

1. SERIAL MODE OPERATION ON ePLUS UNITS

This document is a Quick procedure document to operate the unit In Serial mode.



Please read the **PR386A00 Parallel and serial operation User Manual Modular Hub ePLUS** document before operating the unit in Serial option mode.

1.1. Power wiring connection

Please, check the connection diagram¹ shown below for the final two units in DC serial system:



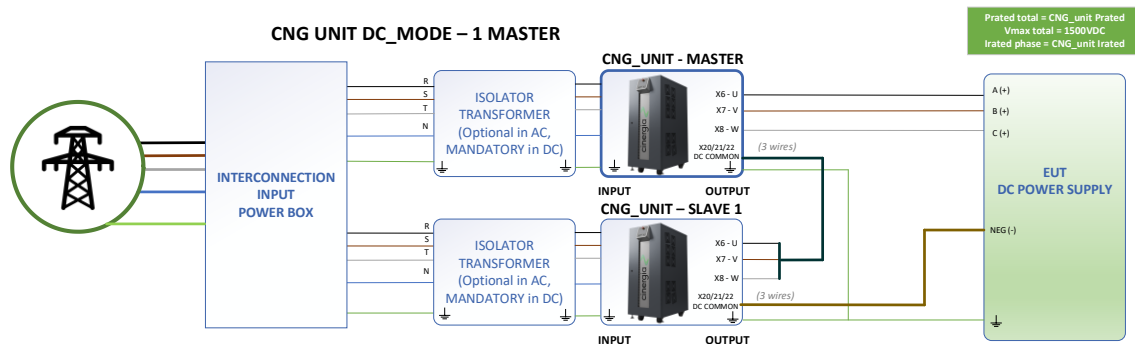
Any change on wiring must be done with no power in the system (input/grid and output/EUT) and following the premises of the *Cinergia Unit Installation and Operation manual* provided with the units.



The wiring connection of each unit must be done according the power and current of each unit. The interconnection must be done using cables according of the final power and current of all the units working in parallel.



If the units are working in PARALLEL, be sure that all the output wires of each unit are connected phase by phase (these means that each U channel, V channel, W channel of each unit are connected). The section of each power cable has to be installed according to the power (current) of the unit.



Cinergia recommends using an INTERCONNECTION BOX for the all the connection between units on GRID side. The interconnection box is not provided by Cinergia, neither designed nor manufactured.



The GROUND WIRE or EARTH CABLE must be connected at the input and also at the output of the unit.

¹ Check more diagram options in **PR386A00 Parallel and serial operation User Manual Modular Hub ePLUS** document

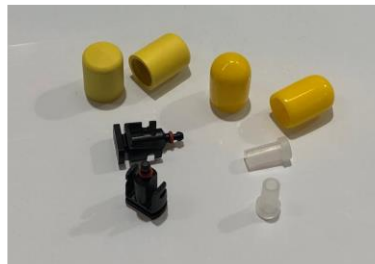
1.2.FO connection



In case that any FO connectors will not be used, please leave the FO safety protector elements installed just to avoid any internal damaged on the FO system. It could cause some permanent damage on the unit if this safety protector element is not installed properly.

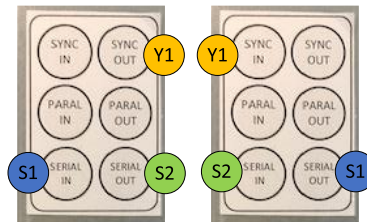


DO NOT THROW IT AWAY. Keep with you all the safety protector elements from FO circuitry from the unit, from the HUB_FO_V2 and even from the FO cables. Please, see pictures below:



On the picture above, you can identify safety protector elements: from the unit (yellow elements), from the HUB_FO_V2 (black elements), from the FO cables (white elements).

Follow the diagram below for the correctly connection of the Optical Fiber (FO) cable (**Note that not all FO must be connected**):



Unit 1
Master



Unit 2
Slave 1

1.3. Interface operation

At this point, all the power wiring and the FO cables are properly connected and verified by the supervisor.

Before turning ON the unit, be sure that all the units that must work in serial operation must be configured with the specific control mode as a Master and as a SLAVE. If all the units are not properly configured, the master will remain on Alarm status all the time. Please, read this document before operating and activate this option. The SLAVE must always be configured as a 1CHANNEL mode.



Take into account that the unit configured as a SLAVE must be configured and connected as a 1 channel mode ALWAYS.

All the CNG units must be connected through ethernet for the configuration by the Modbus interface provided by Cinergia.

Once the units are connected by the interface, the user can introduce all the codes to activate the functionality required.

The user must choose the MASTER, so for the final setup, ONLY this unit is existing. This unit is the only ONE to operate and control by interface. For the final user, only one unit is working.

1.3.1. MASTER & SLAVE configuration in serial operation

To configure the unit as a **Master or Slave configuration**: the user must connect to the unit with the Cinergia interface: Press the button *Config Master Slave* from the Serial FO (number **1** in the figure below).





Take into account that the unit must be in Alarm or Stand by Status to proceed with these instructions.

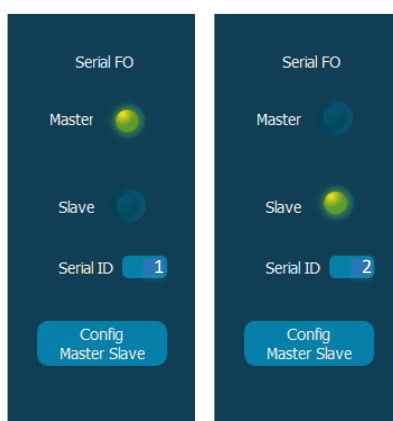
Once the button is pressed, a dialog box called **Master Serial Configuration dialog** will appear. Depending on which unit act on Master or Slave. The delivered code² *Password_Upgrade_Serial_ON_Master* or *Password_Upgrade_Serial_ON_Slave* must be introduced in the *Password* reserved space (number **2** in the figure above) and, afterwards, press the button *Send Password* (number **3** in the figure above). You can find the code provided under these lines:

Password_Upgrade_Serial_ON_Master	←	ENABLE as a MASTER
Password_Upgrade_Serial_ON_Slave	←	ENABLE as a SLAVE
Password_Upgrade_Serial_OFF	←	DISABLE any configuration
Password_Upgrade_Paralel_ON_Master		
Password_Upgrade_Paralel_ON_Slave		
Password_Upgrade_Paralel_OFF		

When the configuration is activated, the LED beside the option (marked with an **a** or **b** in the figure below) will be shining and the final configuration will appear on the reserved spaces.

When the configuration is activated and the codes are correct, the specific space configuration marked as a Serial FO will show the final configuration sent.

As an example of 2 units working in serial, the specific space Serial FO configuration of them will show:



If all units from the final system (Master and slave) are NOT properly configured and even the FO are not properly connected, the Master will remain to Alarm status all the time.

² The user would find all the delivered codes for these functionalities in the USB provided with the unit