

# Installation Instructions for SunLink RMS Wire Management

## TABLE OF CONTENTS

Notices and Safety Precautions	Page 1
Component and Tool Quick Reference	Page 2
Wire Tray & Clip Specifications	Page 3
Wire Tray Installation Guidelines	Pages 4-7
Wire Clip Installation Guidelines	Page 8
Frequently Asked Questions	Page 9



1010 B Street, Suite 4100 – San Rafael, CA 94901  
415-925-9650 – [www.sunlink.com](http://www.sunlink.com)

## Notices and Safety Precautions

**Read this document before beginning installation work.** Plan for safe practice during any installation activity with respect to hazards from tripping, falling, lifting, repetitive stress, and any overhead or electrical hazards. When working close to building roof edges, consider protection options that reduce worker exposure to fall hazards. Refer to OSHA Sub-Chapter 7, Group 1, Article 2.

SunLink products mentioned herein are made from aluminum, steel, and stainless steel alloys. These materials are considered to be non-toxic. Metal components often have sharp edges. *Handle carefully! Wearing gloves is good practice.*

**This document is not prescriptive regarding safety and does not purport to address all the safety concerns that may arise with its use. Contractors should become familiar with all applicable safety, health and regulatory requirements before beginning work.**

**Electrical safety notice** – Any time a SunLink system contains two or more electrically interconnected modules, a shock hazard is present. SunLink is a mechanical system and contains no “live” parts. Mechanical installers and electricians should coordinate in order to ensure that all personnel are aware of electrical hazards.

**Precedence** – Nothing in this document is intended to limit the allocation of rooftop space or to control crafts with respect to work precedence and coordination.

**As-built documentation process** – On-roof use and mark-up of this document and the drawings and printed matter referred to in this document is good practice. Mark up and annotate the drawings on a regular basis, noting completions, exceptions, dimensional inconsistencies, etc.

**Workarounds** – Workers laying out or installing arrays on rooftops may encounter undocumented or unexpected obstacles requiring workaround. Since PV arrays are intended to be primarily regular and repeating structures, workarounds should be noted on working drawings. When a workaround affects the location of two or more modules at once, the supervisor should be advised and the workaround should be evaluated and then completed in a manner that ensures that the remainder of the array is not affected.

**Roof life and care** – The service life of any roof is contingent upon care for the roof especially during equipment installation on a roof. Avoid concentrated loads on the roof. Never drag SunLink components into place. Instead, elevate the component, and then move it manually or with a cart. Locate it and then place it “on spot.” To ensure roofing system warranty continuation, work with roofing system installation contractors to ensure roofing system – array compatibility.

**WARNING!** Single-ply roofs are not damage tolerant. Avoid accumulation of metal fines that result from drilling or sawing metal components. Metal fines embedded in the soles of shoes can damage single-ply roofs.

**Final inspection** – Visually inspect assembled SunLink arrays, roof-mounted or ground supported. The suggested process consists of a row-by-row walk-through and then a perimeter walk-around. Report any distortion in the assembly to SunLink.

## Component and Tool Quick Reference

COMPONENTS		
<p><b>WIRE TRAY</b> (030-1001)</p> 	<p><b>WIRE TRAY COVER</b> (030-1003)</p> 	<p><b>WIRE TRAY HINGE</b> (030-2101)</p> 
<p><b>WIRE TRAY BRACKET, LONG LINK</b> (030-2003)</p> 	<p><b>WIRE TRAY JOINT</b> (030-2102)</p> 	<p><b>WIRE TRAY CORNER JOINT</b> (030-2304)</p> 
<p><b>S WIRE CLIP</b> (030-3001)</p> 	<p><b>LONG LINK WIRE CLIP</b> (030-3002)</p> 	<p><b>SPAR WIRE CLIP</b> (030-3003)</p> 

REQUIRED INSTALLATION TOOLS		
5/32" hex driver or allen wrench	Miter "chop" saw with metal cutting blade	Portable band saw
Angle grinder	Protective gloves	

## Wire Tray and Wire Clip Technical Specifications

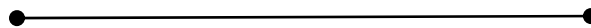
### Wire Tray

- The wire tray, cover and components are aluminum alloy.
  - Fasteners are stainless steel.
  - System is ventilated.
- Not intended to be a water-tight enclosure.

