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IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

INSTRUCTIONS IMPORTANTES CONCERNANT LA SÉCURITÉ

Before maintaining or servicing the DISCOM String Combiner Box, please read all instructions and caution markings in this guide and on the String Combiner box, as well as on the PV modules and PV inverter or Charge Controller.

This manual contains important instructions that shall be followed during maintenance and servicing of DISCOM String Combiner Boxes. To reduce the risk of electrical shock, and to ensure the safe maintenance and service of the combiner, the following safety symbols are used to indicate dangerous conditions and important safety instructions.



WARNING
Could Injure Personnel or
Damage Equipment



Instructions for
Qualified
Personnel Only



Positive
Connection Point
Symbol



Negative
Connection Point
Symbol



Ground
Connection Point
Symbol



DC Electrical
Connection Point
Symbol

All electrical installations, including the wiring method shall be performed in accordance with all local and national electrical codes, including ANSI/NFPA 70 and the Canadian Electric Code Part 1



WARNING - The DISCOM fused string combiner contains no user serviceable parts. For maintenance, please contact Solectria Renewables or an authorized installer by visiting <http://www.solectria.com> or by calling +1-978-683-9700.



WARNING - Disconnect all PV modules or completely cover the surface of all PV arrays with opaque (dark) material before wiring. PV arrays produce electrical energy when exposed to light and could create a hazardous condition.



AVERTISSEMENT-COUPER TOUTES LES SOURCES D'ALIMENTATION AVANT LE DÉPANNAGE

WARNING - Connection of the DISCOM String Combiner Box with PV modules and a PV inverter to the electric utility grid must be done after receiving prior approval from the utility company and performed only by qualified personnel.



WARNING - The DISCOM String Combiner Box is designed to be used with a PV system where one of the two DC source conductors is grounded at the inverter. This guide assumes a negative grounded PV system.

For positive grounded PV systems consult the full product manual or exchange the terms “negative” and “positive” below.

If connecting the DISCOM String Combiner Box to a charge controller, substitute the term “charge controller” for inverter throughout this guide.

1.0 Product Overview

The DISCOM String Combiner Box is designed for combining multiple strings of Photovoltaic (PV) modules for connection to an inverter. In a large PV array, each string of PV modules must be fused before being paralleled and connected to an inverter. The DISCOM String Combiner Box is available in configurations from 8 to 30 source circuits and each source circuit is designed to utilize a fuse that is rated at least 156% of its short circuit current rating. The fuse value for any source circuit should not exceed the lowest PV module fuse rating specified for any module within the source circuit string.

1.1 Disconnect Switch Operation

The DISCOM String Combiner Box contains a user-operable disconnect switch. When this disconnect switch handle is in the “OFF” position, the circuit is open between the ungrounded source conductors and the ungrounded output conductor(s). When the disconnect switch is in the “ON” position, the circuit is closed between the ungrounded source conductors and the ungrounded output conductor(s). The disconnect switch is fully load-break rated and can be safely operated under normal operating conditions when installation is per the DISCOM Installation and Operations guide and all warnings and ratings are observed.

2.0 Ratings Table

MODEL	DISCOM-08	DISCOM-12	DISCOM-16	DISCOM-20	DISCOM-24LT	DISCOM-24	DISCOM-30
Maximum Input Voltage (VDC)	600	600	600	600	600	600	600
Voltage Range (VDC)	0-600	0-600	0-600	0-600	0-600	0-600	0-600
Maximum Continuous DC Current (ADC)	100	200	225	225	250 ¹	400 ²	400 ²
Maximum Fuse Rating (A)	15	20	15	15	15 ¹	20	15
NEMA Rating	4, 4X ³	4, 4X ³	4, 4X ³	4, 4X ³	4, 4X ³	4, 4X ³	4, 4X ³
Ambient Operating Temperature	-40°C to +50°C	-40°C to +50°C	-40°C to +50°C	-40°C to +50°C	-40°C to +50°C	-40°C to +50°C	-40°C to +50°C
Weight (LBS)	29	29	36	36	75	75	75
Height (Inches)	20.0	20.0	24.0	24.0	30.0	30.0	30.0
Width (Inches)	16.0	16.0	20.0	20.0	24.0	24.0	24.0
Depth (Inches)	6.0	6.0	6.0	6.0	8.0	8.0	8.0

