APsystems
ALTENERGY POWER

White Paper 2025

AC3 Female Connector Solution for Microinverter Expansion

AC3 Female Connector at the Y3 Bus Cable



This white paper introduces the microinverter expansion schemes by connecting APsystems AC3 accessories to the APsystems Y3 bus cable system both developed by Altenergy Power System Inc. (APsystems) including the background of this solution, a description of the connector, and an analysis of its advantages and limitations for microinverter system.

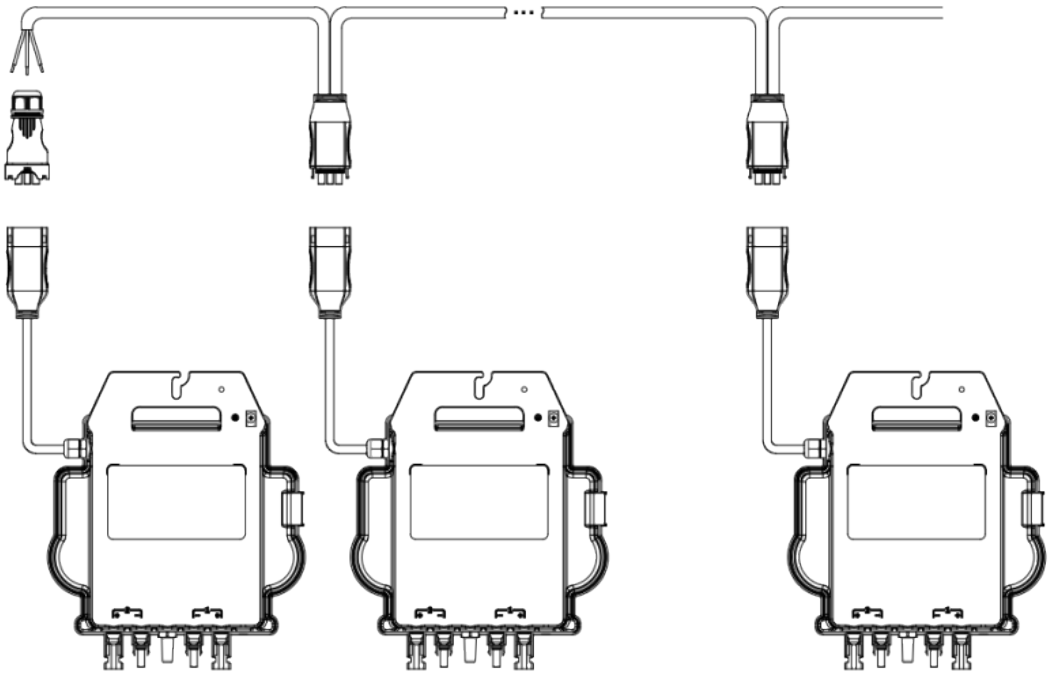
Table of Contents

The end of the Y3 bus cable enhancement plan	3
ACB3 female connector description	4
Advantages of ACB3 female connector alternative	4
Limitations of ACB3 female connector alternative	5
The solution of using ACT3 female connector and AC3 trunk connector on the head of the Y3 bus cable for additional installation	6

V1.0 202511

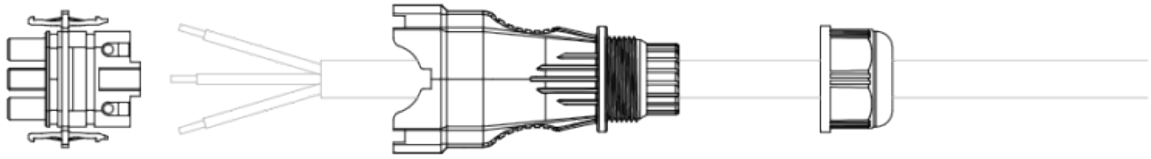
The solution of using ACB3 female connector replacement for Y3 bus end cap

The ACB3 female connector, a key component in APsystem's AC3 bus system, is designed for flexible integration with microinverters. Compatible with microinverter connectors, it also supports seamless operation within the Y3 bus cable system. As illustrated below, connecting this ACB3 female connector to the tail end of the Y3 bus enables additional microinverters to be seamlessly connected to the system's terminal.



ACB3 female connector description

The connector is mainly composed of three parts: shell, core and locking nut. It can be assembled on the construction site of photovoltaic system laying, and it is convenient and fast to assemble without additional special tools.



