



Descriptive Report and Test Results

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REPORT: 70106311

PROJECT: 80042340

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PRODUCTS

CLASS - C531382 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems - Certified to US Standards

Models:	Ballasted Power Rail™ Mount	-	Ballasted Power Rail Top-Clamping PV Module Rack Mounting System, incorporating Aluminum Rails with S.S or coated Clamping Hardware. Secures to roof via Ballast Blocks.
	Power Rail™ P6	-	Power Rail Top-Clamping PV Module Rack Mounting System, incorporating Aluminum Rails with S.S or coated Clamping Hardware. Secures to Roof via L-Feet, incorporating P6 Rail
	Power Rail™ P6+	-	Power Rail Top-Clamping PV Module Rack Mounting System, incorporating Aluminum Rails with S.S or coated Clamping Hardware. Secures to Roof via L-Feet, incorporating P6+ Rail
	Power Rail™ P8	-	Power Rail Top-Clamping PV Module Rack Mounting System, incorporating Aluminum Rails with S.S or coated Clamping Hardware. Secures to Roof via L-Feet, incorporating P8 Rail
	Power Rail™ P14	-	Power Rail Top-Clamping PV Module Rack Mounting System, incorporating Aluminum Rails with S.S or coated Clamping Hardware. Secures to Roof via L-Feet, incorporating P14 Rail
	POWER RAIL™ D-Series	-	Power Rail Top-Clamping PV Module Rack Mounting System, incorporating Aluminum Rails with S.S or coated Clamping Hardware. Secures to Roof via Mounting Base Bracket, incorporating D-Series rails

The systems listed are designed to provide bonding/grounding, and mechanical stability for photovoltaic modules, including fire performance ratings.

The Ballasted Power Rail system employs type 5000 Series aluminum bays, and type 6000 Series aluminum P8 Rails. The Power Rail P6, P6+, P8, and P14 employ type 6000 Series Rails and L-feet to secure the rack mounting system to the roof, with the only difference between the models including the larger module support rails. Modules are secured to the racking system with the AMP™ and Rad™ Clamp Assembly.

Models:	Power Peak™ AL	-	Ground-Mount PV Racking System with 6000 series Aluminum Rails and Strongback Assemblies; Galvanized I-Beam Pile.
	Power Peak™ GS	-	Ground-Mount PV Racking System Incorporating all Galvanized Steel Components and I-Beam Pile
	Power Peak™ GSC	-	Ground-Mount PV Racking System Incorporating all Galvanized Steel Components and C-Channel Pile
	Power Peak™ GSH	-	Ground-Mount PV Racking System with Galvanized Steel and Aluminum Components and I-Beam Pile.
	Power Peak™ GSHC	-	Ground-Mount PV Racking System with Galvanized Steel and Aluminum Components, and C-Channel Pile.
	Ballasted Power Peak™ series	-	Ground-Mount PV Racking System with Galvanized Steel and/or Aluminum Components, C-Channel, and Ballast Block.

The systems listed are designed to provide bonding/grounding only for photovoltaic modules.

The system employs Galvanized Steel Piles (either C-Channel or I-Beam depending on the system), and Galvanized Steel or Aluminum Rails (depending on the system). Modules are secured to the racking system with a Type 300 Stainless Steel AMP™ Clamp Assembly. The modules are bonded to the racking system with anodization-piercing clamps.

Models:	PV Cable Mount	-	Ground mount solar racking system, PV modules installed in portrait orientation, PV modules secured to cables with PV Module Clamps fastened to PV Mounting holes. System is secured with tensioned cables bolted to ground anchors.
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The system listed is designed to provide bonding/grounding and mounting facilities for photovoltaic modules. Bonding and grounding PV module frames to racking system uses Bonding Plates to pierce anodized coatings that are outlined in the installation manuals. The system has only been tested for bonding, grounding, and electrical continuity, no mechanical load was performed and no-load rating has been given.

The grounding of the system is intended to comply with the latest edition of the National Electrical Code, to include NEC 250 & 690. Local codes compliance is required, in addition to national codes. All grounding/bonding connections are to be torqued in accordance with the Installation Manual and the settings used during the certification testing for the current edition of the project report.