<b>METALLIC WIREWAY (STANDARD USE)</b>	
<i>When installed as a metallic wireway the following specifications are applicable:</i>	
<b>Size of Conductors</b>	8 GA or smaller
<b>Maximum # of Conductors</b>	Up to 50. See NFPA70 : NEC Article 376.21
<b>Cross-Sectional Area of Wire Tray</b>	4 in <sup>2</sup>
<b>Ampacity Adjustment Factor Calculations</b>	Per NEC 376.22 (B), adjustment factors in 310.15(B)(2) shall be applied only where the number of current carrying conductors exceeds 30. When calculating adjustment factors per NEC 310.15(B)(2)(c) note the Wire Tray is typically 1-3 in. off the surface of the roof.
<b>Compliant with Specifications</b>	<ul style="list-style-type: none"> <li>NFPA70 : NEC Article 376.21</li> <li>UL ZOYX</li> </ul>

<b>VENTILATED CABLE TRAY (FOR ONE AUGHT WIRE OR LARGER)</b>	
<i>When installed as a ventilated channel cable tray the following specifications are applicable:</i>	
<b>Maximum # of Conductors</b>	Up to 50. See NFPA70 : NEC Article 392
<b>Inside Width</b>	3 in. (See NFPA70: NEC Article 392.10(B))
<b>Ampacity Adjustment Factor Calculations</b>	When calculating adjustment factors per NEC 310.15(B)(2)(c) note the Wire Tray is typically 1-3 in. off the surface of the roof.
<b>Compliant with Specifications</b>	<ul style="list-style-type: none"> <li>NFPA70 : NEC Article 392</li> <li>NEMA VE 1-2009</li> <li>CSA C22.2 NO 126.1-02</li> <li>UL CYOV</li> </ul>
<b>Additional Installation Guidance</b>	See NEMA VE2

<b>WIRE TRAY LOAD RATINGS</b>		
5 ft.	27 lbf.	11 lbf./ft.
10 ft.	14 lbf.	2.75 lbf./ft.
12 ft. (max)	12 lbf.	2 lbf./ft.

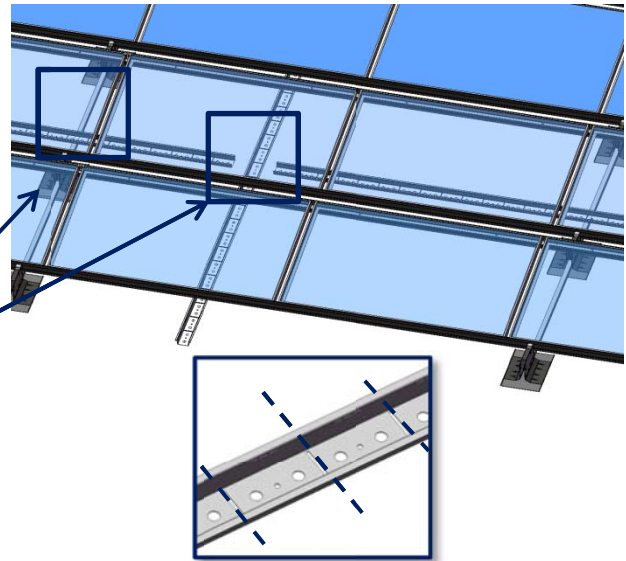


### Wire Clips

- Wire clips are stainless steel.
- Capacity is 1 to 3 PV cable.

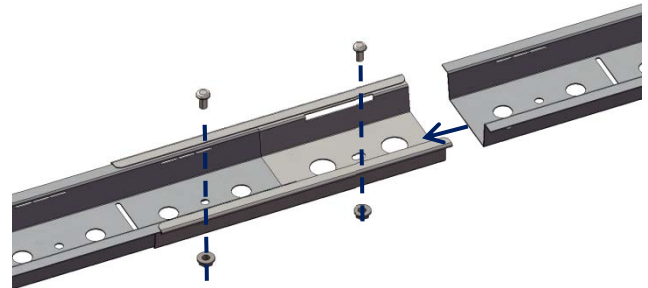
### Step 1 – Position Wire Trays

- A. Complete all RMS and module installation, including ballast pans and connectors.
- B. Remove wind deflectors and engage the RMS Tilt Access® feature for easy access to the sub-array.
- C. Position all sections of wire tray in the sub-array, avoiding ballast pans and connectors.
- D. Rest North-South runs of wire tray on the roof.
- E. Rest East-West runs of wire tray on the long link, south of connectors and ballast pans.
- F. Interrupt and/or cut East-West running trays at any intersection with a North-South run.
  - a. To trim to length, cut tray at perforated slot. (Trays perforated every 6 inches.)



