STRCOM

INSTALLATION AND OPERATION MANUAL

Fused String Combiners

Subject to Change

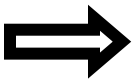
IMPORTANT SAFETY INSTRUCTIONS

This manual contains important instructions that shall be followed during installation and maintenance of the STRCOM Fused String Combiners.

To reduce the risk of electrical shock, and to ensure the safe installation and operation of the combiner, 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 a serious hardware damage if not applied appropriately.

Use extreme caution when performing this task.



NOTE: This indicates a feature that is important either for optimal system set-up or operation.

EXAMPLE: This indicates an example.

POS: Positive connection point symbol

NEG: Negative connection point symbol

GROUND: Ground symbol

DC: DC electrical connection point symbol

SAVE THESE INSTRUCTIONS

IMPORTANT SAFETY INSTRUCTIONS

- All electrical installations shall be done in accordance with the local and national electrical codes ANSI/NFPA 70.
- The STRCOM Fused String Combiner contains no user serviceable parts. Please contact Solectria Renewables or a Solectria Renewables authorized system installer for maintenance. (See Appendix C for Solectria Renewables contact information and authorized system installers.)
- Before installing or using the STRCOM Fused String Combiner, please read all instructions and caution markings in this manual and on the STRCOM Fused String Combiner unit as well as the PV modules and PV inverter (or Charge Controller).
- Connection of the STRCOM Fused String Combiner 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.
- Disconnect all PV modules or completely cover the surface of all PV arrays with opaque (dark) material before wiring them. PV arrays produce electrical energy when exposed to light and could create a hazardous condition.

SAVE THESE INSTRUCTIONS

Table of Contents

1 Introduction

The STRCOM String Combiner is a commercial, fused string combiner designed to be used for combining multiple strings of PV modules for connection to an inverter or solar charge controller. With this manual the STRCOM string combiner can be installed and operated safely. This installation guide is used as reference for the commissioning and as a guideline on how to use the string combiner most effectively.

In a large PV array, each string of PV modules must be fused before being paralleled and connected to an inverter or charge controller. This string combiner is available in configurations from 4 to 30 fuses. The combiner includes of choice of 600VDC rated fuses. Available fuses sizes can be 8, 10, 12, 15 or 20A. Typically, the fuse size you chose is at least 1.56 x the short circuit current rating of the PV string (or module used in the string) it protects. The fuse value should not be more than the fuse rating listed on the module nameplate label or manual.

The STRCOM string combiner is available in either the standard version for use with negatively grounded PV systems or an optional version for use with positively grounded systems (typically used in conjunction with Sunpower Corp modules.) Note that neither the positive or negative conductor is grounded in the string as this is typically done in the inverter for the system, however, labeling is different in the negative and positive grounded string combiner versions.

The STRCOM fused string combiner is rated NEMA4 for outdoor use (NEMA4X Stainless Steel also available as an option). It is designed and tested to be easy to mount and wire up. A flat tip screwdriver is required to open the enclosure for typical rooftop applications and an optional lock kit is available if access needs to be restricted farther.

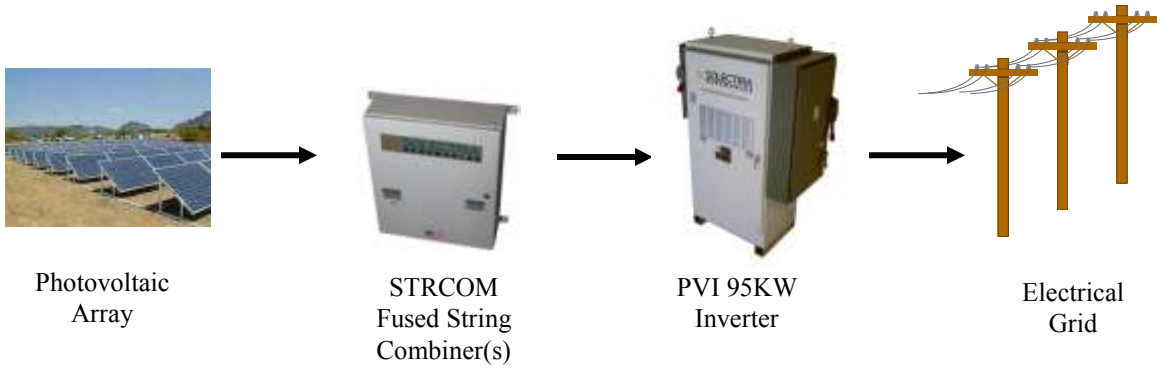


Fig. 1 Fused String Combiner Application

2 Installation

WARNING: Before installing the string combiner, read all instructions and caution markings in this manual and on the string combiner as well as on the photovoltaic modules.

WARNING: Electrical installation shall be done in accordance with all local electrical codes and the National Electrical Code (NEC), ANSI/NFPA 70.

2.1 Checking for Shipping Damage

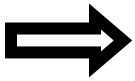
The Combiners are thoroughly checked and tested rigorously before they are shipped. Even though they are delivered boxed, in a rugged cardboard carton, shipped individually or on a pallet, the combiners can be damaged in shipping.

Please inspect the combiner thoroughly after it is delivered. If any damage is noticed, please immediately notify the shipping company. If there is any question about potential shipping damage, contact Solectria Renewables. A digital photo of the damage may be very helpful.

Do not accept unit, if visibly damaged or note visible damage when signing shipping company receipt. Report damage immediately to shipping company. Do not remove the unit from pallet/packaging. If it is determined that the unit must be returned, an RMA# must be obtained from Solectria Renewables.

2.2 Combiner Mounting

The combiner enclosure is rated NEMA4 (gasket sealed, rainproof) for typical mounting on a roof with the PV array. Optional mounting tabs allow simple mounting to a wall, array racking (if allowed) or to posts. When unpacking, remove cardboard shipping aids and tape inside enclosure.



NOTE: If the combiner is mounted outside, make sure the enclosure door remains closed in case of rain during the installation process. The components inside the enclosure will be damaged by exposure to rain.

Notes regarding mounting and placement of the combiner.

Criteria for device mounting:

- Because the unit has a NEMA4 rating, it can be mounted outdoors.

- The combiner is designed to be mounted vertically with all the conduits entering and exiting the bottom (6 x 20") of the unit. It can be mounted flat as well, but pay extra attention to seals.

- Install the combiner in an accessible location following NEC codes for enclosure and disconnect door clearances and proximity to other equipment. (See mounting diagram, Fig. 2a and 2b)

- Although not required, installation at waist or chest height allows easiest access and keeps the unit above potential snow line or drifts. Installer sometimes prefer lower installation heights for aesthetics or wind-loading reasons.

- Although not required, the combiner and fuses will remain most cool if the combiner is located in shade or partial shade from the array, roof equipment vault, walk-up or other equipment on the roof.

