Application Note AN009

Fox ESS RS485 Wiring Guide

Connecting the Levelise Hub to the Fox ESS H1-G2 hybrid inverter using RS485.

Overview

The Fox ESS H1-G2 hybrid inverter uses a proprietary, multipurpose communications connector that combines the RS485, meter and CT connections into a single plug for the inverter. Consequently, a custom-made RS485 cable must be used instead of the RS485 cable included in the box with the Levelise Hub 1.5.

This application note explains how to simply prepare and install a suitable RS485 cable by modifying any standard Cat5e Ethernet patch cable.

What You'll Need

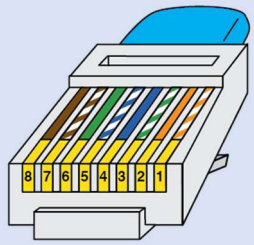
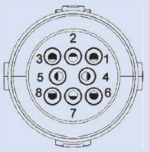
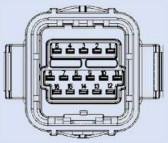
- A TIA/EIA-568-B compliant Cat5e Ethernet patch cable of the required length
- The Fox ESS 8- or 16-pin communication connector provided with the inverter
- Wire strippers
- Screwdrivers

Compatibility

- Levelise Hub 1.5
- Fox AC1/H1-3.7-E-G2 and ECS2900 batteries
- Fox AC1/H1-3.7-E-G2 and EP6 batteries

Quick Summary for Experienced Users

If you're confident, use the following pinout reference table to rewire one end of a standard patch cable into the H1-G2 communication connector:

Connector Pin	**Hub End** (Standard TIA/EIA-568-B RJ45)	**H1-G2 End** (Proprietary Connector)
		 or 
1	White/Orange	Unused by Hub
2	**Orange (RS485 A+)**	Unused by Hub
3	White/Green	**Blue (RS485 B-)**
4	**Blue (RS485 B-)**	**Orange (RS485 A+)**
5	White/Blue	Unused by Hub
6	Green	Unused by Hub
7	White/Brown	Unused by Hub
8(-16)	Brown	Unused by Hub

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 ~30mm of the outer sheath from the cut end.
   - Untwist and straighten the wire pairs.

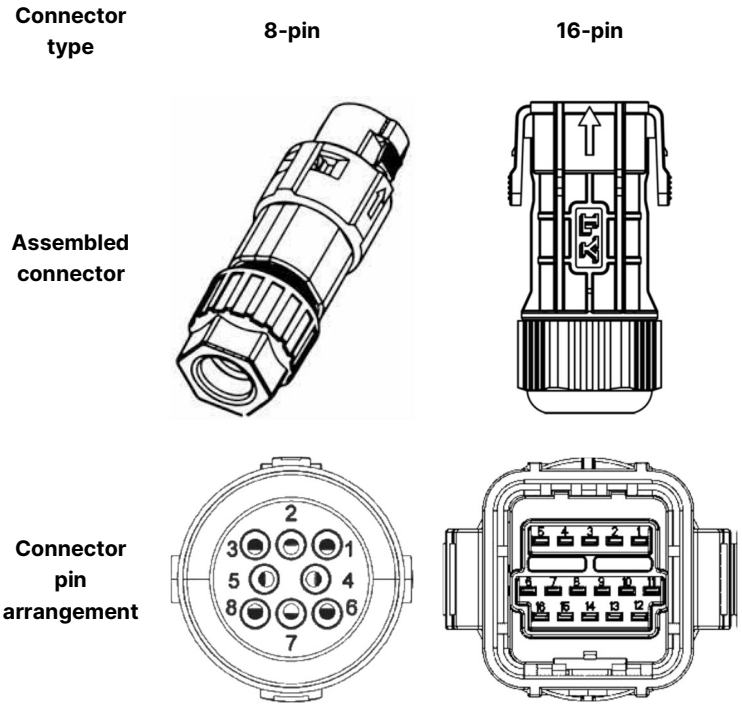
- Trim wires evenly, leaving ~25 mm exposed.
- Identify the orange and blue wires.
- Strip about 5 mm of insulation from the orange and blue wires.