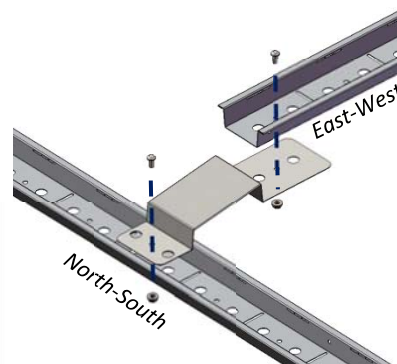
### Step 2 – Assemble Tray Joints

- A. Join continuous lengths of wire tray by sliding the joint assembly onto either end of the tray.
- B. Fasten using two 5/16"-18 X 1" button head cap screws and flange nuts.
- C. Use a 5/32" hex driver or allen wrench torque screws to 11-14 ft-lbs.

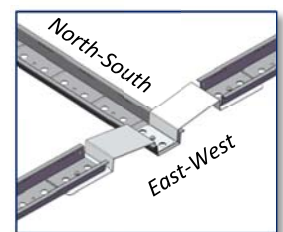


### Step 3 – Assemble T Joints/Corner Joints

- A. Place one end of the T/corner joint assembly into the North-South tray and the other into the East-West tray.
- B. Note: The North-South tray will always run underneath the East-West tray.
- C. Fasten using two 5/16"-18 X 1" button head cap screws and flange nuts.
- D. Use a 5/32" hex driver or allen wrench to torque screws to 11-14 ft-lbs.



#### Alternate Method

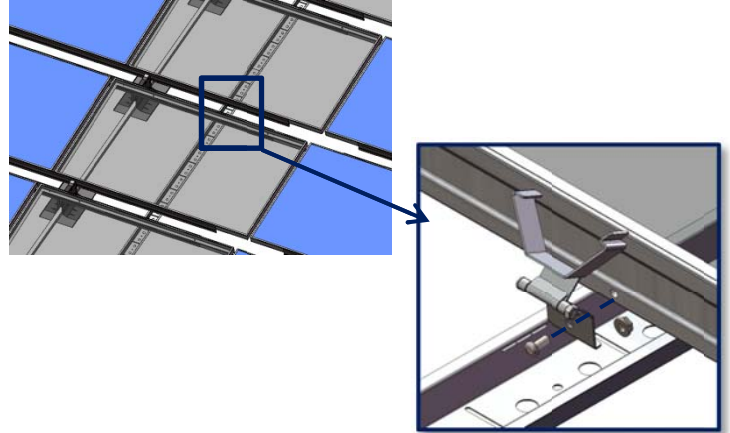


#### Alternate Method - Corner Joint "T"

- A. Attach two East-West trays to a North-South tray using two T/corner joint assemblies.

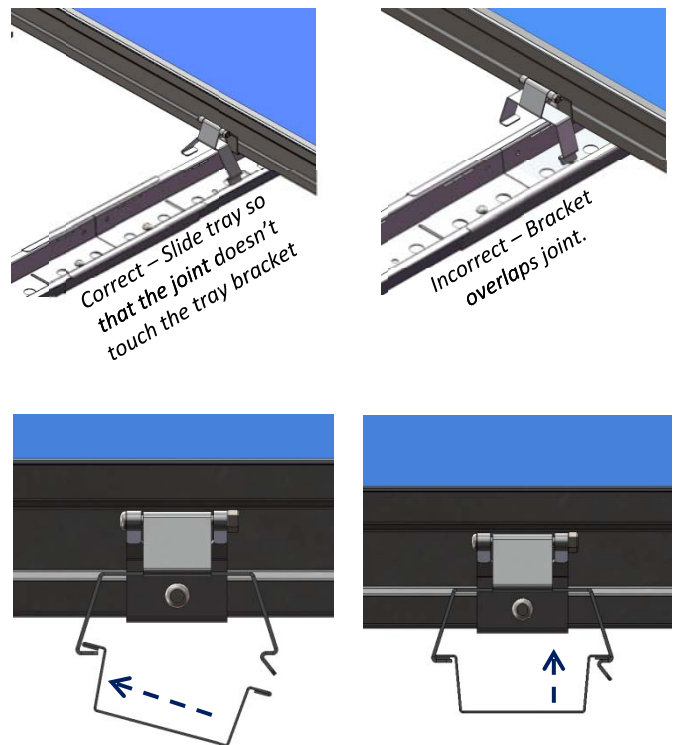
### Step 4 - Fasten North-South Wire Tray Hinges to the RMS Spar

- A. Install a wire tray hinge assy on the RMS spar whenever a wire tray passes underneath the south (lower) edge of a PV module.
- B. Mount the hinge either using 1) unused deflector holes (located every 2 ft.), or if desired 2) by using the hinge as a template to field drill a hole in the spar using a .344" diameter drill bit.
- C. Fasten the wire tray hinge assy to the spar using a 5/16 – 18 X 1" button head cap screw and flange nut.
- D. Use a 5/32" hex driver or allen wrench to torque screws to 11-14 ft-lbs.



