

Figure 1


1. INTRODUCTION

SOLARLOK Transition Boxes 2106916-1 and 2106916-2 are pre-terminated connectorized weather-resistant enclosures used to convert up to five strings of outdoor wire, such as photovoltaic (PV) or underground service entrance (USE)-2, to conduit-appropriate building premise wire, such as thermoplastic heat and water resistant nylon-coated (THWN)-2 wire in PV modules.

Each transition box meets the standards of Underwriters Laboratories Inc. (UL) 1741 to be used as an accessory for inverters.

Transition Box Specifications

System Voltage (DC):	600 V Maximum
Current Per String (DC):	20 A Maximum
Module Short Circuit Rating (Isc) Per String:	12.8 A Maximum
Weatherability Enclosure Type:	NEMA Type 3
Ambient Temperature:	70°C [158°F] Maximum
Terminal Torque:	4 Nm [35 in.-lbs]

NOTE  All numerical values in this instruction sheet are in metric units [with U.S. customary units in brackets]. Figures are not drawn to scale.

Reasons for reissue of this instruction sheet are provided in Section 5, REVISION SUMMARY.

NEMA is a trademark. National Electrical Code and NEC are trademarks.

**IMPORTANT
 SAFETY INSTRUCTIONS
 SAVE THESE INSTRUCTIONS**

This instruction sheet contains important instructions for Assemblies 2106916-1 and 2106916-2 that must be followed during installation and maintenance of the power system.

Read and understand the following safety precautions *before* installing or working with the transition box.

- Wiring methods must comply with the National Electric Code (NEC) and American National Standards Institute (ANSI)/National Fire Protection Association (NFPA).
- The DC input and DC output circuits are isolated from the enclosure. System grounding, if required by Section 250 of the NEC and ANSI/NFPA 70, is the responsibility of the installer.
- The photovoltaic system grounding must be installed according to the requirements of Sections 690.41 through 690.47 of the NEC and ANSI/NFPA 70 and is the responsibility of the installer.
- An over-current protection device and a DC disconnect switch must be incorporated in the installation in accordance with Article 690 of the NEC.
- DO NOT work with the transition box if it is attached to any live electrical source.

— This non-metallic enclosure DOES NOT provide grounding between conduit connections. Use grounding-type bushings and jumper wires for grounding the equipment.

— ALWAYS use insulated tools.

— ALWAYS disconnect the transition box from loads; such as, moving the AC/DC switches to off position and covering the solar cells with opaque (dark) material, before connecting or disconnecting SOLARLOK connectors.

— ALWAYS disconnect SOLARLOK connectors before working with the transition box.

— DO NOT connect or disconnect wires when electrical current from SOLARLOK connectors or external source is present.

— DO NOT work with the transition box if it is wet.

— DO NOT alter the transition box in any way.

WARNING: PV modules generate electricity when exposed to light and can cause electrical shock or burn. Multiple power sources could be present inside the transition box, and hazardous voltages could exist on exposed wiring and disconnected terminals. Care must be taken not to touch live terminals or conductive materials without personal protection.

WARNING: There is a risk of electrical shock. Normally grounded conductors may be ungrounded and energized when a ground-fault is indicated.

2. DESCRIPTION

Each transition box consists of a box, cover (with hinges), dead front lid (to be installed under the cover), and 10 pre-terminated SOLARLOK connectors each with a removeable seal cover. The box features 4 knockouts (for output wiring), lock tab, and mounting slots. See Figure 1.

The interior of the box contains 5 terminal blocks pre-wired to the positive SOLARLOK connectors, 5 terminal blocks pre-wired to the negative SOLARLOK connectors, and an equipment ground terminal block pre-wired to a wire size 8 AWG used to ground the equipment (if required).

