



## **Quick Reference Guide**

# **Connecting External Data Acquisition Systems to Solectria PVI 14TL and PVI 20TL Inverters**


© 2015, Solectria – A Yaskawa Company

## IMPORTANT SAFETY INSTRUCTIONS

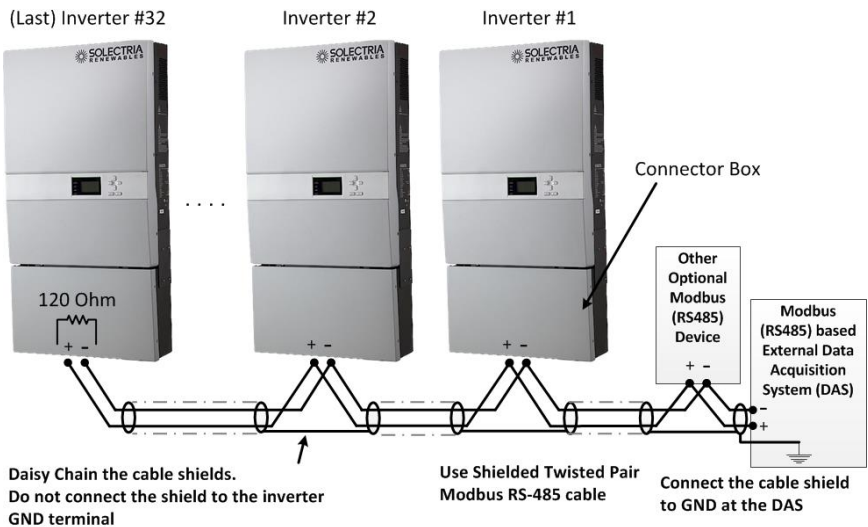
In this guide “inverter” or “inverters” refers to the inverter models: PVI 14TL and PVI 20TL.

This guide contains important instructions that must be followed to connect an external Data Acquisition System (DAS) to the inverter(s).

To reduce the risk of electrical shock, and to ensure the safe installation and operation of the inverter, the following safety symbols are used to indicate dangerous conditions and important safety instructions:

 **WARNING:** This indicates a fact or feature very important for the safety of the user and/or which can cause serious hardware damage if not applied appropriately. **Use extreme caution when performing this task.**

- The Modbus supports up to 32 inverters/devices on the Modbus (RS-485) daisy chain.
- Solectria recommends that the Modbus (RS-485) daisy chain for TL inverters is limited to a maximum of 1600 ft.



**Fig. 1:** TL inverters in a Modbus (RS-485) daisy chain with an external DAS

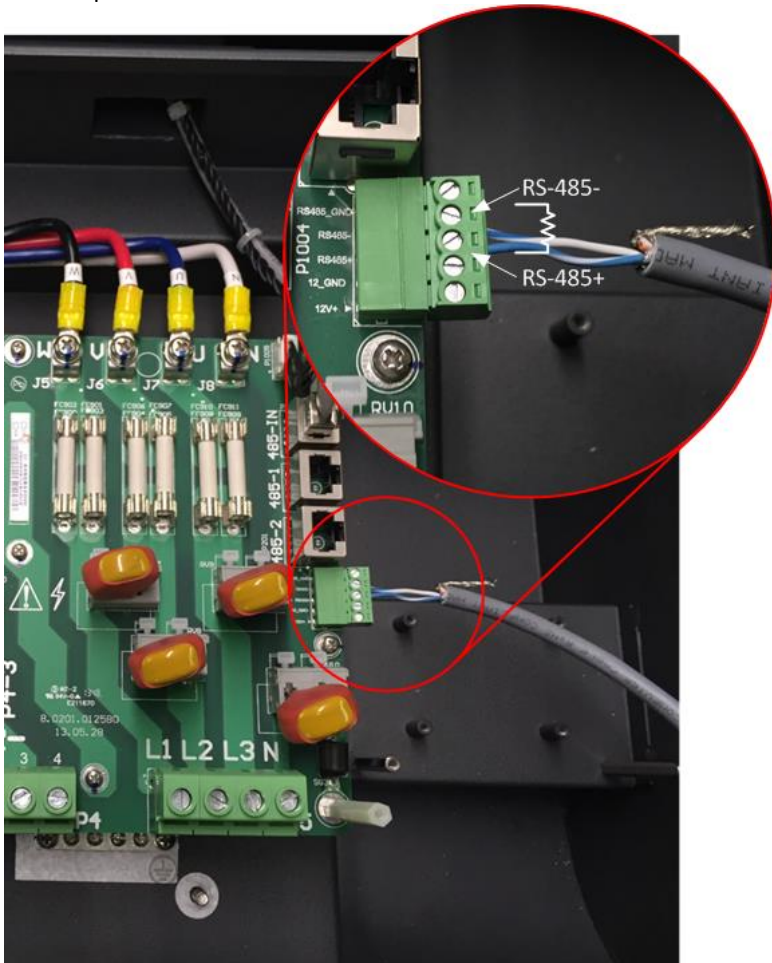
- Care must be taken when daisy chaining the inverters as shown above utilizing a Shielded Twisted Pair Modbus cable such as Belden 9841. Star or T connections should be avoided.
- The shield continuity should be maintained for the entire length of the daisy chain and should only be connected to ground (GND) at the DAS.