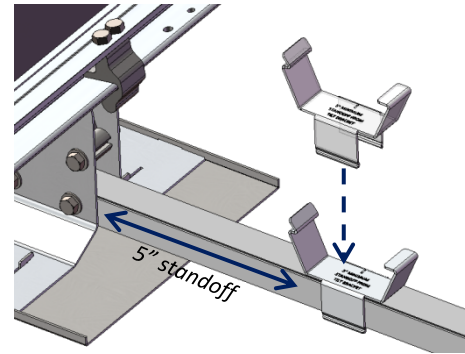
### Step 5 - Snap the North South Tray into the Hinge Assembly

- A. Slide each tray to into position making sure that the joint assembly does not overlap the hinge assembly.
  
  
  
  
  
  
  
  
  
  
- B. Snap the wire tray into the hinge assembly and long link brackets.



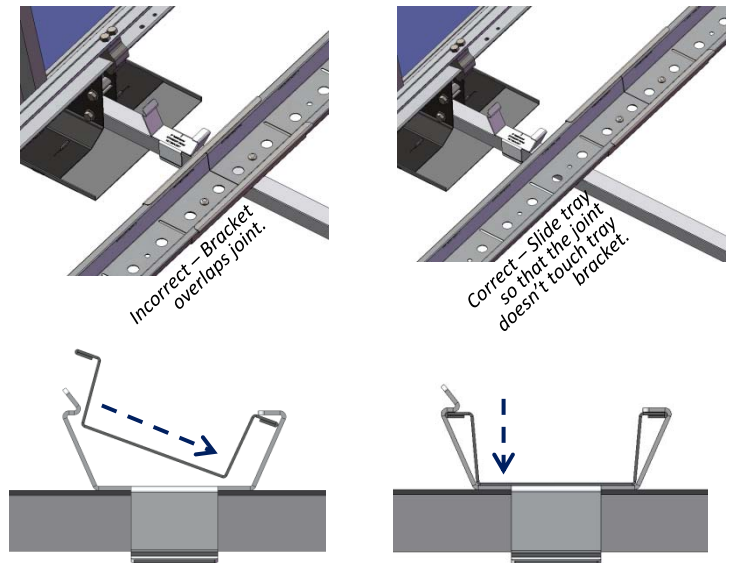
### Step 6 - Fasten East-West Runs of Wire Tray to Long Links

- A. Wherever a wire tray passes over a long link, snap a long link bracket onto the long link.
- B. Maintain a 5" standoff from the center of the bracket to the edge of the tilt bracket cover.



### Step 7 - Snap the East West Trays into the Long Link Brackets

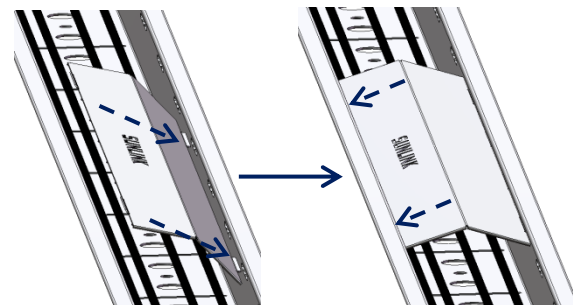
- A. Slide each tray into position making sure that the joint assembly does not overlap the hinge assembly.
- B. Snap the wire tray into the long link bracket.



### Step 8 - Place or Route PV Cables Safely Inside Tray.

#### Optional Step 9 - Snap the Wire Tray Cover Into the Wire Tray.

- A. Insert cover tabs into wire tray slots.
- B. Squeeze cover together, and push downward until all the tabs insert into wire tray slots.
- C. Maintain gaps between covers for ventilation, and cable entry.

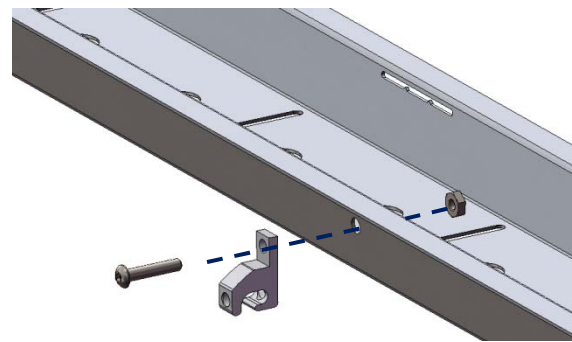


### Step 10 – Install Grounding Lugs\*

- A. Install one grounding lug per continuous section of wire tray.
- B. The lug may be installed either inside or outside the wire tray.
- C. A hole in the sidewall of the tray is provided for a grounding lug.