  Important: Ensure that the remaining unused wires are appropriately trimmed and/or terminated to avoid shorting.

- Insert each stripped wire into an appropriately sized ferrule and crimp.

2. Prepare the Fox ESS Connector*

- The Fox ESS H1-G2 inverter is provided with either an 8- or 16-pin communications connector that plugs into the 'METER/CT/RS485' port on the underside of the inverter.
- Locate the 8- or 16-pin connector (see below).



- Carefully loosen the connector gland and remove the connector end from its housing.

3. Terminate the Cable

- Feed the cable through the gland on the connector housing.

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

- Push the **orange** and **blue** ferruled wires, corresponding to **RS485 A+** and **RS485 B-,** into terminals 4 and 3 respectively.

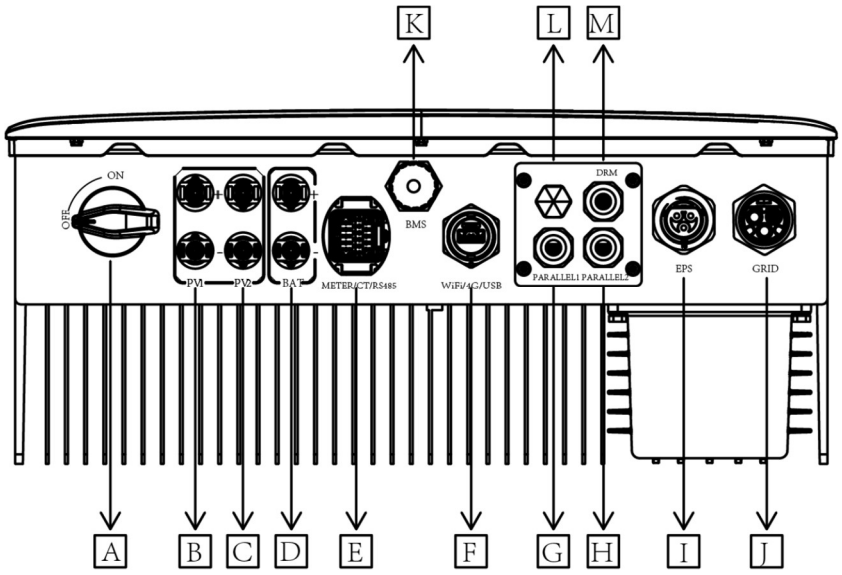
  Important: If the connector uses screw terminals, loosen and then retighten the screws before and after inserting. If the connector uses spring clamps, press gently with a screwdriver to open the clamp before inserting.

- Reassemble the connector to its housing and tighten the cable gland for proper sealing.

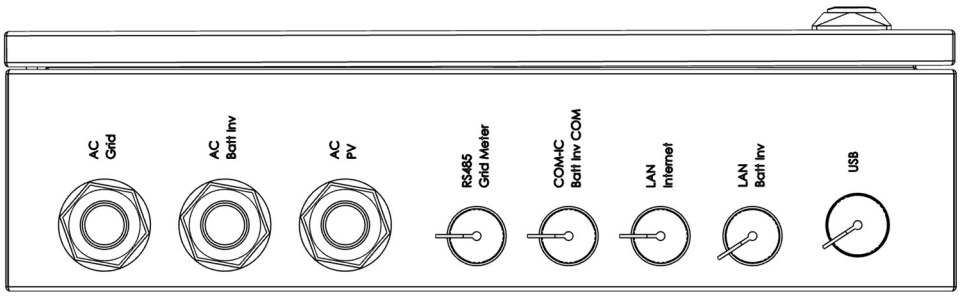
  Important: Ensure the cable sheath also enters the housing via the gland for strain relief.

4. Connect the Cable

- Insert the communication connector into port (E) labelled 'METER/CT/RS485' the underside of the inverter (see below).



- Plug the unmodified RJ45 end into the port marked 'COM-IC Batt Inv Com' on the Hub.



- For outdoor use, ensure all cable glands are properly sealed.

Additional Resources

For more details on the H1-G2 system, refer to Fox ESS's documentation at [fox-ess.com]