Conditions of Acceptability:

Installation is subject to acceptance of the local inspection authorities having jurisdiction. The certification of these products relates only to the methods of installation for bonding and grounding, additional ratings for rooftop mounted systems for mechanical load and fire ratings as outlined in the Installation Manual for each product.

APPLICABLE REQUIREMENTS

UL 2703-1st Edition - Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels.

MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.

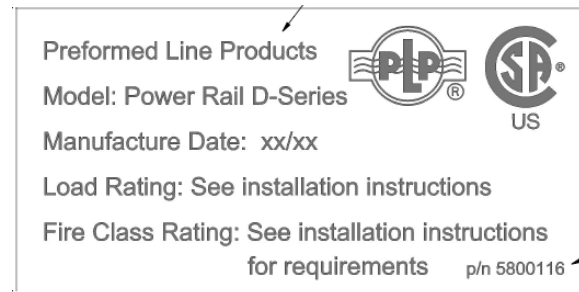
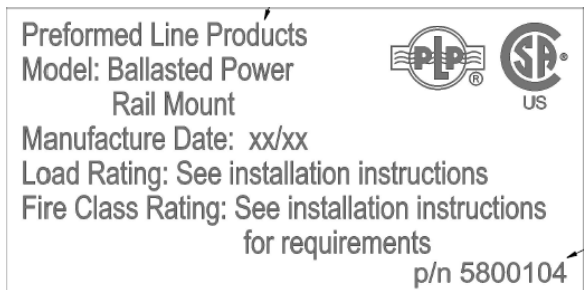
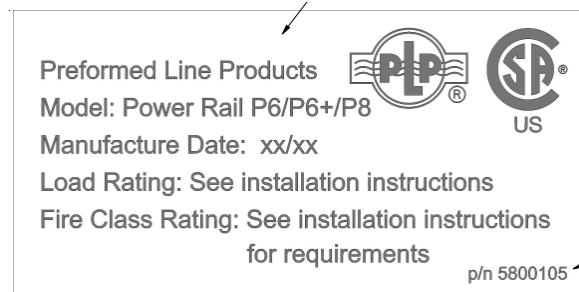
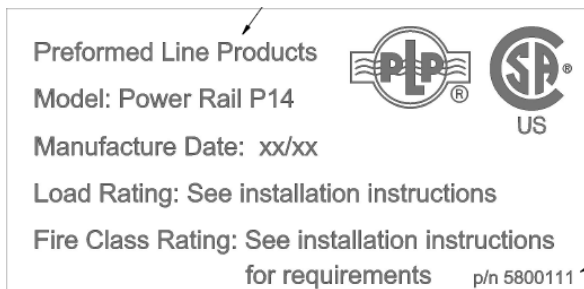
Additional markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent 'US' indicator for US only (indicating that products have been manufactured to the requirements of U.S. Standards).

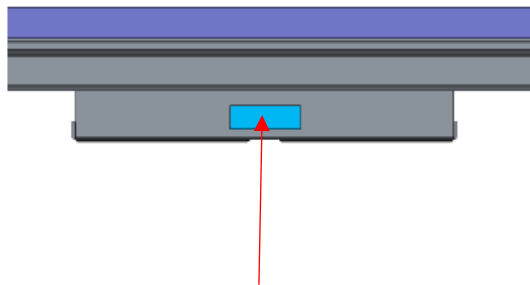
The following markings appear on the ballast bay (for Ballasted Power Rail system) or L-Foot (for Power Rail P6, P6+, P8, and P14 systems) or Splice (for Power Rail D-Series) by adhesive label or stamping:

1. Submitter's name and/or CSA Master Contract number "264073";
2. Model designation;
3. Manufacturing date;
4. The following statement or equivalent verbiage: "System Fire Class Rating: See Installation Instructions for Installation Requirements to Achieve a Specified System Fire Class Rating with this product."
5. Design load rating/designation of information location in Installation Manual;