CAUTION: Please follow these guidelines:

- The combiner weight is 40 lbs. Be sure to verify load capacity of wall mounting area.

- Allow at least 1" clearance around sides and at least ¼" space at back (the depth of the mounting tabs) for cooling considerations in extreme conditions.

- Be sure to leave ample space for conduits to enter and exit the bottom (6"x20") of the unit. Although less recommended for outdoor applications, if any conduits are entering or exiting the right side for PV connections, be extra careful with the installation of the NEMA4 liquid-tight conduit fittings to be sure that they are very well sealed.

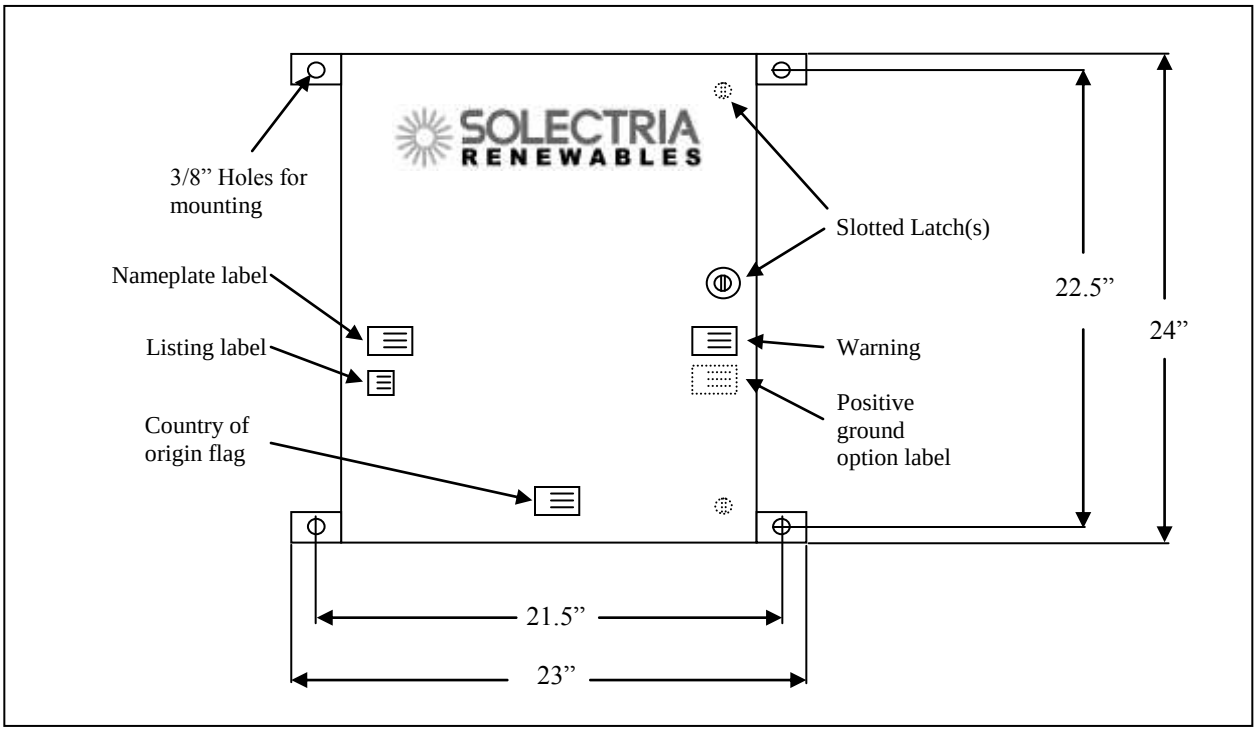


Fig. 2a STRCOM Fused String Combiner Dimensional Mounting Diagram

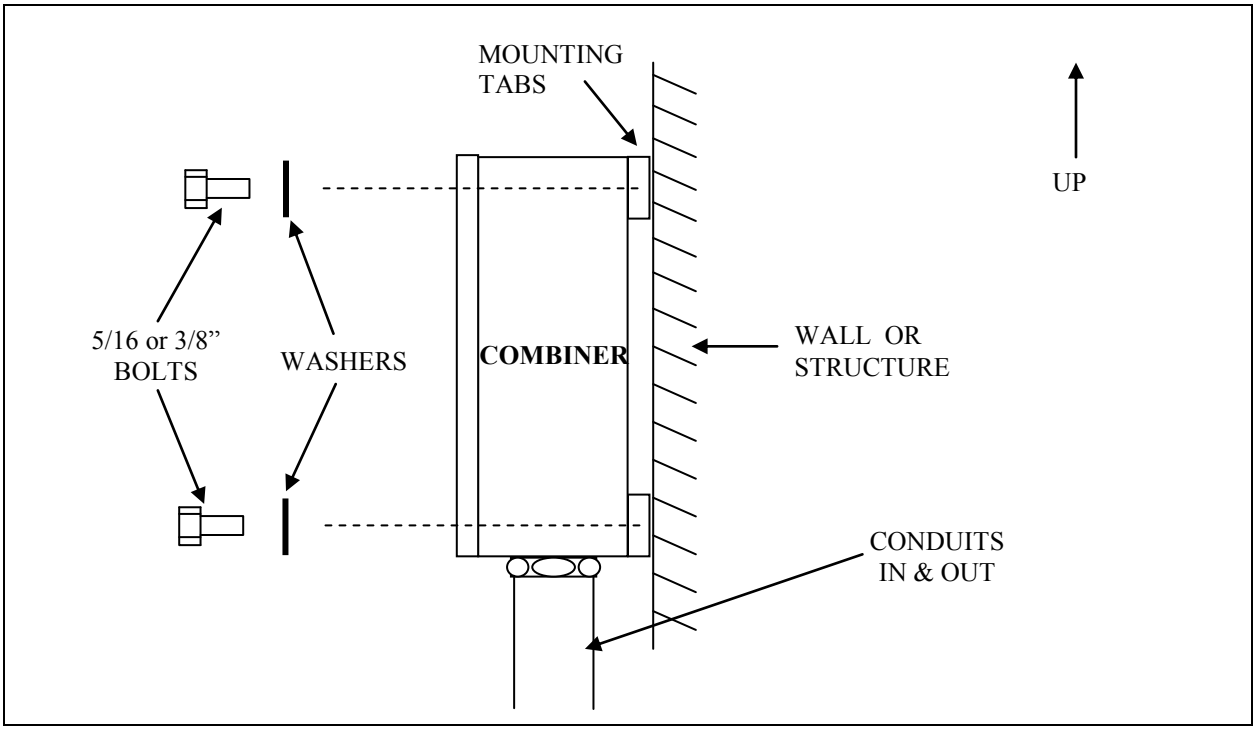


Fig. 2b STRCOM Fused Combiner Mounting Diagram (side-view)

Mounting Details

Using the mounting diagram Fig. 2a and 2b choose whether wall, array structure or stand mounting will be used. Be sure to allow NEC clearance for access to combiner. The units can be mounted side-to-side if multiple combiners are being used.

