ETL Listed to
UL 2703
for Bonding and Grounding

RBI Solar RS-TL Double Rail | Installation Guide 2019 v1
TABLE OF CONTENTS

UL 2703 Listing Summary ................................................................................................. 2
RBI Solar Warranty ........................................................................................................... 2
Component Overview ....................................................................................................... 3
RS-TL Installation ............................................................................................................ 4
  RBI Solar Accessory Mounting Installation ................................................................. 5
  RS-TL Grounding .......................................................................................................... 6
APPENDIX A: Alternative Grounding Methods ............................................................... 10
APPENDIX B: Additional Grounding Notes ................................................................. 12

UL 2703 LISTING SUMMARY

The RBI Solar RS-TL system using RS-VS Rails is ETL Listed to UL 2703 for Bonding and Grounding. Some components, such as roof attachments, are not in the grounding path and therefore were not required to be evaluated under UL 2703.

RBI SOLAR WARRANTY

Installation instructions and applicable building code must be followed or product warranty is void. RBI Solar will not be responsible for any loss and/or liable for any claim resulting from installations that are not in accordance with installation guide instructions and/or applicable building code.
The RBI Solar RS-TL system tilts modules to a 5° or 10° angle using Tilt Leg sets. The RS-TL can be mounted to a variety of low-slope roof applications.

The RS-TL carries a Class A Fire Rating under UL1703 for low-slope roofs when used with Type 1,2, or Type 3 modules. If UL1703 is required for your project, a fire shield will need to be installed. Refer to the Fire Shield Guides for details on the fire shield and installation instructions.

Please read this guide carefully prior to installation. Always follow proper safety precautions and check local building codes to ensure compliance. Please check for the latest versions of the installation guide at www.rbisolar.com.

Required Tools
1. 13mm hex head deep socket
2. Torque wrench

*If the Tilt Legs are attaching directly to the roof, refer to the RBI Solar RS-VS Tilt Portrait Single Rail Installation Guide for how to install.
**RBI Solar RS-TL Installation Guide 2019 v1**

**Step 1. Roof Attachment and L-Feet**
Install appropriate roof attachment per manufacturer’s instructions. Fasten L-Feet to roof attachment. Refer to the Project Layout for the L-Foot spacing.

**Step 2. First Set of Rails**
Attach the first set of rails to the L-Feet using the pre-assembled T-bolts and nuts. Tighten T-bolts to 10 ft-lbs.

**Step 3. IB Splice Connectors**
IB Splice Connectors are required to connect Rails together and electrically bond them. Rails can be flush against each other or spaced apart up to ¼”. Insert Splice in the side of the Rail with four T-bolt heads lined-up with channel opening and center the Splice between the two Rails. Tighten T-bolts to 10ft-lbs.

**Step 4. Tilt Legs**
Attach the Small and Large Tilt Legs to the first set of Rails. The distance between each Large and Small Tilt Leg is 48” to ensure proper fit up. Refer to the Project Layout for the inter-row spacing.

**Step 5. Second Set of Rails**
Attach the Rails to the Tilt Legs using the pre-assembled T-bolts and nuts. Tighten T-bolts to 10 ft-lbs. Install additional IB Splice Connectors where needed.

**Step 5. End Clamps**
Snap the End Clamp onto the Rail as shown. Secure the modules by tightening Clamp to 8 ft-lbs.

**Step 5. IB Mid Clamps**
Snap the IB Mid Clamp onto the Rail with the T-bolt head lined up with the channel opening. Slide the next module against the IB Mid Clamp and tighten to 10 ft-lbs.

**IMPORTANT:** Be sure that the T-bolt indicator line is parallel to the small ribs on the IB Mid Clamp. This alignment is required for proper attachment.

**IMPORTANT:** Do NOT apply additional anti-seize to the clamps.
As part of the UL 2703 Listing, Solar Edge Power Optimizer top plates and other microinverters & power optimizers with top plates that meet the requirements listed below can be bonded to the rest of the system. After installing the provided hardware, tighten to 10 ft-lbs.

