Open Energy for All

Technical Note

Selection and Installation of AC End Cables for Flex-T5 Cable System

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Contents

1. Introduction 1

2. Cable Selection 1

2.1 Conductor Number and Material 1

2.2 Conductor Type 1

2.3 Cable Size 2

2.4 Nominal Voltage 2

2.5 The Dressing Method and Environment 2

2.6 Insulation Color 2

2.7 Cable Outer Diameter 3

3. Connector Selection 3

4. Installation Method 4

1 Introduction

The Hoymiles microinverter system's AC output line consists of three main components:

- Microinverters
- AC Trunk
- AC End Cable

The AC Trunk, which includes cables and connectors from the Flex-T5 Cable System, transfers power from the microinverters to the AC End Cable. The AC End Cable, which includes a Flex-T5 Cable Terminal Connector and a single AC cable, connects the AC Trunk to the distribution box (see Figure 1).

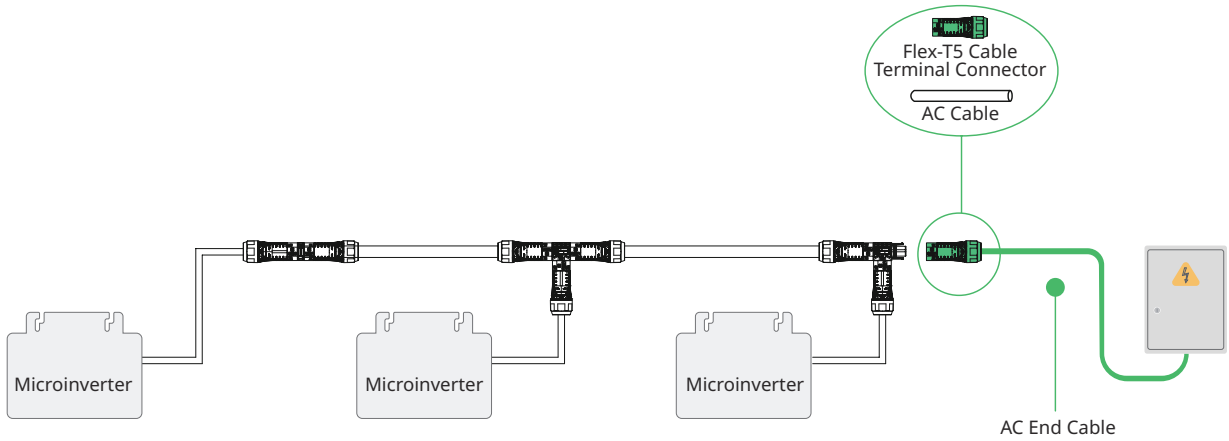


Figure 1-Typical Microinverter System Diagram

For installation, you should select the appropriate length and size of the AC End Cable based on the project configuration and the distance from the final microinverter on the AC Trunk to the distribution box. This document guides you through selecting and installing the AC End Cable.

2 Cable Selection

This section covers seven key aspects of cable selection.

2.1 Conductor Number and Material

Considering the grid type compatibility of the HMT and MIT series microinverters and the superior conductivity of the copper, Hoymiles recommends a **five-core copper cable*** for the microinverter system.

NOTE

- *In this document, "five-core" means the cable has five separate wires: a neutral wire (N), a protective earth wire (PE), and three live wires (L1, L2, L3).*
- *Copper is chosen as the conductor material because of its superior conductivity to reduce voltage drop.*

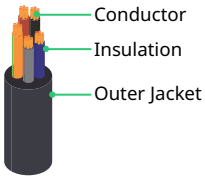


Figure 2-Composition of Cables

2.2 Conductor Type

Cables usually come in two conductor types: solid and stranded. Solid wire consists of a single strand of wire, while stranded wire consists of multiple strands twisted together.

Figure 3-Solid vs. Stranded Wire

You can select either conductor type based on the local regulations and your preferences.

Importantly, Hoymiles offers different Flex-T5 Cable Terminal Connectors that are compatible with either solid or stranded wire. Refer to ***3 Connector Selection*** to select the correct connector.

2.3 Cable Size

The Flex-T5 Cable Terminal Connectors of different models are available for 2.5 mm², 4 mm² or 6 mm² cables.

Larger cables have higher ampacity to handle more current. The table below shows the recommended ampacity for each cable size in the Flex-T5 Cable System.

