

SOLAR BUILDER™

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THE INVERTER ISSUE

- ARC FAULT DETECTION
- ADVANCED FEATURES
- COMMON INSTALL ERRORS
- SOLAR + STORAGE OPTIONS
- INVERTER BUYER'S GUIDE

ASK AN

EXPERT

INVERTER
MANUFACTURERS
GIVE US THEIR BEST
TROUBLESHOOTING ADVICE
FOR AVOIDING COMMON
INSTALL, SERVICE ISSUES

By *SB Staff*

WI-FI CAN CAUSE COMMUNICATION ISSUES

Christopher Barrett, director of technical services, APsystems



We often see issues our installers are facing related to communication, often due to misplacement of the gateway or an unreliable internet connection. Following best practices recommended by the manufacturer will help installers reduce repeat site visits to fix communication problems. Some of these best practices include installing a gateway in the correct location, which is typically a direct connection to the service panel in which the PV array home-run is landed (often a dedicated PV sub-panel). We also recommend using a wired ethernet connection whenever possible to better ensure reliable communication and minimize returns to the jobsite.

DOUBLE-CHECK THOSE AIRWAYS, STRING LENGTHS

Ryan LeBlanc, senior applications engineer, SMA America



1. Over-voltage, strings that are too long, are the fastest way to kill an electrical device.
2. Blocking airways, installing inverters too close to walls or other inverters, and not inspecting inverters regularly for a blocked air intake are both common. This results in less production, but it's hard to say if it kills them earlier.

PRO TIP: TRY DIFFERENT CABLE COLORS

Frank O'Young, associate VP, Darfon



Our tech team sees that often the polarities of the DC lines from a PV module or string are incorrectly connected to the inverter due to the fact that same color cables (mostly black) are used for the + and - of the module or string. This can be avoided by using different cable colors for different polarities or checking the polarities before inverter connection. Our tech team also sees of that the L1 and L2 lines of the AC circuit are incorrectly wired when tying the inverter to the grid. Caution should be taken when connecting the L1 and L2 and instructions from the inverter manual should be followed.



STORAGE IS COMPLEX – GET TRAINED TO DO IT RIGHT

Mark Cerasuolo, director of training and marketing, OutBack Power

Since our products and systems typically either include or interact with batteries, some training beyond what most grid-tie installers have is really necessary to ensure a safe and reliable installation. Even then, we really encourage installers to use pre-wired systems to ensure that the system is complete and wired correctly.

TOP 4 INVERTER INSTALLATION ISSUES FROM CPS

Ed Heacox, GM, CPS Americas



- “Grid V Out of Limit.” This is when the customer forgot to check that AC switch is on, so the inverter thinks the AC grid voltage is out of limit.
- String mis-match. An inconsistent number of panels per string on one MPPT.
- Exceeding DC/AC ratio recommendations. This can lead to occasional intermittent faulting.
- Installing the DC string from left to right when it would be more ideal to balance the load across two MPPTs. This can lead to one MPPT too far out of balance from other MPPTs (e.g. four strings in No. 1 and one string into No. 2).

WATCH YOUR CONNECTIONS, SYSTEM DESIGN

Peter Mathews, North American general manager, SolarEdge



Two very common errors are the improper mating of the connectors or reverse polarity. Other items that relate to the connectors include leaving connectors open during the installation process, which can lead to water penetration, or not fully crimping the wires. Another area in which we see support issues arise is in system design. For example, SolarEdge enables the installation of longer strings, so installers who are used to standard design constraints may out of habit design short strings instead of the 11.25-kWp strings that are available with the SolarEdge solution.

INVERTER INTEGRITY STARTS WITH A CORRECT INSTALLATION

Brian Lydic, senior standards and technology engineer, Fronius USA



The most common installation oversights we see are related to torquing, inverter location and moisture management. The mounting bracket must be installed on a surface to ensure there is no bowing or warping of the bracket. The wiring compartment must be wired as per guidelines to ensure a flush mating of the inverter body to the mounting bracket chassis. If wire routing or conduit fittings are not considered, there may be a loss of integrity in this seal. Pay special attention to the DATCOM cover. Make sure it “clicks” or “snaps” in place before screws secure it. If the cover is simply screwed in, there may be bowing and slight gaps between the inverter body and DATCOM cover, allowing water ingress.