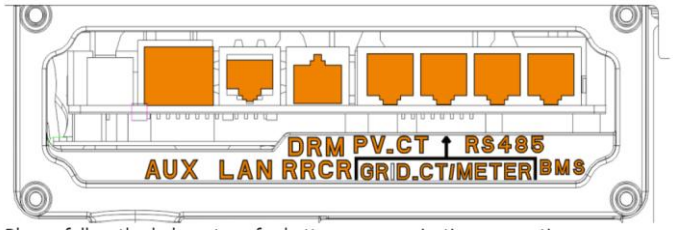
1. **Prepare the Cable**
   - Cut off the RJ45 connector from the Hub 2-Inverter RS485 cable using wire cutters.
   - Strip ~25mm of the outer sheath from the cut end.
   - Untwist and straighten the wire pairs.

2. **Rearrange the Wires**
   - Align wires from left to right according to the SMILE-G3 pinout table above.
   - Ensure:
     - **Blue wire (RS485 A)** is in **position 5**
     - **Blue & white wire (RS485 B)** is in **position 4**; and

3. **Terminate the Cable**
   - Trim wires evenly, leaving ~12mm exposed.
   - Insert wires into the RJ45 plug, ensuring full insertion and correct alignment as shown below.
     Important: Ensure the cable sheath also enters the plug slightly for strain relief.
   - Crimp the connector securely.
   - Use a cable tester to verify continuity and pinout (Recommended).

4. **Connect the Cable**
   - Loosen waterproof communications port cover (9) on inverter's left side*.

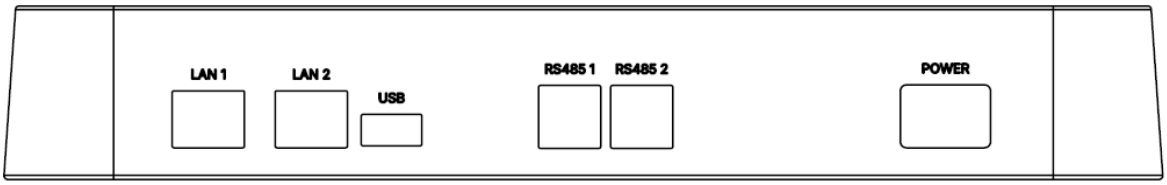
   - Feed the modified RJ45 through cable gland and plug into the RS485 port.



   - Reattach cover and tighten gland for sealing.

* IMPORTANT: Where these steps differ from or conflict with the manufacturer instructions, the manufacturer's instructions take precedence

- Plug the unmodified RJ11 end into the port marked ‘RS485 1’ on Hub 2.



- If using the Outdoor Kit, ensure all cable glands are properly sealed.

Additional Resources

For more details on the SMILE-G3 system, refer to Alpha ESS’s documentation at alpha-ess.co.uk