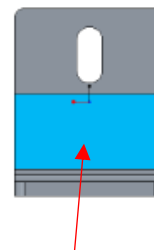
Marking Labels



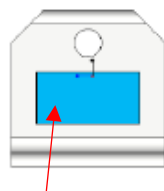
Location of Marking



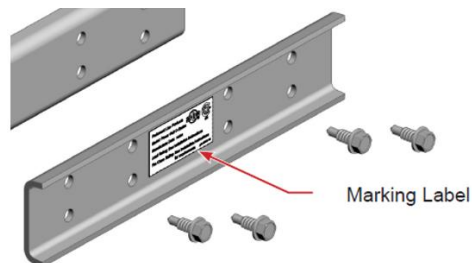
BPRM – 1.0 x 3.0



Power Rail P6/P8 1.0 x 2.0



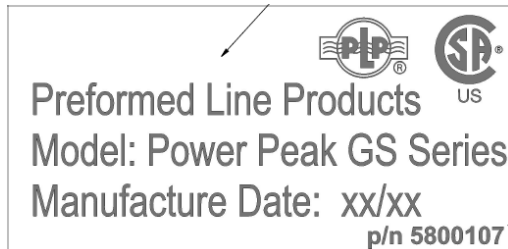
Power Rail P14 1.0 x 2.0



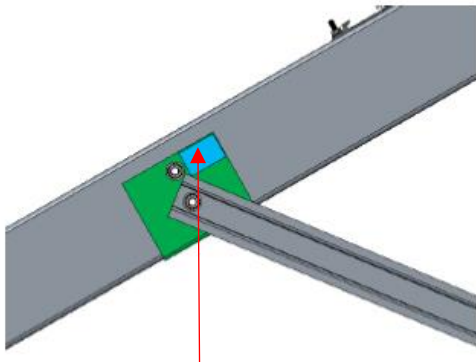
Power Rail D-Series

The following markings for Power Peak systems appear on the ballast bay by affixed label:

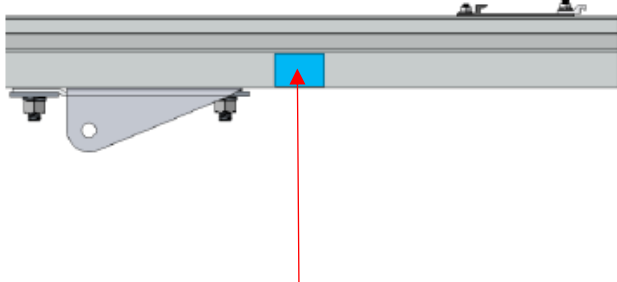
1. Submitter's name and/or CSA Master Contract number "264073";
2. Model designation;
3. Manufacturing date;



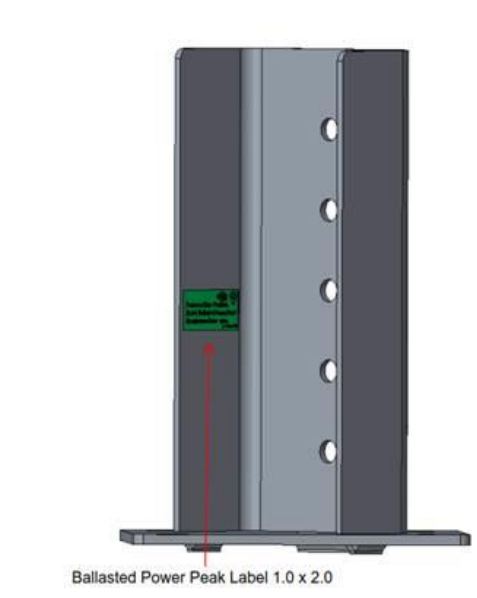
Location of Markings



Power Peak GS GSH GSC GSHC 1.5 x 2.25



Power Peak AL 1.5 x 2.25

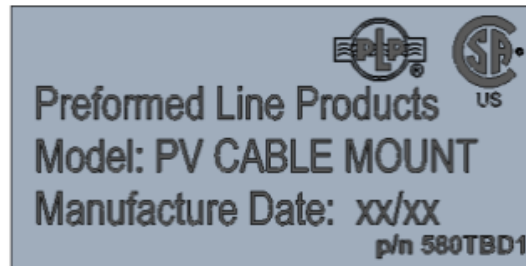


Ballasted Power Peak Label 1.0 x 2.0

The following markings for PV Cable Mount appear on the racking system:

1. Submitter's name and/or CSA Master Contract number "264073";

2. Model designation;
3. Manufacturing date;



Nameplate adhesive label material approval information:

Flexcon Co. Inc. Model Number "THERMLfilm CHEMGARD 21361". UL Certified under file number PGJI2.MH16635. Rating when adhered to Galvanized Steel: 125°C to -40°C, suitable for use in indoor/outdoor locations.