Notes: ¹ Maximum source circuits for DISCOM-24LT (without temperature derating):

24 source circuits for $I_{sc} \leq 8.33A$

23 source circuits for $I_{sc} \leq 8.69A$

22 source circuits for $I_{sc} \leq 9.08A$

² Maximum Continuous DC Current Rating is 360 ADC per CSA C22.2 No. 107.1-01 (R2011).

³ Optional NEMA-4X rated enclosure.

3.0 Servicing Instructions



WARNING – These installation instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any installation unless qualified to do so.

3.1 Re-Torqueing Connections

All terminal connections should be periodically inspected and re-torqued to recommended settings.

A thermal scan following 2-3 hours of high current system output is recommended as an annual maintenance step.



WARNING – PV Circuits conduct dangerous voltage and current levels any time there is light present. Cover PV modules with an opaque covering before proceeding.

1. Tighten each ungrounded source conductor at the fuse holder to the torque ratings specified in the Torque Table. The proper bit is #2 Phillips.



WARNING – Removing the plastic guard exposes service personnel to dangerous voltage and shock hazards.

2. Remove the plastic guard per 3.2.
3. Tighten the ungrounded output conductor(s) to the torque ratings specified on the Torque Table.
4. Tighten the grounded source conductor(s) to the torque ratings specified in the Torque Table.
5. Tighten the equipment grounding conductors to the torque ratings specified in the Torque Table.
6. Tighten the main equipment grounding conductor to the torque rating specified in the Torque Table.
7. Re-install the plastic guard. Affix the guard with the two #10 screws originally provided.

3.2 Guard Removal



WARNING – Removing the plastic guard exposes the service personnel to dangerous voltage and shock hazards.



WARNING – Remove all fuses before proceeding with steps 3.4.2 through 3.4.5.

1. Hold the plastic guard.
2. Remove the two #10 screws using Phillips #2 screw driver.
3. Gently remove plastic guard and store for reinstallation.
4. Store the two screws for reinstallation of the plastic guard.

3.3 SPD Module Inspection and Replacement

This String Combiner Box optionally comes with a DC Surge protector that is designed to protect Inverter equipment and PV modules from damage from over voltages on the DC circuits.

1. Remove the Guard per 3.2.
2. Inspect the three removable SPD modules (Component G of Diagram 1). Normal operation of these modules is indicated with a green color shown in the module window. A failure in one of the three modules will be indicated by a red color appearing in the module window. Solectria Renewables recommends replacing all three modules if any one module has failed.
3. Replace the SPD module with the same type and rating.
4. Install the plastic guard that was removed in 3.2. Affix the guard using the two number 10 screws originally provided.

4.0 Torque Table

REF	COMPONENT	Cond. Types	DISCOM-08	DISCOM-12	DISCOM-16	DISCOM-20	DISCOM-24LT	DISCOM-24	DISCOM-30
A	EGC Bus Bar Terminations	Cu	40	40	40	40	40	40	40
B	EGC Output Lug(s)	Cu or Al	40	40	40	40	275	275	275
C	Ungrounded Source Terminations	Cu	30	30	30	30	30	30	30
D	Ungrounded Output Lug(s)	Cu or Al	325	325	325	325	375	375	375
E	Grounded Source Terminations	Cu	20	20	20	20	20	20	20
F	Grounded Output Lug(s)	Cu or Al	325	325	325	325	375	375	375

See Diagram 1 for Component Identification. All Torque Values Specified in inch-lbs.

DIAGRAM 1 – Component Identification Diagram