- **M8-1.25 304SS serrated flange nut** (tighten to 10 ft-lbs)
- **8.2mm slot width**
- **Top Plate (5052-H32 aluminum, 2mm thick)** - Common to microinverters power optimizers
- **M8-1.25x25mm 304SS serrated T-bolt w/ nylon patch**
- **VS Rail Mill Finish**
EGC/GEC Grounding at Ends (tighten to 10 ft-lbs)

NOTES:

- Only one lug per module row required
- See Appendix A for alternate grounding methods
- One Lug per Rail recommended

![Diagram of solar panel rails with grounding details]
Rail-to-Rail Grounding at IB Splice (tighten to 10 ft-lbs)
Module-to-Module and Module-to-Rail Grounding at IB Mid Clamp (tighten to 10 ft-lbs)

NOTE:

The End Clamp and Mid Clamp connectors are not bonded to the system. The serrated T-bolt and WEEB MSNR516 are what properly bonds the modules together and the modules to the Rail.
RBI SOLAR RS-TL GROUNDING (cont.)

Integrated WEEB bonds module to module. Serrated T-bolt and serrated flange nut extend that bond to the rail.

Serrated T-bolts and serrated flange nut bond both rails and the IB splice connector.

WEEB clip bonds the rail to the lug. The solid copper wire provides the ground connection. Tighten the lug to the rail to 10 ft-lbs. Tighten the copper wire to 7 ft-lbs.

Serrated T-bolts and serrated flange nuts bond the upper layer rail to the small and large tilt leg and the lower layer rail.
Dynobond Module Jumper Installation

The Dynobond Module Jumper can bond one row of modules to another row of modules without the need of additional Grounding Lugs and copper wire. The teeth on the Dynobond Module Jumper bites into the module frame penetrating the anodized surface. It requires no tools and can slide on either the long or short side of the module frame. For SolarWorld modules, the Dynobond Module Jumper must be installed on the short side of the module frame. For a complete list of PV modules approved for use with Dynobond Module Jumper see the table in Appendix C.

APPENDIX A: ALTERNATIVE GROUNDING METHODS

Alternate Rail-to-EGC/GEC Grounding at Ends

Ilsco GBL-4DBT lug

0.196” drilled hole in VS Rail

Tin-coated copper Ilsco GBL-4DBT lug

No. 10 304 SS split lock washer
10-32x0.75 304 SS HH bolt (tighten to 35 in-lbs)

10-32 304 SS hex nut
No. 10 304 SS star washer
Ilsco DE-OX oxide inhibitor

Ilsco DE-OX oxide inhibitor

⅛-28 304 SS set screw (tighten to 35 in-lbs)

10-14 AWG, Cu, solid
4-8 AWG, Cu, stranded
APPENDIX A: ALTERNATIVE GROUNDING METHODS

Alternate Rail-to-EGC/GEC Grounding at Ends

Ilisco SGB 4

- Connects to VS Rail or VS System to EGC/GEC
- May be fastened as shown or fastened to flat side of VS Rail
- 14 AWG to 4 AWG Copper EGC/GEC
- Fasteners use 7/16” wrench or socket

Alternate Rail-to-EGC/GEC Grounding at Ends

Burndy BGBS 4

- Connects to VS Rail or VS System to EGC/GEC
- Accepts 14 AWG to 6 AWG Copper EGC/GEC
- May be fastened as shown or fastened to flat side of VS Rail
- Fasteners use 7/16” wrench or socket
The RBI Solar RS-TL mounting system may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

In order to maintain the Listing for bonding, Listed wire management device(s) must be assembled according to the manufacturer’s instructions.

The RBI Solar RS-TL is a non-separately derived system that is listed under UL 2703 and was evaluated with the modules listed in the table below and any other models that have the same frame. The max fuse rating of the racking system is 30A. It is important to periodically inspect the installed system for loose components, loose fasteners, and any corrosion. If any corroded parts are discovered, the affected parts must immediately be replaced.