It is recommended to use galvanized grade 5 or better bolts or stainless steel bolts. The correct bolt size is 5/16" or 3/8" (or 8-10mm) diameter, SS or galvanized steel hardware is recommended. Be sure to use flat washers and lock washers. If wall mounting is used, be sure to verify sheer and pullout strength of anchors or other wall attachments.

WARNING: Injury could occur if the combiner mounting fails and the unit falls on a person.

NOTE: Always use all 4 mounting tabs for mounting.

NOTE: The 40 lb. weight of the combiner will exert as much as 20 lbs. per bolt on the 4 wall mounts. Make sure an appropriate safety margin is used for both shear and tension of wall mounting bolts, anchors or other attachments.

NOTE: Do not leave enclosure door open when you are not actually working on the inside the combiner.

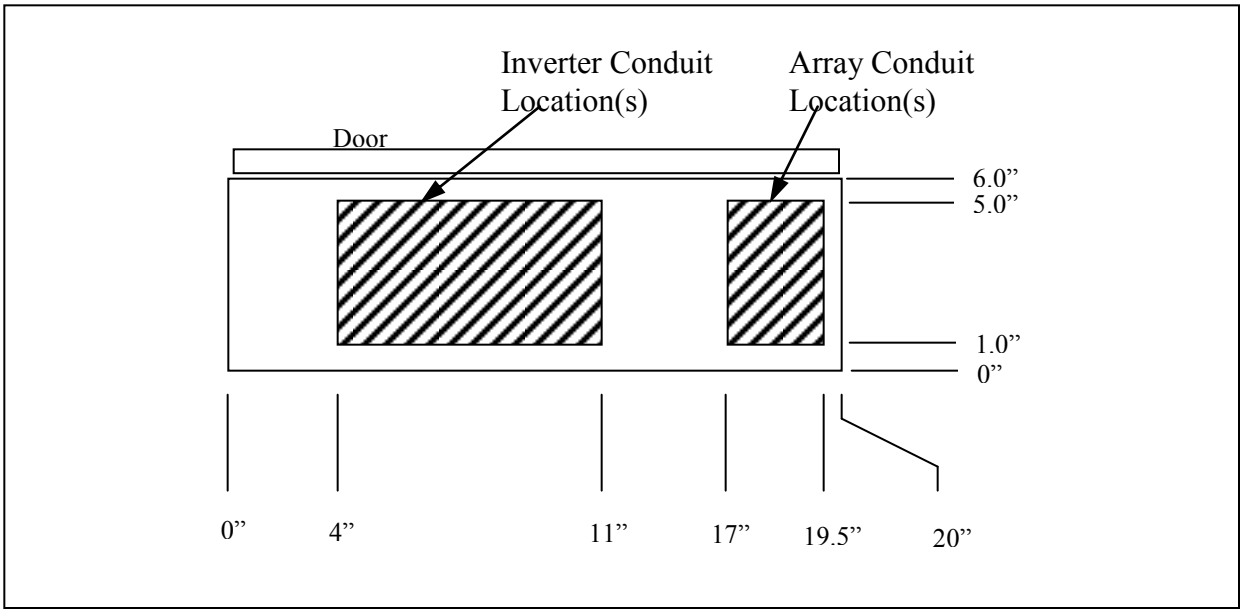


Fig. 2c STRCOM Fused Combiner Conduit Exit Location Diagram (bottom-view, from outside enclosure)

In order to maintain the Type 4 rating of the enclosure you must use NEMA 4 conduit fittings. For Rigid and IMC Conduit, use the following Cooper Crouse-Hinds, Myers Watertight Hubs or equivalent:

½”	STG-1	1-1/4”	STG-4	2-1/2”	STG-7
¾”	STG-2	1-1/2”	STG-5	3”	STG-8
1”	STG-3	2”	STG-6	3-1.2”	STG-9

Install hubs per manufacturer’s instructions.

