

Application Note AN002

Alpha ESS RS485 Wiring Guide

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

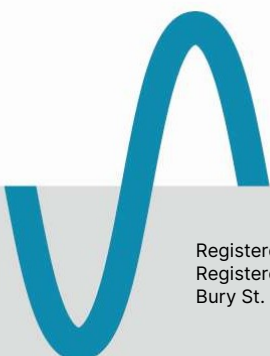
Overview

The Alpha ESS SMILE-G3-S3.6/S5 uses a different RS485 pinout to the RS485 cable included in the box with Hub 1.5, requiring a custom cable configuration.

This note explains how to simply prepare and install a compatible cable by modifying any standard Cat5e Ethernet patch cable.

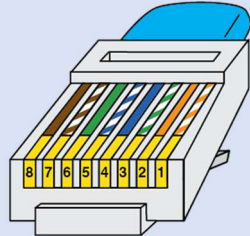
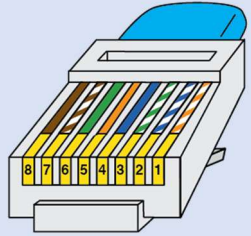
What You'll Need

- A TIA/EIA-568-B compliant Cat5e Ethernet patch cable of the required length
- 1x RJ45 connector
- RJ45 crimping tool
- Wire strippers
- Screwdrivers
- Cable tester



Quick Summary for Experienced Users

If you're confident with RJ45 terminations, use the following pinout reference table to rewire one end of a standard ethernet patch cable:

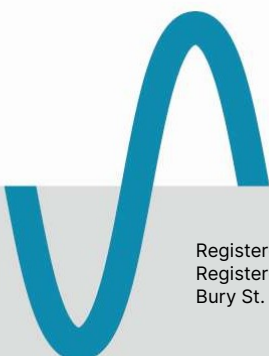
RJ45 Pin	Hub End (Standard)	SMILE-G3 End (Custom)
		
1	White/Orange	White/Orange
2	Orange (RS485 A+)	White/Blue
3	White/Green	White/Green
4	Blue (RS485 B-)	Blue (RS485 B-)
5	White/Blue	Orange (RS485 A+)
6	Green	Green
7	White/Brown	White/Brown
8	Brown	Brown

Tip: The Hub end of the cable uses a standard Ethernet configuration and does not need modification.

Detailed Steps-by-Step Guide

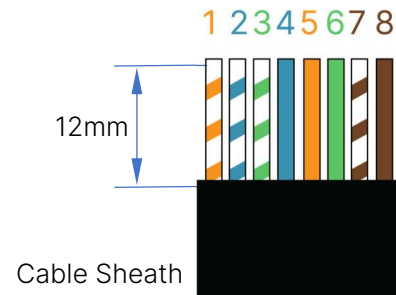
1. Prepare the Cable

- Cut off one RJ45 connector from the ethernet patch 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 B-)** is in **position 4**
 - **Orange wire (RS485 A+)** is in **position 5**

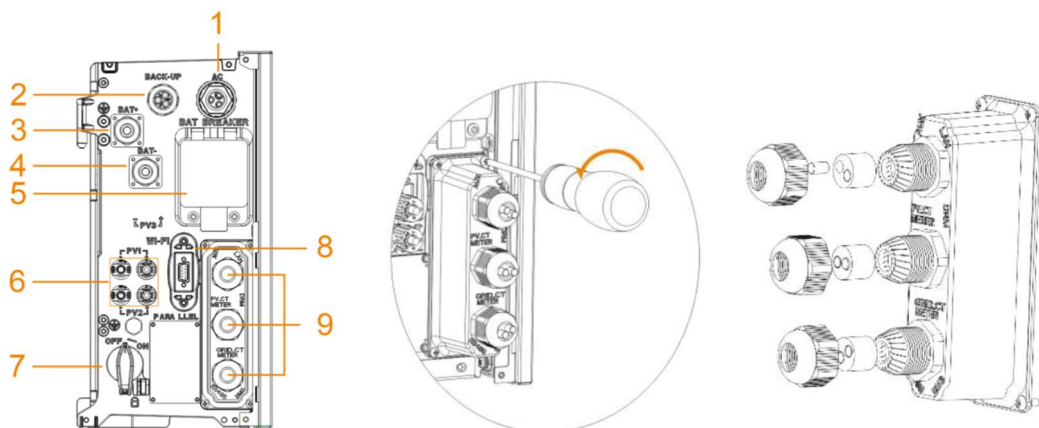


3. Terminate the Cable

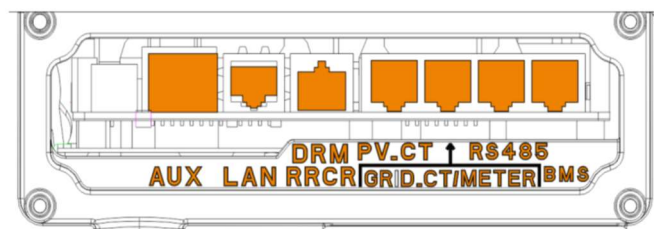
- Trim wires evenly, leaving ~12mm exposed.
- Insert wires into the RJ45 plug, ensuring full insertion and correct alignment as shown below.
- **Important:** Ensure the cable sheath also enters the plug slightly for strain relief.
- Crimp the connector securely.
- Use a cable tester to verify continuity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

4. Connect the Cable

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

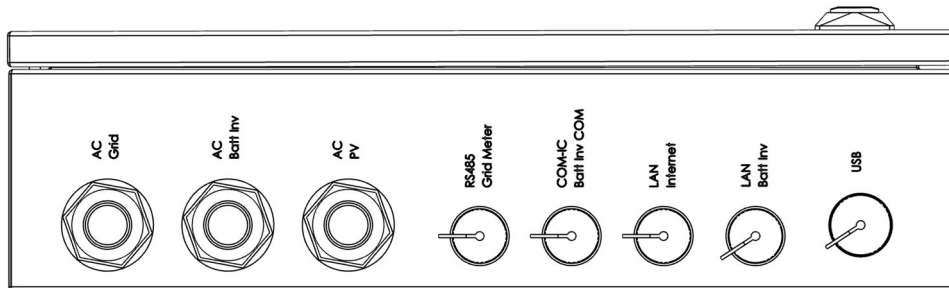


- Feed the modified RJ45 through cable gland and plug into the RS485 port.



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

- Reattach cover and tighten gland for sealing.
- Plug the unmodified RJ45 end into 'COM-IC Batt Inv Com' port on Hub.



- For outdoor use, 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