PV Modules evaluated for use with Dynobond bonding jumpers noted in Table 1.

### Table 1. UL 2703 Approved Modules

<table>
<thead>
<tr>
<th>Module Manufacturer</th>
<th>Module Series</th>
<th>Dynobond</th>
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</thead>
<tbody>
<tr>
<td><strong>Astronergy</strong></td>
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<tr>
<td>[40mm Frame]</td>
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<tr>
<td>(Nova) CHSM6612M-315-345</td>
<td>(Violin) CHSM6612P/HV-305-330</td>
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<td>(Violin II) CHSM6612P-315-335</td>
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<td>(Nova II) CHSM6612M/HV-330-365</td>
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<td>(Diamond) CHSM6612P-305-325</td>
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<td>(Stave II) CHSM6612P/HV-330-345</td>
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| **BYD**             |               |           |
| [40mm Frame]        |               |           |
| BYD XXP6C-30        |               |           |
| BYD XXP6C-36        |               |           |

| **CSUN**            |               |           |
| [40mm Frame]        |               |           |
| CSUN235-250-60M     |               |           |
| CSUN240-260P        |               |           |
| CSUN265-280-60M QSAR |               |           |
## APPENDIX B: ADDITIONAL GROUNDING NOTES

<table>
<thead>
<tr>
<th>Module Manufacturer</th>
<th>Module Series</th>
<th>Dynobond</th>
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<tr>
<td><strong>ET</strong> [60-cell Silver 35mm Frame]</td>
<td>ET-M660270-290WWAC</td>
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<td>ET-P660260-270WWAC</td>
<td>Elite Mono ET-M660280-295WW</td>
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<td>Flex Energy [35mm &amp; 50mm Frame]</td>
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<td>Hansol [35mm Frame]</td>
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<td>72 Cell Mono UD-AN1 340-370W</td>
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<td>MSE355-365SQ4S</td>
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<td>REC [30mm Silver Frame]</td>
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<td>REC360-380TP2SM72</td>
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<td>REC [38mm Black Frame]</td>
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<td>REC285-300TP2M BLK2</td>
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<table>
<thead>
<tr>
<th>Module Manufacturer</th>
<th>Module Series</th>
<th>Dynobond</th>
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</thead>
</table>
| REC [38mm Silver Frame] | REC265-285TP
REC275-295TP2
REC240-270PE |  |
| REC [45mm Silver Frame] | Twin Peak REC330-340TP72
Peak Energy REC300-325PE72 |  |
| Recom [40mm Frame] | Amur Leopard RCM-300-340-6PA
Black Panther RCM-310-330-6MA
Black Panther RCM-335-355-6MA |  |
| Seraphim [50mm Frame] | SRP-340-360-6MA
SRP-315-330-6PA |  |
| SolarWorld [31mm Frame] | Sunmodule SW 220 mono & poly
SW 225-235 poly
SW 240-245 mono & poly
SW 245-255 poly Pro | SW 250-270 mono
Plus SW 250-285 mono
Protect SW 265-275 mono |
| SolarWorld [33mm Frame] | Sunmodule Plus, SW xxx Mono where xxx is 275 - 300
Sunmodule SW xxx XL Mono where xxx is 320 - 350
Sunmodule Pro-Series, SW xxx Poly where xxx is 250 - 260
Sunmodule Protect, SW xxx Mono where xxx is 275 - 280 | YES |
| Suniva [46mm Silver Frame] | OPT 250-260-4-100 |  |
| SunPower [46mm Frame] | SPR-305-WHT-I
SPR-E20-440-COM
SPR-E20-435-COM
SPR-E19-410-COM
SPR-E20-327-COM
SPR-E19-310 COM
SPR-E18-295-COM | SPRP17-335-355-COM
SPR-435NW-WHT-D
SPR-X22-470-COM
SPR-X21-460-COM
SPR-X21-445-COM
SPR-X22-360-COM |
| Trina [60-Cell 40mm Frame] | TSM-225-245 PC05
TSM-225-245 PA05 |  |