Parameters of ACB3 female connector:

ACB3 Connector Material Number	Rated Voltage	Maximum Current	Environmental Temperature	Protection Rating	Appropriate Cable Diameter
2301432705	600VAC	25A	-40°C-65°C	IP68	7-14.5mm

Advantages of ACB3 female connector alternative

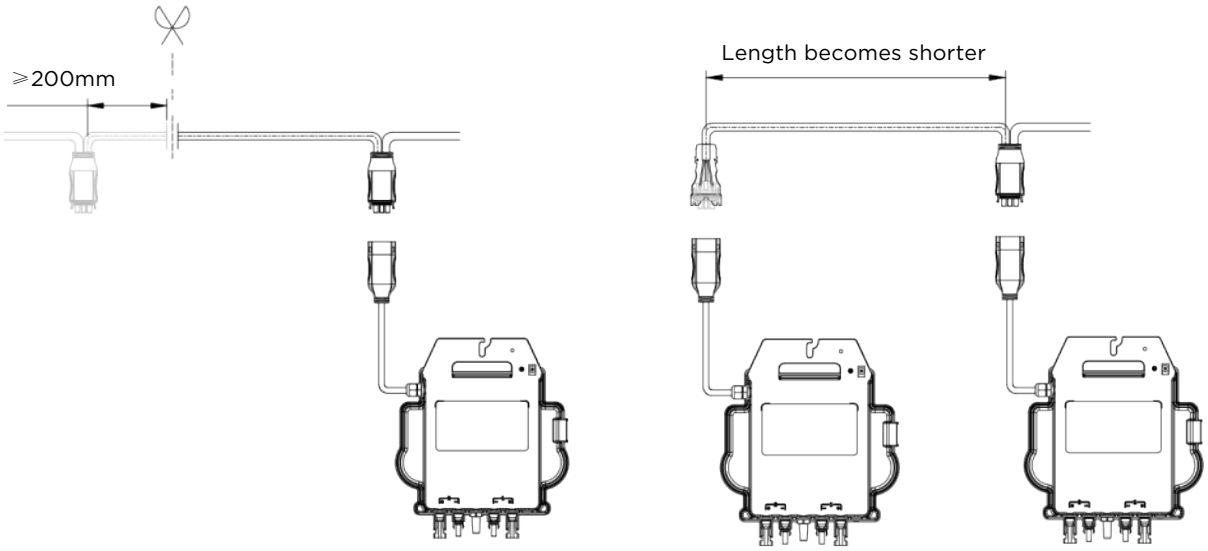
Save the waste of cables at the end of the bus

Traditional Y3 bus cable system require cable cuts based on actual node counts during installation, leaving unused cable segments at the end. The conventional solution involves adding a bus cable end cap to ensure waterproofing and insulation. By replacing the end cap with an ACB3 female connector, an additional microinverter can be installed, effectively reducing system costs.