2.3 DC Electrical Connections to Fused Combiner

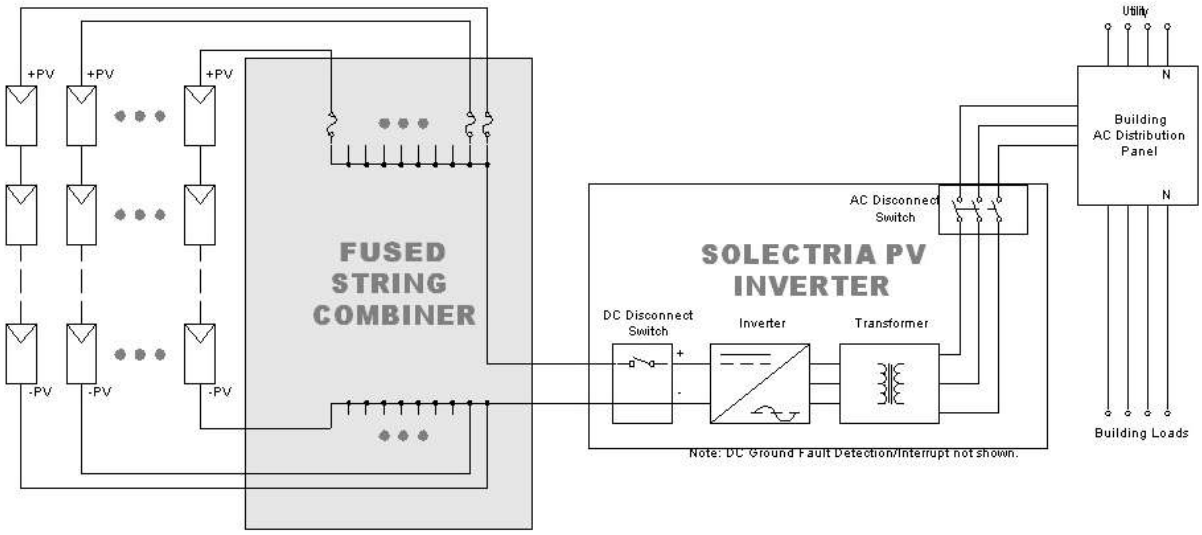


Fig. 3 Simplified electrical connection diagram

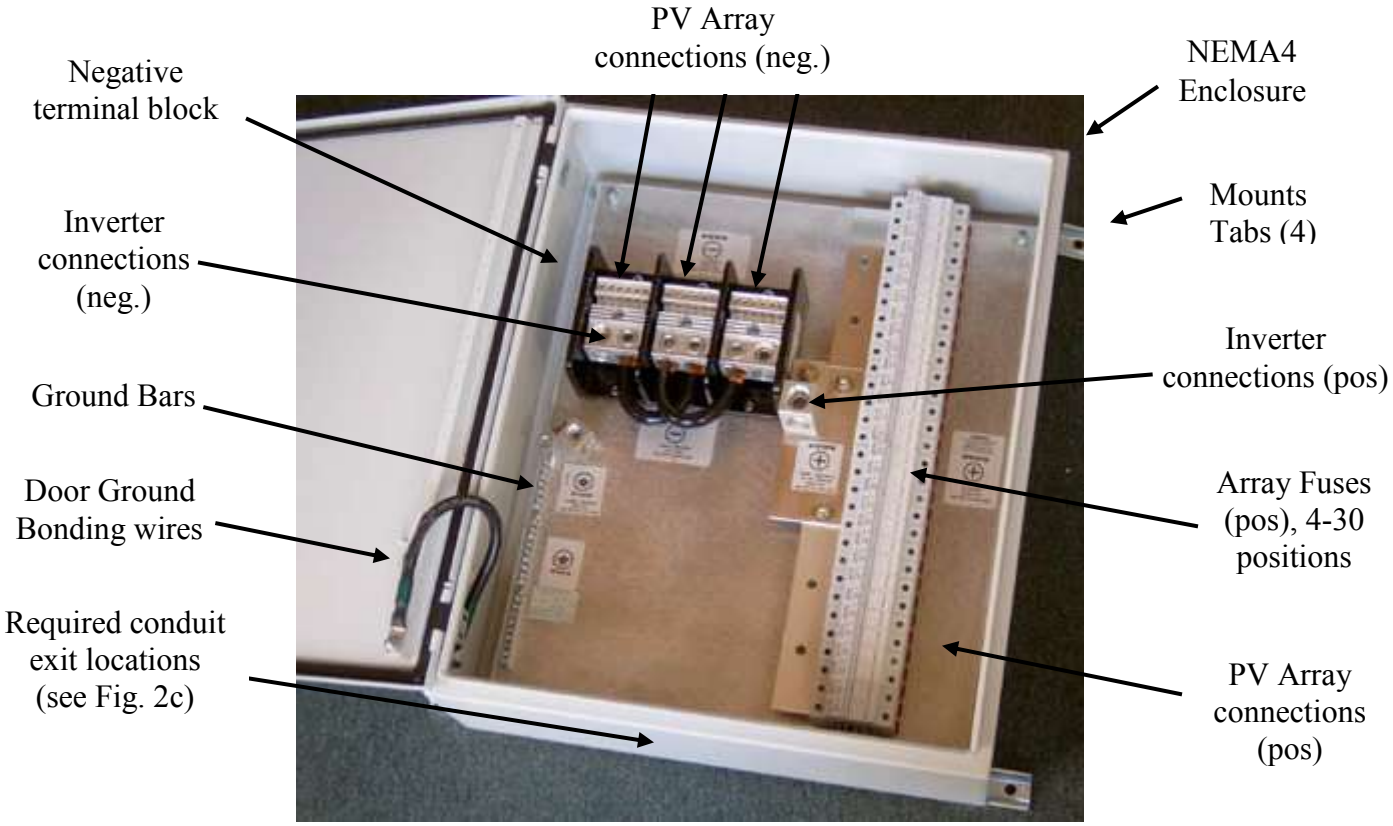


Fig. 4 Fused String Combiner Features and Connections

WARNING: All electrical installations shall be done in accordance with all local electrical codes and the National Electrical Code (NEC), ANSI/NFPA 70.

WARNING: Always be certain that all array strings are disconnected before working on any wiring in the string combiner.

WARNING: Over-current protection for a battery circuit is to be provided by others. Battery over-current protection is not provided by this string combiner.

Choosing correct fuse sizes for your combiner: This is done when you are ordering the combiner. This string combiner is available in configurations from 8 to 30 fuses. The combiner also includes your choice of 600VDC rated fuses. Fuses sizes can be 8, 10, 12, 15 or 20A. Typically, the fuse size you chose is at least 1.56 x the short circuit current rating of the PV string (or module used in the string). The fuse value should not be more than the fuse rating listed on the module nameplate label or manual.

Example 1: PV module with 3.84A short circuit current rating and a 10A fuse rating.
1.56 x 3.84A = 5.990A
An **8 or 10A** fuse can be selected for this module.

Example 2: PV module with 7.69A short circuit current rating and a 15A fuse rating.
1.56 x 7.69A = 11.996A

A **12 or 15A** fuse can be selected for this module.

Example 3: PV module with 8.12A short circuit current rating and a 15A fuse rating.
1.56 x 8.12A= 12.667A
A **15A** fuse must be selected for this module.

Connection of Grounded Conductor Terminal Block (negative conductors):
The grounded connection terminal block in the standard version combiner, for array and inverter connections is grounded by the inverter and is not to be grounded anywhere else. In the standard version of the combiner, for negatively grounded systems, the PV array negative and inverter negative conductors connect to this block. (This block is used for the positive array and inverter connections in an optional version for positively grounded systems.)
ARRAY CONNECTIONS: conductor size 8-12AWG can be used to connect to each solar array string terminal block. Torque to 35 in-lb
INVERTER CONNECTIONS: conductor size 4AWG-400KCM can be used to connect from the terminal block to the inverter. Torque to 375 in-lb

Connection of Ungrounded Conductors for fuses (positive conductors):
The ungrounded array conductors (positive conductors in a standard negatively grounded system) connect to the fuses. One PV string connects to each fuse position.
ARRAY CONNECTIONS: conductor size 8-12AWG can be used to connect to each solar array string fuse holder. Torque to 18-22 in-lb
INVERTER CONNECTIONS: conductor size 6AWG-350KCM can be used to connect from the terminal block to the inverter depending on string combiner version:

String Combiner Version		# of wire positions	Wire size	Torque
4-12 fuse		1	6AWG-250KCM	275 in-lb
13-24 fuse		1	4/0 – 350KCM	340 in-lb
	(or	2	1/0 – 250KCM	340 in-lb)
25-30 fuse		1	6AWG-250KCM	275 in-lb
	and	1	4/0 – 350KCM	340 in-lb
	(or	2	1/0 – 250KCM	340 in-lb)

Conduit Entrance locations:
It is recommended that PV array string conductor conduit(s) enter the lower right corner of the combiner enclosure on the bottom or right wall. Array conduit(s) can also enter anywhere on the right side or top right corner of the enclosure but to maintain the NEMA4 rating of the combiner, NEMA4 rated, liquid-tight conduit connectors must be used.

It is recommended that the conduit(s) to the inverter(s) exit the center of the enclosure bottom.