Each transition box accepts:

Output wire: copper wire sizes 14 through 4 AWG with a maximum of 19 strands (conductor size must be determined by the system designer with respect to the NEC)

Use copper wire rated at 90°C [194°F] minimum

The intended expectation is wire sizes 12 through 10 AWG

Input wire: (10) SOLARLOK connectors with wire suitable for application (for field installation of SOLARLOK connectors onto wire, refer to instruction sheet 411-18305-1)

The intended expectation is wire sizes 12 through 10 AWG for 20 A per string

Conduit hub (fitting): trade size 21 mm [³/₄ in.] in diameter (maximum exterior diameter of 44.2 mm [1.74 in.]) meeting standards of UL 514B — required to maintain weather resistance for the transition box

Use only UL Listed rain-tight or wet-location hubs for entry into the enclosure

NOTE



For PV systems, the NEC requires that all wiring be sized for a minimum of 1.56 times the short circuit current rating (Isc) of the PV module used in the system plus additional deratings for temperature, conduit fill, etc.

3. INSTALLATION

WARNING: The transition box must be installed and serviced by qualified personnel only.

NOTE



Qualified personnel must be knowledgeable in safety procedures for working with electricity. Installation must be performed in compliance with all applicable building and safety codes including the NEC, ANSI/NFPA 70, and local utility interconnection requirements.

3.1. Mount the Transition Box

DANGER



To avoid contact with electricity, DO NOT mount the transition box if the transition box is attached to any live electrical source.

1. Using a small flat blade screwdriver, remove one of the knockouts to be used for output wire (knockout located on the side of the transition box is preferred). *Take care not to damage* any of the interior components while removing the knockout.

2. Mount the transition box onto a planar surface using the mounting slots (DO NOT drill holes into the transition box) and appropriate hardware: stainless steel ¹/₄- or ³/₈-in. bolts or screws with washers. See Figure 2 for mounting dimensions.

Before system assembly is complete, ensure that:

- the transition box assembly and exposed wiring is located in an area that is NOT readily accessible, such as a roof top or behind a fence or barrier, at least 0.914 m [3 ft] above ground level
- the location surface ranges from 0° horizontal to 90° vertical
- the transition box is oriented with the hinges at the top, right, or left

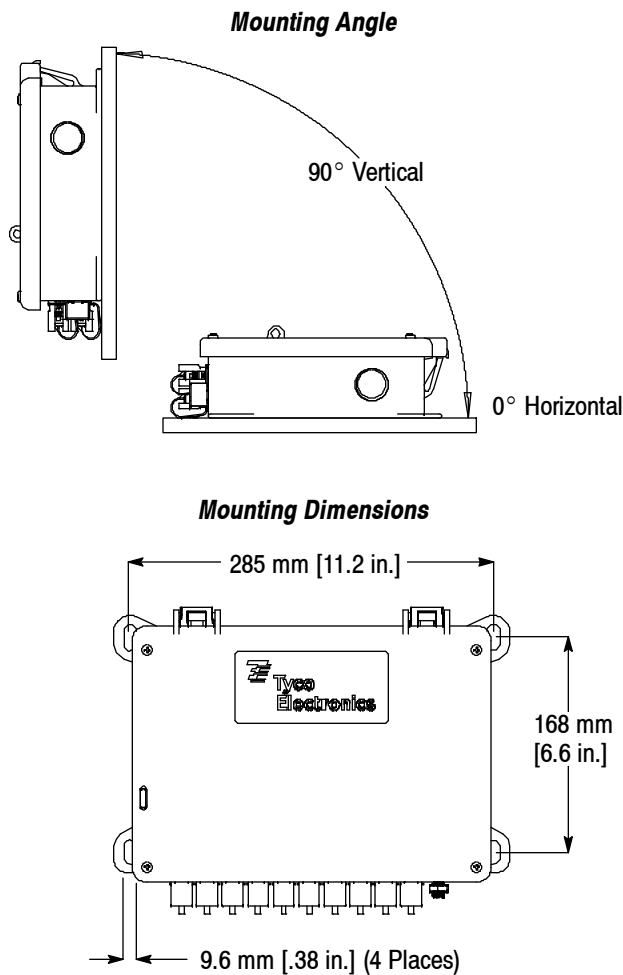


Figure 2

- d. the location does not have continuous water flow or extreme temperature changes
- e. there is enough clearance at the front and above the hinges of the transition box to open the cover and below the connectors for mating and unmating connectors, and approximately 25.4 mm [1 in.] on all 4 sides of the transition box for ventilation
- f. the location ambient temperature is a maximum of 70°C [158°F]
- g. the transition box is in the shade (this is recommended)

After system assembly is complete, ensure that:
 the transition box and exposed wiring for connection to the transition box PV input strings via the SOLARLOK connectors is located in an area that is NOT readily accessible, such as a roof top or behind a fence or barrier

3.2. Ground the Equipment (If Required)

Grounding the equipment is the responsibility of the installer. Ensure that the ground wire is not nicked, cut, or scraped.