**Warning:** Risk of Electric Shock.

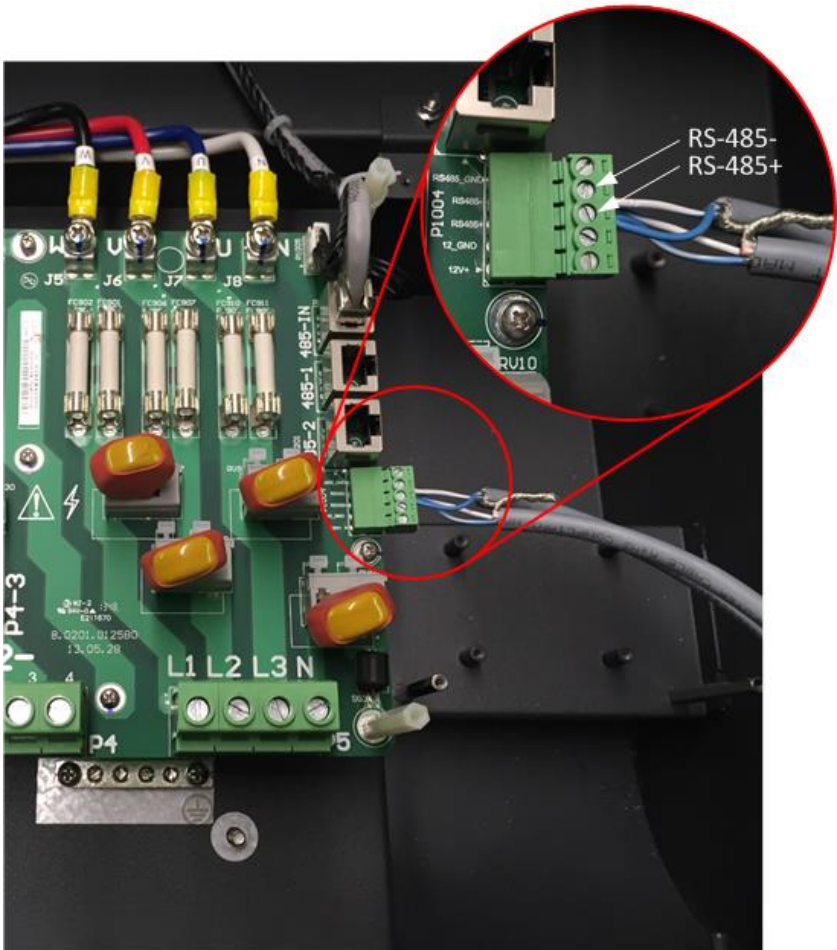
Make sure all DC and AC power to the unit has been disconnected before opening the inverter connector box.

1. Open the connector box and remove the protective cover.
2. Bring the cable into connector box through knockout holes at the bottom.
3. Connect the Modbus (RS-485) wires to the green Phoenix connector (P1004) ensuring correct polarity and using a twisted pair in the shielded twisted pair cable.



**Fig. 2:** The above image shows the Modbus (RS-485) cable connection where the Modbus daisy chain ends. Notice how the cable shield is not landed inside the inverter. Connect the termination resistor across the RS-485+ and RS-485- terminals as indicated if the inverter is the last device in the daisy chain.

4. Install a 1/2W 120 Ohm Resistor (not shown) across the RS-485+ and the RS-485- terminals for Modbus termination if the inverter is the **last** device in the daisy chain. Do not install a resistor in any of the other inverters.
5. Connect the cable shield to ground (GND) at the DAS. Do not connect the shield to any inverters.



**Fig. 3:** Notice how the cable shield is daisy chained together and not landed inside the inverter.



**Warning:** Risk of Electric Shock.

Make sure all shield wires are properly secured and insulated to prevent shorting to any other components inside the inverter.

6. Reinstall the protective cover and close the connector box.
7. Reconnect AC and DC power.