Grounding Conductors:
The array frame and mounting structure equipment ground conductors should be terminated on the ground bar provided in the combiner. There are several connection

points for array equipment ground conductors depending on the string combiner model:

String Combiner Version		positions	wire size	Torque
4-12 fuse		30 (2/lug)	14-12 AWG	25 in-lb
	or	15 (1/lug)	12-10 AWG	20 in-lb
		(1/lug)	8 AWG	25 in-lb
		(1/lug)	6-4 AWG	35 in-lb
	and	1	6AWG – 2/0	50 in-lb
13-30 fuse		50 (2/lug)	14-12 AWG	25 in-lb
	or	25 (1/lug)	12-10 AWG	20 in-lb
		(1/lug)	8 AWG	25 in-lb
		(1/lug)	6-4 AWG	35 in-lb
	and	1	6AWG – 2/0	50 in-lb
	and	2	6AWG - 250KCM	275 in-lb

Lightning and Surge Protection:

The inverter used with the PV system must be listed to UL1741/IEEE1547 and include required lightning and surge protection. It is a good practice to add additional lightning and surge protection on inverter or system DC disconnects. The lightning arrester can also be installed on the combiner but must be done in a way that maintains the NEMA4 rating of the combiner if outdoors. Lightning arrester leads should be connected to:

1- a ground bar terminal
2- a lug on the inverter side of the positive (+) fuse bus (you need to add an appropriate lug for this to an available hole on the fuse bus.
3- one of the array terminal screws on the negative (-)terminal block.

Grounding Electrode Conductor:

As with all PV systems, a Grounding Electrode Conductor must be installed per UL690.47 (and 250.166). This conductor should be sized according to these NEC requirements.

To disconnect the inverter from the building/utility grid, turn off the DC disconnect, then the AC disconnect. Turn off the AC 3-phase building/utility breaker if needed.

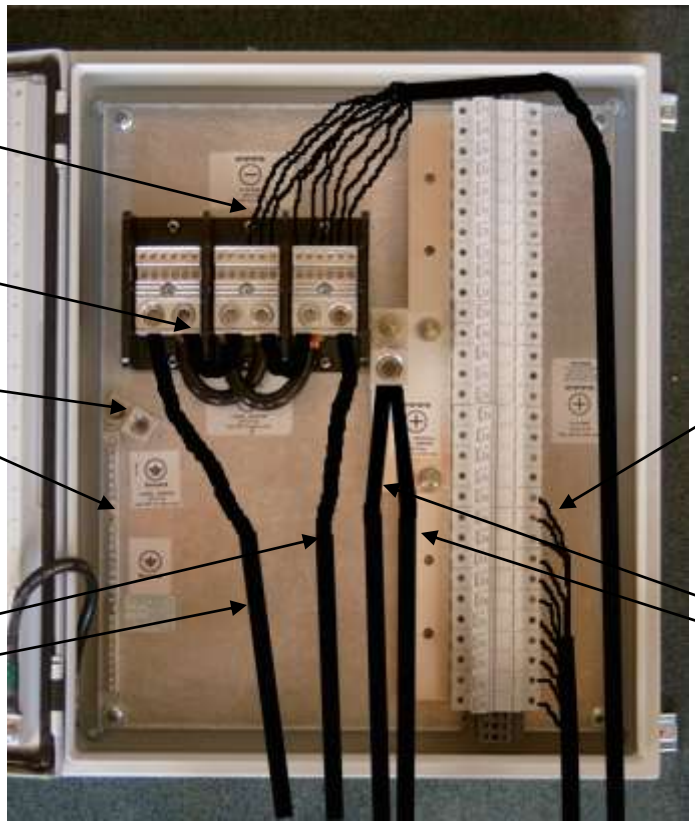


Fig. 5. STRCOM 30X__A String Combiner Wiring and Typical Conduit Exits (open showing connection)

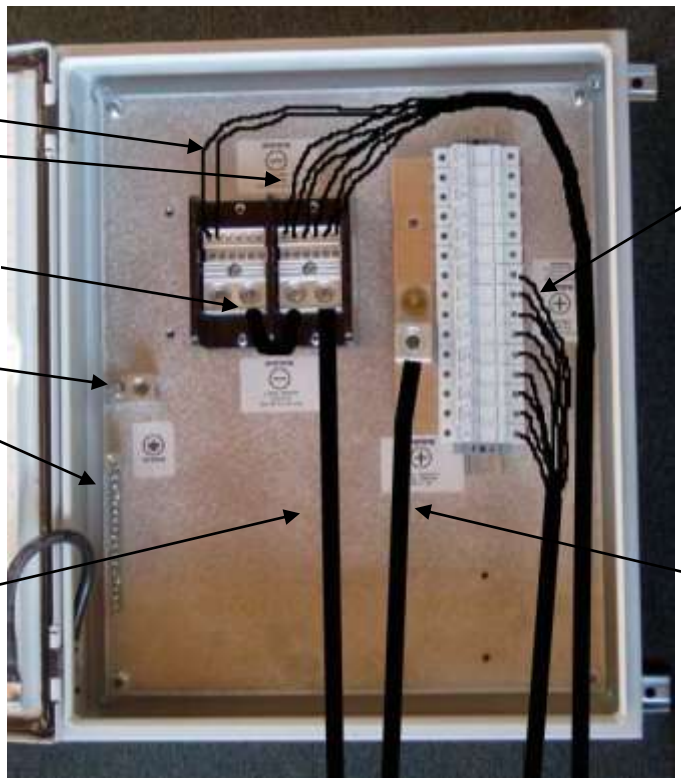


Fig. 6. STRCOM 15X__A String Combiner Wiring and Typical Conduit Exits (open showing connection)

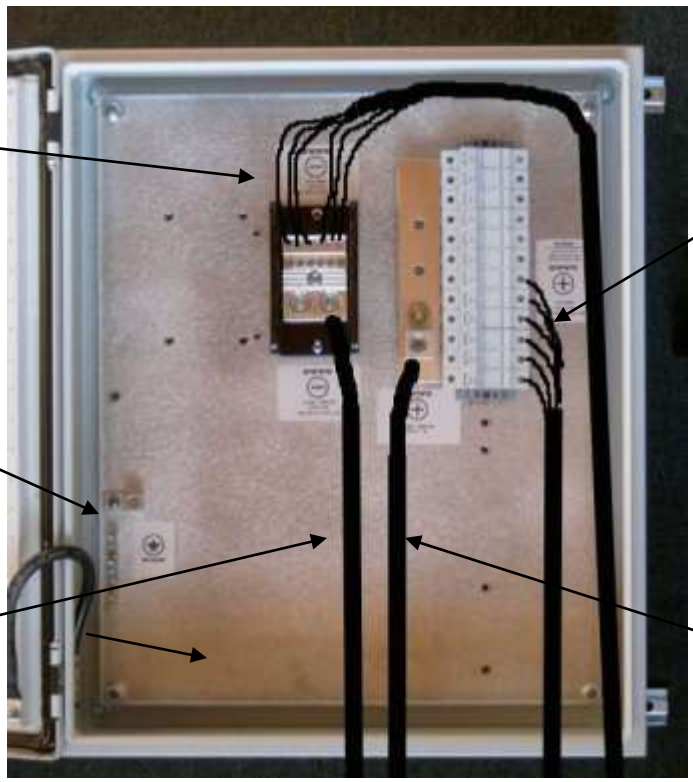
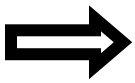


Fig. 7. STRCOM 10X__A String Combiner Wiring and Typical Conduit Exits (open showing connection)

WARNING: Fuses in fused combiner must only be replaced with the same make and model fuse. KLKD8, KLKD10, KLKD12, KLKD15, KLKD20 or ATM8, ATM10, ATM12, ATM15 or ATM20. 20A fuses not recommended for use in the 27-30 fuse position versions.