Limitations of ACB3 female connector alternative

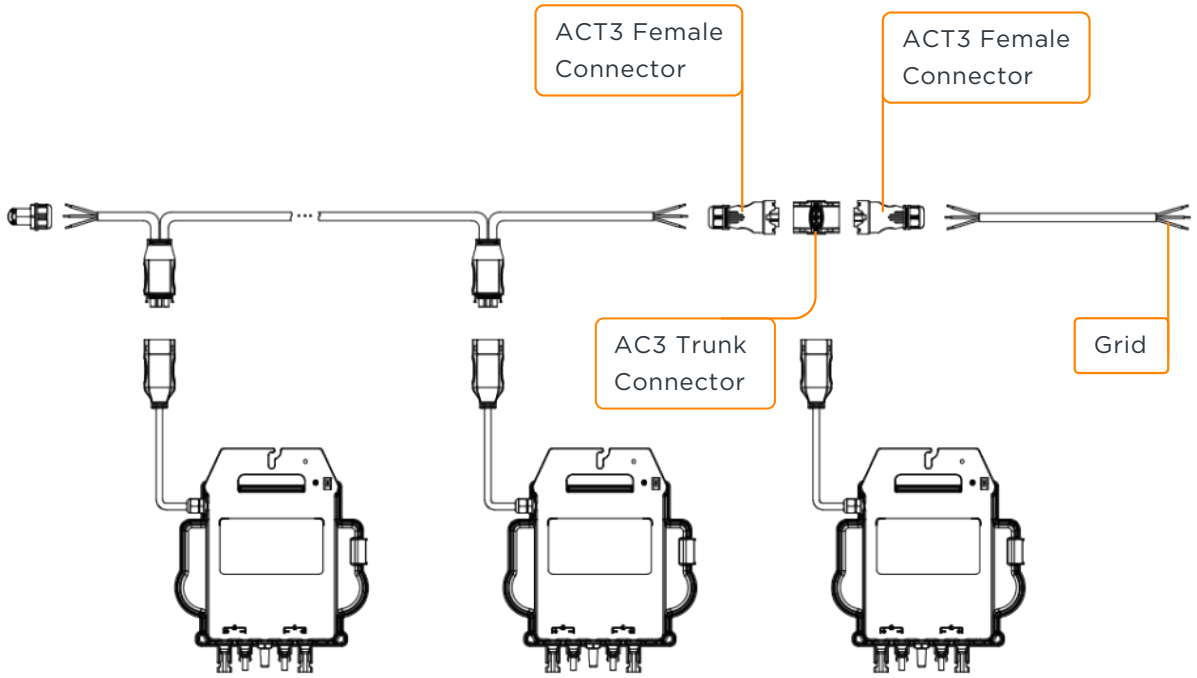
The length of the tail end cable will be shorter than other nodes

Since connectors are installed on the tail end cables, these cables are typically cut from the midpoint of the bus node. This results in shorter lengths compared to standard microinverter nodes. Under this configuration, insufficient cable length may occur during the final installation of microinverters, necessitating advance planning of the laying scheme. The specific length of tail end cables depends on both on-site construction losses and the bus node's cutting position. The feasibility of this approach must be determined based on the actual installation locations of microinverters at the site.



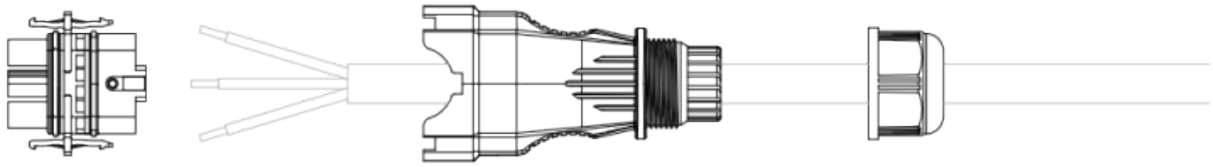
The solution of using ACT3 female connector and AC3 trunk connector on the head of the Y3 bus cable for additional installation.

The ACT3 female connector and the AC3 trunk connector are also components of the APsystems AC3 bus system. Refer to the following figure. Using the ACT3 female connector and the ACT3 trunk connector at the head of the Y3 bus, which can add a microinverter access system.

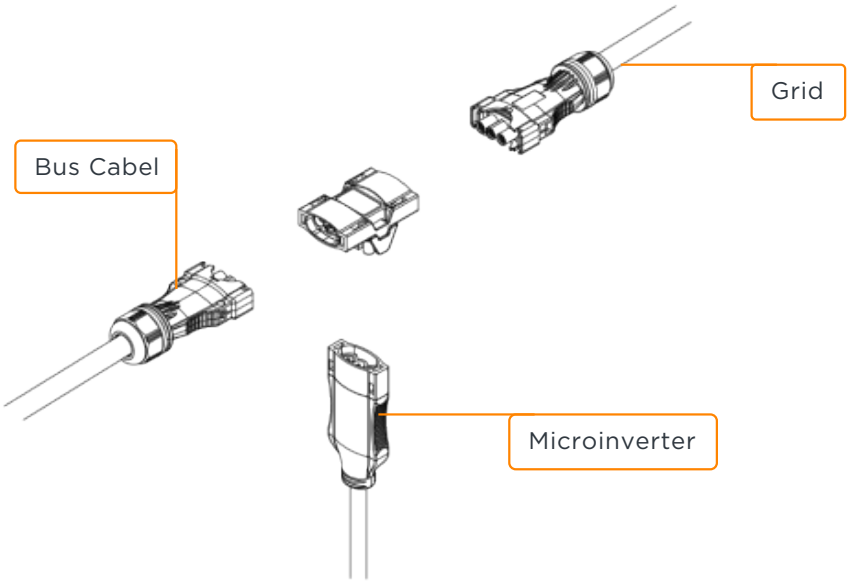


① The instruction to ACT3 female connector and ACT3 trunk connector

The ACT3 connector is also composed of three parts: the shell, the core, and the locking nut. It can also be quickly assembled without the need for special tools.