Refer to Figure 3, and proceed as follows:

NOTE *A size 8 AWG copper wire is installed between the grounding assembly and the equipment ground terminal block.*

1. Remove the wire binding hex nut from the wire grounding assembly.
2. Position the ground wire into the wire slot of the ground bolt.
3. Thread the wire binding hex nut onto the ground bolt. Finger-tighten the wire binding hex nut until the wire is compressed.
4. Using a ⁹/₁₆-in. open end wrench, hold the hex body of the ground bolt, and using a ⁵/₈-in. socket wrench, tighten the wire binding hex nut to a torque of 5.08 N-m [45 in.-lbs.].

For additional information on the wire grounding assembly, refer to Instruction Sheet 408-10262.

Optional Grounding

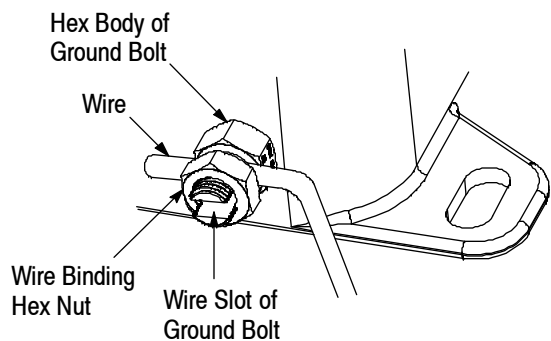


Figure 3

3.3. Connect Wiring

1. Using a cross-recessed screwdriver, remove the two cover screws opposite the hinge, then remove the two remaining cover screws. Pivot the cover open.
2. Using the screwdriver, remove the two screws securing the dead front lid; then remove the dead front lid. Refer to Figure 4.
3. Install the conduit hub onto the conduit; then install the hub onto the knockout opening of the transition box. Push the hub toward the floor of the transition box so that it will not interfere with closing the cover of the transition box; then tighten the hub. Dress the output wires through the conduit and into the transition box.

NOTE



The hub must be installed onto the conduit before the hub is installed onto the knockout opening.

4. Strip the output wires to approximately 12.7 mm [.50 in.].

5. Insert the positive wires into the positive output terminal blocks; insert the negative wires into the negative output terminals; and, if required, insert the ground wire into the equipment ground terminal (located on the equipment ground terminal block) — then using the screwdriver, tighten each terminal screw to the torque indicated in Section 1. See Figure 4.

NOTE



DO NOT use the terminal block as a system ground. Use it only as an equipment ground pass-through.

6. Remove the seal covers, and retain. Connect the SOLARLOK connectors (of input wiring) from the PV modules to the appropriate SOLARLOK connectors of the transition box.

3.4. Inspect and Close the Transition Box

1. Inspect the transition box to ensure the following:

- all terminations are secure

— conduit hub (fitting)(s) is properly sealed

— connectors are fully mated

2. Re-install, and secure (using the two screws), the dead front lid. Tighten the screws to a torque of 0.5 N-m [4 in.-lbs].

3. Close the cover, and secure it using the four cover screws. Tighten the screws to a torque of 0.9 N-m [8 in.-lbs].

4. REPLACEMENT AND REPAIR

Components of the transition box are not repairable. DO NOT use a damaged or defective transition box. DO NOT alter any components of the transition box.

Order replacement transition boxes through your representative, or call 1-800-526-5142, or send a facsimile of your purchase order to 717-986-7605, or write to:

CUSTOMER SERVICE (038-035)
 TYCO ELECTRONICS CORPORATION
 PO BOX 3608
 HARRISBURG PA 17105-3608

5. REVISION SUMMARY

Revisions to this instruction sheet include:

- Changed trade size of conduit hub fitting in Section 2