Cable Size (mm²)	2.5	4	6
Cable Ampacity (A)	0 to 22	0 to 30	0 to 39

Table 1-Cable Size and Ampacity Comparison

For effective and safe operation, the AC cable's ampacity should be higher than the **total output current of each AC output line***. Calculate the total output current in advance to select the appropriate cable size.

NOTE

- *The total output current of each AC output line is the sum of all the output currents from the microinverters per line.*
- *The current-carrying capacity (ampacity) of a conductor is influenced by the electrical resistance of the material. The ampacity calculations in this document are based on copper conductors and may not apply to other materials.*
- *Consider local regulations, which may recommend oversizing the AC cable or reducing the number of microinverters per line to limit voltage drop for longer cable lengths.*
- *The cable ampacity values provided in Table 1 are for reference only; consult the local electrical code for specific guidelines.*

2.4 Nominal Voltage

Because the HMT and MIT series microinverters are designed for a three-phase AC output voltage of 400 V, the cable's nominal voltage* should be at least 400 V.

Hoymiles recommends a 450/750 V (U0/U) low-voltage cable for optimal performance and safety.

NOTE *The nominal voltage refers to the optimal voltage that allows the cable to operate safely and stably for a long time.*

2.5 Dressing Method and Environment

When the AC End Cable is run from the roof to the exterior wall of a house, it can be laid inside a metallic sheathed cable, installed in a cable tray, or directly exposed to the open air.

For outdoor installations, select cables that are resistant to water, UV, fire, and temperature extremes (-40°C to 90°C). Additionally, ensure the cable complies with local regulations.

Here is the technical data of a Flex-T5 Connection Cable for your reference.

Model	Standard
H07RN-F	EN50525-2-21*

Table 2-Flex-T5 Connection Cable Specifications

NOTE *EN50525-2-21 does not specify requirements for outdoor wiring. However, cables and connectors from the Flex-T5 Cable System can be used in the open air. If you are using cables from other manufacturers, consult them to confirm suitability for outdoor use. If the cables are not suitable, consider using a cable tray or a metallic sheathed cable.*

2.6 Insulation Color

AC cables are color-coded for safety reasons. You can typically identify the various functions of the conductors by observing the color of their insulation.

Given that cable color codes are specified based on the region or country, Hoymiles recommends that you consult the local insulation color specifications before selecting an AC cable.

⚠ *To ensure correct connections, the insulation color of the conductors in the AC End Cable must match the color in the distribution box.*

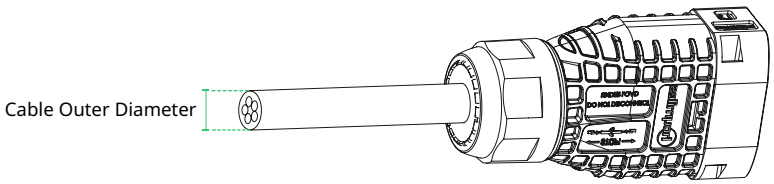
Standards	Region / Country	Protective Earth (PE)	Neutral (N)	Live (L1)	Live (L2)	Live (L3)
IEC 60446 EN 60446 BS 7671	The European Union, Singapore, Kazakhstan, UK, India, Pakistan, Malaysia					
AS/NZS 3000	Australia, New Zealand					
JIS	Japan					
-	Korea					

Table 3-Wiring Color Codes Infographic

2.7 Cable Outer Diameter

Since the AC cable needs to be connected to the Flex-T5 Cable Terminal Connector, the outer diameter of the AC cable must be compatible with the Flex-T5 Cable Terminal Connector.

The Flex-T5 Cable system is typically installed on rooftops, and all cables and connectors should be waterproof. The Flex-T5 Cable Terminal Connector includes a gasket and a nut. Tightening the nut compresses the gasket, sealing the cable to create a tight waterproof connection.



You should verify that the AC cable meets the specified requirements to ensure waterproof functionality.