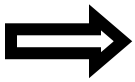
3 Operation, Tests & Commissioning the PV System

The string combiner is mounted, all connections are made and you are ready to power it up with the rest of the PV system.



NOTE: Make sure all tools, parts, etc. are removed from the string combiner before connecting PV strings or uncovering modules.

WARNING: Make a final check for correctness of all AC and DC wiring to the inverter and in the system. Fuse holders should be open at this point.



NOTE: With the PV modules connected (or uncovered) and inverter disconnects still off, it is a good final precaution to check PV polarity once more simply by carefully using a 600V, DC rated digital volt meter and probing the positive (+) and negative (-) PV connections in the disconnect enclosure.

Checking Individual strings:

- With the PV inverter still off so no current is being drawn from the array through the combiner, you can check that each string is good by checking the voltage at each fuse holder on the array side. It is best to open all the fuse holders BEFORE connecting the PV strings (or uncovering the PV modules).
- With all the fuses open, check each string for voltage and polarity by attaching negative (for a neg. grounded system) lead of a 600VDC rated voltmeter to the negative terminal block in the combiner and positive (in a pos grounded system) lead to each fuse holder on the array side.
- You should see very slightly different DC voltages from each string (assuming light no significant shadows are on the array. The polarity should be checked to be correct on all strings as well.
- Close all the fuse holders.

Operation and tests:

Once the string voltages and polarities have all been checked, it is good to check the polarity at the inverters DC disconnect also for correct polarity, then turn on the inverter.

- You should see the open circuit voltage of the array drop to roughly 75-80% once the inverter starts to load the array to MPP.
- Check the current level of each string when the system is operating. This can be done with a clamp-on amp meter (DC). Assuming constant sun intensity is on all the strings, the current output should be similar for each string, within 5-10%, for example.

To check for an open PV string:
With the inverter on and the PV system running (producing power), open the enclosure and probe each fuse holder on the array side and other lead of meter on negative terminal block (neg. grounded systems). If there has been a short in a string, the fuse for that string may be blown. You will see this because that string will sit at open circuit voltage while all the other strings are at MPP voltage.

WARNING: The combiner should only be opened by qualified service technician.

WARNING: If the combiner is outdoors, only open it when the weather is clear and dry and the unit is dry.

To check for a weak PV string:
With the inverter on and the PV system running (producing power), Open the enclosure and probe each PV string on the array side with a current clamp. If there is a weak string, you will see lower current on that string. A dead string will show no current at all. Once you find what string has a problem, you can dig into the wiring and modules for that string to find and fix the problem.

Ground Currents:
Check ground conductors for no current flowing while system is operating. Before closing the enclosure always check for any signs of problems such as corrosion, loose parts, insect or animal infestation, excessive dirt/dust or over heated or deformed/aged-looking parts. Also be sure if any wires were moved or cable ties cut, that they are replaced as new.

4 Product Warranty & RMA Policy

4.1 Warranty Policy

The Solectria Renewables Warranty Policy is stated below.

Solectria Renewables Warranty Coverage:
Solectria Renewables Limited Warranties are provided by Solectria Renewables, LLC. ("Solectria Renewables") and cover defects in workmanship and materials..

Duration of a Solectria Renewables Warranty Period:
The warranty period is 60 months from the date of purchase of the SRTCOM Fused String Combiners by the end user or 64 months after the delivery date from Solectria Renewables to distributor or dealer/installer, whichever is shorter. If a warranty extension has been purchased, the term is defined as extension beyond 60 months. For example, if a 5-year extension (to 10 years total) is purchased, the term becomes 120 months from date of purchase.

If Solectria Renewables repairs or replaces a product, its warranty continues for the remaining portion of the original Warranty Period or 90 days from the date of the return shipment to the customer, whichever is greater.

All warranties are null and void if full payment for products and associated shipping are not received in full and in a timely manner by Solectria Renewables.

Please contact Solectria Renewables Customer Service for further details on other products.

What will Solectria Renewables do?
Solectria Renewables will, at its option, repair or replace the defective product free of charge, provided that you notify Solectria Renewables of the product defect within the Warranty Period for your product, and provided that Solectria Renewables, through inspection, establishes the existence of such a defect and that it is covered by the Limited Warranty.

Solectria Renewables will, at its option, use new and/or reconditioned parts in performing warranty repair and building replacement products. Solectria Renewables reserves the right to use parts or products of original or improved design in the repair or replacement. All replaced products and all parts removed from repaired products become the property of Solectria Renewables.

Solectria Renewables will attempt to repair the unit within a reasonable time period (there is no reimbursement for lost energy production.)

Solectria Renewables covers both parts and labor necessary to repair the product, and return shipment to the customer via a Solectria Renewables-selected non-expedited surface freight within the contiguous United States and Canada. Alaska and Hawaii and Rest Of The World are excluded. Contact Solectria Renewables customer service for details on freight policy for return shipments outside of the contiguous United States and Canada.

Obtaining Service:
If your product requires troubleshooting or warranty service, contact your distributor or dealer/installer. If you are unable to contact your distributor or dealer/installer, or the distributor or dealer/installer is unable to provide service, contact Solectria Renewables directly at the number listed on the website in the customer service section for your product.

Solectria Renewables may send personnel to a jobsite or contract with an area technician, installer or other authorized, trained service personnel to service/replace components.

Direct returns may be performed according to the Solectria Renewables Return Material Authorization Policy. Call for details.

In any warranty claim, dated proof of purchase must accompany the product and the product must not have been disassembled or modified without prior written authorization by Solectria Renewables.
Proof of purchase may be in any one of the following forms:
- The dated purchase receipt from the original purchase of the product at point of sale to the end user, or
- The dated distributor or dealer/installer invoice or purchase receipt showing original equipment manufacturer (OEM) status, or
- The dated invoice or purchase receipt showing the product exchanged under warranty.

Solectria Renewables provides trouble-shooting service Monday-Friday, 9am-6pm EST. Once a problem is identified, necessary replacement component(s) will be dispatched within 1-2 days to the jobsite or the designated service personnel's address or will be brought to the site by Solectria Renewables' personnel.

