TECHNICAL NOTE

Enphase Control Cable specification

Applicable regions: North America

Overview

Enphase Energy Systems with the IQ Battery 5P require control wiring between the IQ System Controller 3/3G, IQ Battery 5P, and IQ Combiner 5/5C or Communications Kit 2 (if using a standalone IQ Gateway/Envoy S Metered).

Refer to the quick install guides (QIGs) for the respective products on the Documentation center for guidance on control (CTRL) cable stripping, termination onto the header, and the common wiring scenarios for an Enphase Energy System.

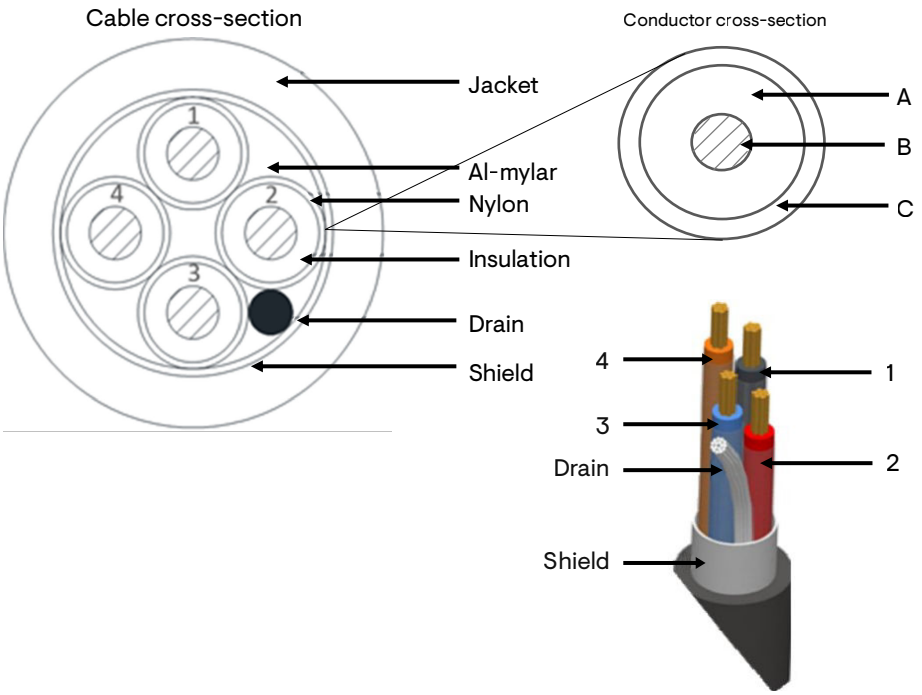
NOTE: Enphase Control Cable complies with UL 3003, UL 1277, and UL 83 standards. This cable (SKU: CTRL-SC3-NA-01) has optimal impedance and has been validated for optimal system performance. Third-party cables may not have the correct characteristic impedance and may not work reliably. Enphase cannot guarantee performance when a third-party control cable is used.

NOTE: to ensure the system operates per specifications, the total length of control wiring across the system cannot exceed 250 feet.

Enphase Control Cable specifications

The following table lists the Enphase Control Cable specifications.

Model number	
Reseller	Enphase Energy, Inc.
Enphase Energy SKU	CTRL-SC3-NA-01 (1 quantity = 1 spool of 500 ft)
Manufacturer	Jiangyin SINBON Electronics Co. Ltd.
Manufacturer part number	A8921065-D
Description	
UL, DG, TC-ER*, 18 AWG (7/0.385BS) * 4C + D + AM, OD = 7.80 mm, 90°C 600 V, PVC	



Jacket extrusion	
Jacket material	PVC
Jacket diameter	7.80 ±0.30 mm
Minimum average thickness	1.14 mm
Surface	Matte
Marking	(UL) Type TC-ER* and DG 600V 90C dry/wet 4/C 18AWG 90C jacket -40C oil res I sunlight resistant FT4 Jiangyin SINBON Electronics Co., Ltd. YYMM (YY-Year MM-Month)
Color	Black
Jacket characteristics	
Maximum conductor DC resistance (20°C)	Core A: 21.8 (Ω/km)
Operating temperature	–40°C to 90°C
Temperature meeting	90°C (dry or wet)
Rated voltage	600 V
Oil resistance I (IRM 902)	UL 1277 & UL 3003 (listed under SINBON Electronics)
UV resistance	UL 1581 (720H) (listed under SINBON Electronics)
Cold bend (–40 ±2°C × 4 hours)	UL 1277 & UL3003 (listed under SINBON Electronics)
Flammability test	FT4 (listed under SINBON Electronics)
Impedance	Minimum 50 Ω (core-core)

RoHS and Reach compliant	Yes
Conductor (A) characteristics	
Conductor AWG	18 AWG (7 mm/0.385 mm), bared stranded copper
Primary number	4C
Insulation (B) characteristics	
Insulation B material	PVC (material equivalent to THWN -2 type)
Minimum average thickness	0.38 mm
Insulation diameter	1.95 ±0.15 mm
Color	1. Black 2. Red 3. Blue 4. Orange Refer to the Cable cross-section figure.
Insulation (C) characteristics	
Insulation C material	Nylon
Minimum average thickness	0.10 mm
Insulation diameter	2.20 ±0.15 mm
Color	Translucent 1. Black 2. Red 3. Blue 4. Orange Refer to the Cable cross-section figure.
Assembly	
Pitch	90 ±20 mm
Drain wire (D)	18 AWG (16 mm/0.254 mm), tinned stranded copper (pitch 28 ±5 mm)
Al-mylar (overlapping, %) foil facing in	≥25% (50 µ)
Application and warranty	
Application	Standard for electrical power and control tray cable
Manufacturer warranty	12 months from the date of manufacturing
Additional Information	

*The older stock of the control cables has cable markings on the outer jacket stating TC and DG ratings only. Enphase Energy, in agreement with Jiangyin SINBON Electronics Co. Ltd, confirms that the control cable is already rated for TC-ER and DG, and is reflected in the latest stock of the cables sold. Both the older and newer

stock of the control cables can be used for outdoor installation with an exposed run. Refer to the Enphase Energy System control cable dual-rating technical brief at the Documentation center.

Revision history

Revision	Date	Description
TEC-00007-3.0	February 2025	Added “TC-ER” details to the specifications.
TEC-00007-2.0	March 2024	Added an image in the “Enphase Control Cable specifications” section and made editorial updates.
TEC-00007-1.0	December 2023	Initial release.