Cable Size (mm^2)	2.5	4	6
Outer Diameter (mm)	14.5 to 17.5	14.5 to 17.5	17.5 to 20.5

Table 4-Recommended Outer Diameter of AC Cable

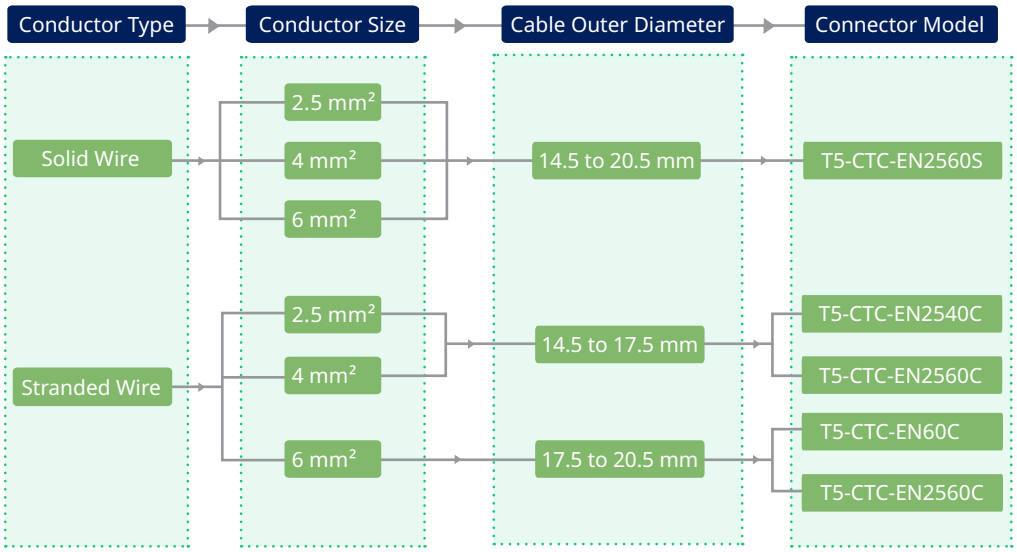
3 Connector Selection

Four models of Flex-T5 Cable Terminal Connectors are available.

Model	Compatible Conductor Type	Compatible Conductor Size (mm^2)	Compatible Cable Outer Diameter (mm)
T5-CTC-EN2540C	Stranded Wire	2.5/4	14.5 to 17.5
T5-CTC-EN60C	Stranded Wire	6	17.5 to 20.5
T5-CTC-EN2560C	Stranded Wire	2.5/4/6	14.5 to 20.5
T5-CTC-EN2560S	Solid Wire	2.5/4/6	14.5 to 20.5

Table 5-Flex-T5 Cable Terminal Connector Specifications

To select the right connector, follow these steps:



NOTE

T5-CTC-EN2560S and T5-CTC-EN2560C have two configurations:

- *With gasket type 1: Compatible with 2.5/4 mm² cable.*
- *With gasket type 2: Compatible with 6 mm² cable.*

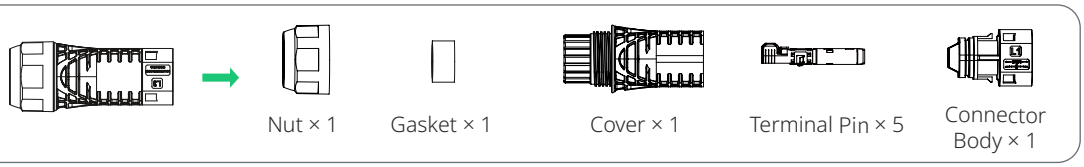
Therefore, both connectors can work with 2.5/4 mm² cable or 6 mm² cable.

4 Installation Method

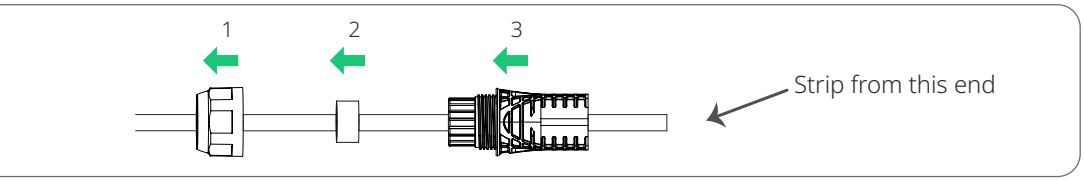
Step 1 Prepare an AC cable.