The AC3 trunk connector is a type of adapter connector with two male connectors at both side end and one female connector at the middle end. It is used for connecting buses and microinverters.



Parameters of ACT3 female connector and AC3 trunk connector:

Connector Material Number & Name	Rated Voltage	Maximum Current	Environmental Temperature	Protection Rating	Appropriate Cable Diameter
2301632505 ACT3 Female Connector	600VAC	40A	-40°C-65°C	IP68	10-14.5mm
2301733005 AC3 Trunk Connector	600VAC	40A	-40°C-65°C	IP68	N/A

① The advantage of using ACT3 for additional installation

The load of the bus will not increase.

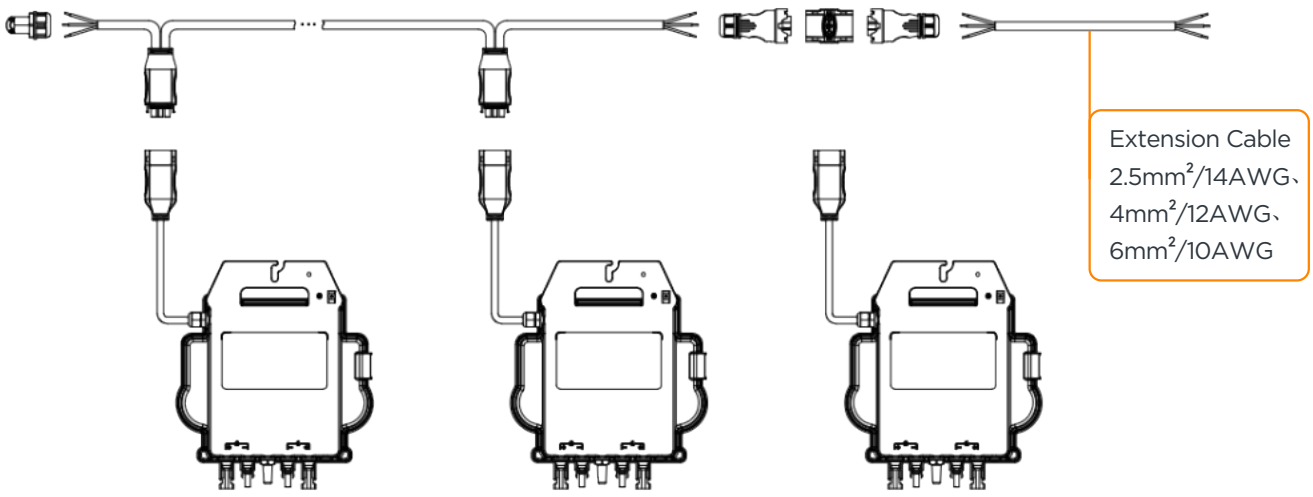
Add a microinverter at the head of the Y3 bus cable near the gird side. The current of this micro-inverter will not pass through the original bus system, which can prevent the newly added micro-inverter from increasing the load of the original bus system.

② The limitation of using ACT3 for additional installation

The ampacity of the extension cable needs to be paid attention.

Since the current generated by the newly added microinverter does not pass through the original bus, when the microinverter is added, the total ampacity of the system needs to be evaluated based on the maximum ampacity of the extension cable between the microinverter and the grid. The total power of the newly added microinverter and the maximum power of the original micro-inverters combined cannot exceed the maximum load that the extension cable can bear. According to the specifications of the extension cable, the ampacity of the entire microinverter bus system after the addition needs to be referred to the following table.

Extension Cable Specification	2.5mm²/14AWG	4mm²/12AWG	6mm²/40AWG
Ampacity	25A	32A	40A



Published by APsystems

No.3535, Linggongtang Road, Nanhu District, Jiaxing City, Zhejiang Province
Tel: +86 573 83986967
Email: info@APsystems.cn
APsystems.com

© APsystems 2025
Support: Please direct any questions in connection with this White Paper to your APsystems contact person at your representative/sales office.
Subject to changes and errors.