What does the Solectria Renewables warranty not cover?
Solectria Renewables Limited Warranties do not cover normal wear and tear of the product or costs related to the removal, installation, or troubleshooting of the customer's electrical systems. These warranties do not apply to and Solectria Renewables will not be responsible for any defect in or damage to:
a) The product, if it has been misused, neglected, improperly installed, physically damaged or altered, either internally or externally, or damaged from improper use or use in an unsuitable environment;
b) The product, if it has been subjected to fire, water, generalized corrosion, biological infestations, acts of God or input voltage that creates operating conditions beyond the maximum or minimum limits listed in the Solectria Renewables product specifications including high input voltage from generators and lightning strikes;

c) The product, if repairs have been done to it other than by Solectria Renewables or authorized, trained service personnel;
d) The product, if it is used as a component part of a product expressly warranted by another manufacturer;
e) The product, if its original identification (trademark, serial number) markings have been defaced, altered, or removed;
f) The product, if it has been damaged in shipping (unless approved in writing by Solectria Renewables);
g) Any installation and operation beyond the scope covered by relevant safety regulations (UL1741, NEC, etc.);

DISCLAIMER

SOLECTRIA RENEWABLES LIMITED WARRANTIES ARE THE SOLE AND EXCLUSIVE WARRANTY PROVIDED BY SOLECTRIA RENEWABLES IN CONNECTION WITH YOUR SOLECTRIA RENEWABLES PRODUCT AND ARE, WHERE PERMITTED BY LAW, IN LIEU OF ALL OTHER WARRANTIES, CONDITIONS, GUARANTEES, REPRESENTATIONS, OBLIGATIONS AND LIABILITIES, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE IN CONNECTION WITH THE PRODUCT, HOWEVER ARISING (WHETHER BY CONTRACT, TORT, NEGLIGENCE, PRINCIPLES OF MANUFACTURER'S LIABILITY, OPERATION OF LAW, CONDUCT, STATEMENT OR OTHERWISE), INCLUDING WITHOUT RESTRICTION ANY IMPLIED WARRANTY OR CONDITION OF QUALITY, DISTRIBUTOR OR DEALER/INSTALLER ABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ANY IMPLIED WARRANTY OF DISTRIBUTOR OR DEALER/INSTALLER ABILITY OR FITNESS FOR A PARTICULAR PURPOSE TO THE EXTENT REQUIRED UNDER APPLICABLE LAW TO APPLY TO THE PRODUCT SHALL BE LIMITED IN DURATION TO THE PERIOD STIPULATED UNDER THIS LIMITED WARRANTY.

IN NO EVENT WILL SOLECTRIA RENEWABLES, LLC, INCLUDING ITS SUPPLIERS, MANUFACTURERS, VENDORS, SUBCONTRACTORS, DISTRIBUTORS, DEALERS AND ANY OTHER AFFILIATES BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSSES, COSTS OR EXPENSES HOWEVER ARISING WHETHER IN CONTRACT OR TORT INCLUDING WITHOUT RESTRICTION ANY ECONOMIC LOSSES OF ANY KIND, ANY LOSS OR DAMAGE TO PROPERTY, ANY PERSONAL INJURY, ANY DAMAGE OR INJURY ARISING FROM OR AS A RESULT OF ANY USE, MISUSE OR ABUSE, OR THE (IN-) CORRECT INSTALLATION, INTEGRATION OR OPERATION OF THE PRODUCT.

Solectria Renewables neither assumes nor authorizes any other person to assume for it any other liability in connection with the repair or replacement or the Product.

Exclusions of the Policy:

If your product is a consumer product, federal law does not allow an exclusion of implied warranties. To the extent you are entitled to implied warranties under federal law, to the extent permitted by applicable law they are limited to the duration of this Limited Warranty. Some states and provinces do not allow limitations or exclusions on implied warranties or on the duration of an implied warranty or on the limitation or exclusion of incidental or consequential damages, so the above limitation(s) or exclusion(s) may not apply to you. This Limited Warranty gives you specific legal rights. You may have other rights, which may vary from state to state or province to province.

WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, UNLESS SPECIFICALLY AGREED TO BY IT IN WRITING, SOLECTRIA RENEWABLES
(a) MAKES NO WARRANTY AS TO THE ACCURACY, SUFFICIENCY OR SUITABILITY OF ANY TECHNICAL OR OTHER INFORMATION PROVIDED IN MANUALS OR OTHER DOCUMENTATION PROVIDED BY IT IN CONNECTION WITH THE PRODUCT; AND
(b) ASSUMES NO RESPONSIBILITY OR LIABILITY FOR LOSSES, DAMAGES, COSTS OR EXPENSES, WHETHER SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL OR INCIDENTAL, WHICH MIGHT ARISE OUT OF THE USE OF SUCH INFORMATION.
THE USE OF ANY SUCH INFORMATION WILL BE ENTIRELY AT THE USER'S RISK.

WARNING: LIMITATIONS ON USE

Please refer to your product user manual for limitations on uses of the product. Specifically, please note that Solectria Renewables products are not intended for use in connection with life support systems and Solectria Renewables makes no warranty or representation in connection with any use of the product for such purposes.

Please review our Return Merchandise Authorization Policy for returning product to Solectria Renewables.

4.3 Return Material Authorization Policy

Please review our Return Merchandise Authorization Policy below after reviewing our Solectria Renewables Warranty Policy.

Obtaining a required, Return Material Authorization:
Before returning a product directly to Solectria Renewables you must obtain a Return Material Authorization (RMA) number and the correct factory "Ship To" address. Products must also be shipped prepaid. Product shipments will be refused and returned at your expense if they are unauthorized, returned without an RMA number clearly marked on the outside of the shipping box, if they are shipped collect, or if they are shipped to the wrong location.

Information Solectria Renewables needs when you are obtaining service:
1) The model names and serial number of your product
2) Information about the installation and use of the unit
3) Information about the failure and/or reason for the return
4) A copy of your dated proof of purchase.

Preparing the product for shipping:
1) Package the unit safely, preferably using the original box and packing materials. Please ensure that your product is shipped fully insured in the original packaging or equivalent. This warranty will not apply where the product is damaged due to improper packaging.
2) Include the following:
a. The RMA number supplied by Solectria Renewables, LLC clearly marked on the outside of the box
b. A return address to which the unit can be shipped. Post office boxes are not acceptable.
c. A contact telephone number where you can be reached during work hours.
d. A brief description of the problem.
Ship the unit prepaid to the address provided by your Solectria Renewables customer service representative.

Returning a product from outside of the USA or Canada:
In addition to the above, you MUST include return freight funds and are fully responsible for all documents, duties, tariffs, and deposits.