Cable Type	Core Number	Cable Outer Diameter	Nominal Voltage
Outdoor use, copper wire	Five	⩽ 20.5 mm	450/750 V (U0/U)

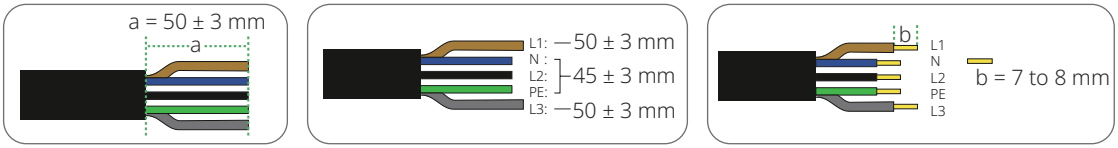
Step 2 Separate the Flex-T5 Cable Terminal Connector into five parts.



Step 3 Slide the nut, gasket and cover over the AC cable in order.

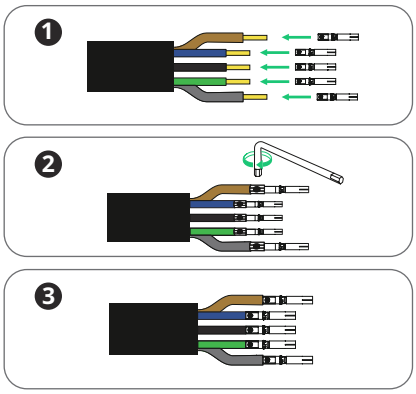


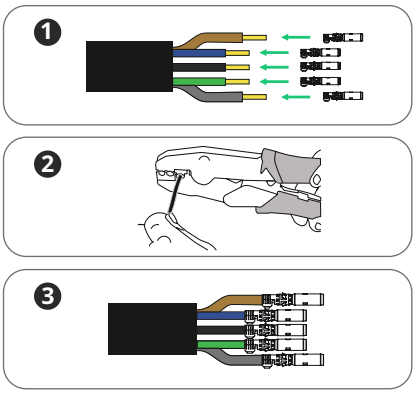
Step 4 Strip 50 ± 3 mm of the outer jacket with a diagonal cutter. Then, cut the N, L2 and PE wires short by 5 mm. Finally, use a wire stripper to strip the insulation, exposing 7 to 8 mm of the conductor.



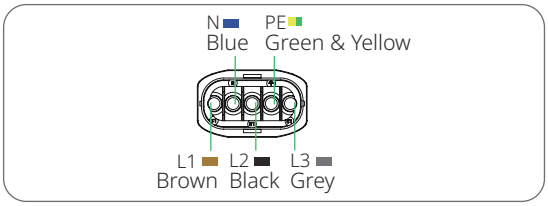
Step 5

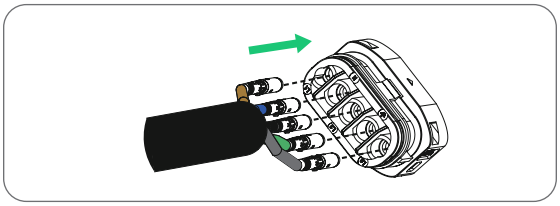
Solid Wire	Stranded Wire
Insert the conductors into the terminal pins, and use a hex key to tighten the screws clockwise (torque: 4.0 ± 0.8 N•m).	Insert the conductors into the terminal pins, and use the crimping tool to crimp the connection.





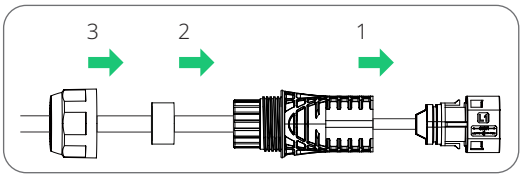
Step 6 Plug the terminal pins into the connector body.

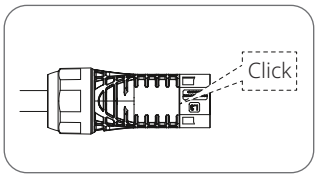


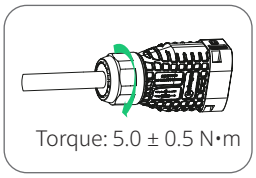


Note *The insulation color might vary by country or region. When wiring, be sure to follow the local wiring codes.*

Step 7 Slide the cover, gasket, and nut over the cable assembly. Then firmly tighten the nut with a torque wrench (torque: 5 ± 0.5 N·m).







Step 8 Plug one end of the AC End cable into the microinverter and the other end into the distribution box.