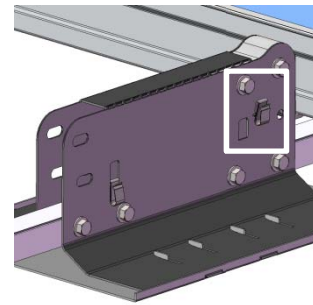
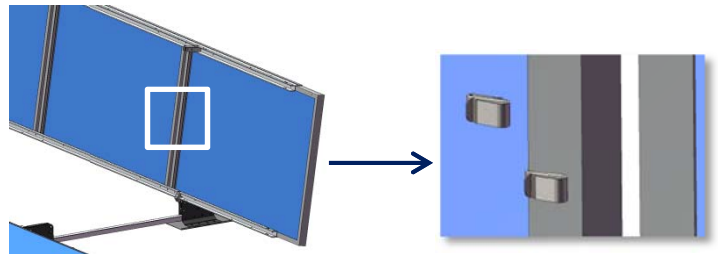
\*Note: components not supplied by SunLink.

See Q2 in the FAQs on page 11 for more information about grounding.



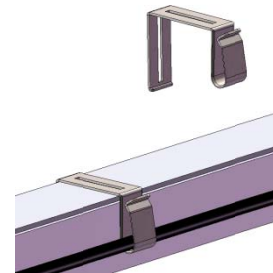
### Install S-Clip

- A. Snap the S-Clip onto either:
  - a. a PV module frame; or
  - b. a SunLink RMS Tilt Bracket Cover.
- B. Snap 1 to 3 PV cables into clip.



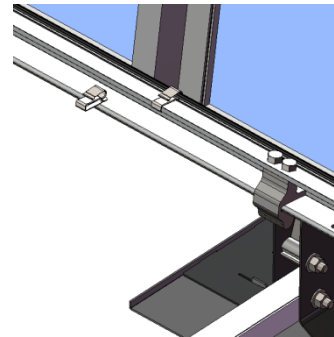
### Long Link Clip Installation

- A. Snap the Long Link Clip onto the SunLink RMS Long Link.
- B. Snap 1 to 3 PV cables into clip



### Spar Clip Installation

- A. Snap the Spar Clip onto the lower leg of the SunLink RMS spar.
- B. Snap 1 to 3 PV cables into clip.



**Q1: Are these components UL or ETL listed?**

Per NFPA70: NEC, when installed as either a metallic wireway (Article 376.21) or cable tray (Article 392), listing is not required.

**Q2: Is grounding required?**

The wire tray must be ground one time per continuous section of tray. The joint and corner joint are designed to provide a continuous grounding path, therefore a single point of grounding per continuous section is recommended. The wire tray cover is intended to be grounded to the wire tray by the “grounding teeth” in the insertion slots. A hole in the sidewall of the tray is provided for a grounding lug (See Step 11 on page 9).

**Q3: Due to a roof obstruction, the wire tray is resting directly on the roof. What does SunLink recommend?**

To keep the wire tray off the deck outside the mounting structure, or in areas where roof slope cause the tray to rest on the surface, shim underneath the wire tray with an EPDM rubber block. EPDM blocks are available from most industrial suppliers in various thicknesses, with adhesive pre-applied to one surface.

**Q4: Can the wire tray be used outside of the mounting structure?**

If the wire tray is installed as a metallic wireway (NFPA70: NEC Article 376.21), it may not be extended beyond 30 ft. from the mounting structure. It is possible to transition to other electrical products at that point, including:

- Rigid metal conduit
- Flexible liquid-tite conduit (UV-stable)

There are a wide variety of brackets, clamps and hangers which can mount directly to the wire tray. Suggested suppliers:

- Clamps for rigid metal conduit
  - Erico CADDY conduit clamp with bolts – CD0 thru CD3.
  - Minerallac conduit hangers – 0B thru 9B.
- Brackets for mounting flexible liquid-tite conduit
  - Sealcon nylon conduit system mounting brackets – MB-09-BK thru MB-48-BK.

**Q5: The bolts from the Joint Assembly are too close to roof deck.**

Shim under the bolt head with a couple of 5/16” washers until threads are covered by flange nut. If this still is a problem, shim underneath the wire tray with an EPDM rubber block (See Q3).