5 Technical Data

Technical Information and specifications – see appendix for complete STRCOM Fused String Combiner data sheet

Input (DC) from PV array:

- Maximum open circuit voltage of PV array: 600V DC

WARNING: NEC 690-7 must be followed to calculate the maximum number of PV modules allowed for a maximum inverter open circuit voltage (OCV) of 600V DC in extreme cold temperatures for the installation location. (Note that some inverter models have a lower maximum open circuit voltage than 600VDC, for example, the PVI 15KW has a 475VDC maximum open circuit voltage.)

- See PV string sizing charts in Appendix B

The open circuit voltage of PV modules depends on the cell temperature and the solar irradiation. The highest open circuit voltage occurs when the PV modules are at the coldest temperature and in bright sun.

Part Number scheme: STRCOM **10**X**15**A (**-P** if for use with positively grounded PV systems)

Number of fuse positions

Current Rating of 600VDC fuses included

STRCOM Fused String Combiner Configurations

STR-COM **4**X___A	4 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **6**X___A	6 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **8**X___A	8 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **10**X___A	10 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **12**X-___A	12 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **13**X-___A	13 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **14**X-___A	14 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **15**X-___A	15 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **16**X-___A	16 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **17**X-___A	17 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **18**X-___A	18 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **19**X-___A	19 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **20**X-___A	20 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **21**X-___A	21 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **22**X-___A	22 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **23**X-___A	23 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **24**X-___A	24 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **25**X-___A	25 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **26**X-___A	26 Fuse String Combiner (with 8, 10, 12, 15 or 20A fuses)
STR-COM **27**X-___A	27 Fuse String Combiner (with 8, 10, 12 or 15A fuses, not for use with 20A fuses)
STR-COM **28**X-___A	28 Fuse String Combiner (with 8, 10, 12 or 15A fuses, not for use with 20A fuses)
STR-COM **29**X-___A	29 Fuse String Combiner (with 8, 10, 12 or 15A fuses, not for use with 20A fuses)
STR-COM **30**X-___A	30 Fuse String Combiner (with 8, 10, 12 or 15A fuses, not for use with 20A fuses)
Optional Mount Tab Kit	Optional mount tab kit (Four mount tabs and hardware. Mount to bottom/back of box in existing mounting holes in enclosure)

Specifications (for 3 specific models	**STRCOM 10X__A**	**STRCOM 15X__A**	**STRCOM 30X__A**
Output			
Continuous Operating Current	150A	280A	340A
Maximum Short Circuit Current	225A	338A	675A
Number of Outputs	1	1-2	1-3
Voltage Range	0 - 600VDC		
Wire Sizes	4AWG-250KCM	1/0 – 350KCM (dual-wire capable lug)	1/0 – 350KCM (dual-wire capable lug)
	Monopole, neg. ground systems (pos ground opt)		
Input			
Array Configuration:	Monopole, neg. ground systems (pos ground opt)		
Max V_{OC} [2]	600 VDC		
Fuse positions	10	15	30
Max Short Circuit Current	150 A	225 A	450 A
Fuse positions avail in series	4, 6, 8, 10, 12	13,14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24	25, 26, 27, 28, 29, 30
All fuse positions available	4, 6, 8, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30		
Wire size range	12 – 8 AWG		
Fuse size choices	8A, 10A, 12A, 15A, 20A*		
Fuse Voltage Rating, Type	600VDC, Midget		
Environmental			
Enclosure	Rain Proof , gasket sealed (NEMA4)		
General			
Weight lb (kg)	40 (18.2)	41 (18.6)	42 (19.1)
Dimensions: inch [mm] (With Optional Mounting Tabs)	24[610] H x 20[508] W x 6.75[172] D 24 [610] H x 23[584] W x 7[178] D		
Warranty	5 years (warranty extensions available)		

*20A fuses not for use in the 27-30A version combiners.

Appendix A – STRCOM Fused Combiner Data Sheet

Link to brochure: http://www.solren.com/downloads/STRCOM_Datasheet.pdf

Appendix B – Example PV string sizing chart(s)

Link: http://www.solren.com/stringSizing.html

The charts below are simplified string sizing examples. Please use the charts on the website for complete charts for use across the country.

Appendix C - Contact Information

Solectria Renewables LLC
360 Merrimack Street, Building 9
Lawrence, Massachusetts, USA

Tel: 978.683-9700
Fax: 978.683-9702
Email: inverters@solren.com
Website: www.solren.com

Authorized Distributors/Dealers/Installers/Designers: www.solren.com
Specific Link: http://www.solren.com/contact/dist.htm

Appendix D – UL1741/IEEE1547 Certification Letter

Intertek

AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

Applicant:	SOLECTRIA RENEWABLES, LLC 360 Merrimack Street	**Manufacturer:**	SOLECTRIA RENEWABLES, LLC 360 Merrimack Street
Address:	Bldg. 9, Floor 2 Lawrence, MA 01843	**Address:**	Bldg. 9, Floor 2 Lawrence, MA 01843
Country:	USA	**Country:**	USA
Contact:	Mr. James Worden	**Contact:**	Mr. James Worden
Phone:	(978) 683-9700	**Phone:**	(978) 683-9700
FAX:	(978) 683-9702	**FAX:**	(978) 683-9702
Email:	www.james@solren.com	**Email:**	www.james@solren.com

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Cortland, NY

Control Number: 3058249 **Authorized by:** Patricia Favara
William T. Starr, Certification Manager

ETL LISTED US

This document supersedes all previous Authorizations to Mark for the noted Report Number.

This Authorization to Mark is for the exclusive use of Intertek's Client and is provided pursuant to the Certification agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Authorization to Mark. Only the Client is authorized to permit copying or distribution of this Authorization to Mark and then only in its entirety. Use of Intertek's Certification mark is restricted to the conditions laid out in the agreement and in this Authorization to Mark. Any further use of the Intertek name for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. Initial Factory Assessments and Follow up Services are for the purpose of assuring appropriate usage of the Certification mark in accordance with the agreement, they are not for the purposes of production quality control and do not relieve the Client of their obligations in this respect.

Intertek Testing Services NA Inc.
165 Main Street, Cortland, NY 13045
Telephone 800-345-3851 or 607-753-6711 Fax 607-756-6699

Standard(s):	UL Standard for Safety for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources (UL 1741, 1st Edition, May 7th 1999, Including Revisions through November 7, 2005.) UL Standard for Safety for Panelboards (UL 67, 11th Edition, December 8, 1993, Including Revisions through April 12, 2006)
Product:	Permanently connected units used for photovoltaic wiring/disconnect.
Models:	STRCOM-YY-X-ZZ-A for negatively grounded systems and STRCOM-YY-X-ZZ-A-P for positively grounded systems, Where: YY is the number of circuits (4-30) ZZ is the individual circuit fuse rating (8, 10, 12, 15 or 20).

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