Or

Markings permanent per stamping, etching, or machining into metal components

ALTERATIONS

None

FACTORY TESTS

Not Applicable

SPECIAL INSTRUCTIONS FOR FIELD SERVICES

1. Component descriptions marked with either the "(INT)" or "(INT*)" identifiers may be substituted with other components providing the requirements specified under the notes in the "Description" are complied with.

COMPONENT SPECIAL PICKUP

1. Component descriptions marked with the identifier "(CT)" are subject to annual pickup and Conformity Testing.

DESCRIPTION

Notes:

1. Component Substitution
 - a) Critical components (those identified by mfr name, cat no), which are NOT identified with either "INT" or "INT*" are not eligible for substitution without evaluation and report updating
 - b) The term "INT" means a "Certified" and/or "Listed" (or a "Recognized" and/or "Accepted") component may be replaced by one "Certified" and/or "Listed" by another certification organization accredited by the appropriate accreditation body or scheme requirements to the correct standard, for the same application; providing the applicable country identifiers are included and requirements in item "d" below are complied with.
 - c) The Term "(INT*)" means a "Recognized" and/or "Accepted" component may be replaced by a component that is CSA Certified. The applicable country identifiers shall be included, the requirements in item "d" below as well as any "conditions of suitability" for the component (as recorded in this descriptive report) shall be complied with;
 - d) Components which have been substituted, must be of an equivalent rating, configuration (size, orientation, mounting) and the applicable minimum creepage and clearance distances are to be maintained from live parts to bonded metal parts and secondary parts.
 - e) Substitution of a "Certified" and/or "Listed" component with a component that is "Recognized" or "Accepted" is not permitted without evaluation and report updating.
 - f) Substitution of a "Recognized" and/or "Accepted" component by one that is not CSA Certified is not permitted without a proper evaluation as well as a report update because the Conditions of Acceptance of the original component may be different than the Conditions of Acceptance of the substitute component.

1. The system does not employ a maximum number of modules that can be installed per system.
2. See Tables 1-5 for customer supplied information for Power Rail systems.
3. See Tables 6-11 for customer supplied information for Power Peak systems.
4. See Tables 12 for customer supplied information for Cable Mount system.
5. See the attached installation manual for each model installation instructions, and system drawings.

The critical components identified below may be formed at other locations and shipped directly to the construction site provided they are made with the material/coatings identified and conform to the physical dimensions described and shown in their respective illustrations. Physical specimens may not be present at the location where the CSA mark is applied.

Power Rail systems

Table 1

Model	Ballasted Power Rail
Max branch circuit overcurrent-protection device (A)	25
Module Orientation	Portrait or Landscape
Fire Rating	Class A, Low Slope, using Type 1, Listed Modules. Tested at 5” interstitial gap which allows installation at any stand-off height per section 31.2.2.1 of UL1703.
Mechanical Load Rating	30 PSF Downward, 30 PSF Upward, 13.67 Downslope.

Torque Settings	
Splice Plate (5/16" x 3/4" Turn Bolt and Flange Nut)	15 ft-lbs
Ballast Pans (5/16" x 3/4" Turn Bolt and Flange Nut)	15 ft-lbs
RAD™ End Clamp (5/16" RAD Bolt and Flange Nut)	15 ft-lbs
AMP™ Module Mid Clamp (5/16" RAD Bolt and Flange Nut)	15 ft-lbs
WEEB-LUG-8.0	10 ft-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
Module Rail	Power Rail P8 Rail. 6000 series Mill Finished Aluminum. Utilized as supporting structure for modules. 5810022-xxx; Mill Finish 5810022-xxx-BA; Black Anodized 5810022-xxx-CA; Clear Anodized
Ballast Pans.....	4-Block Ballast Pan (P/N: 581-5502) – 5052-H32 Mill Finished Aluminum.
	5-Block Ballast Pan (P/N: 581-5503) – 5052-H32 Mill Finished Aluminum.
	5-Block Ballast Pan High Clearance (P/N: 581-5509) – 5052-H32 Mill Finished Aluminum.
Splice Plate	6000 series Mill Finished Aluminum. Secures (2) sections of P8 Rail with 5/16-18 Type 18-8 Stainless Hardware
AMP™ 2.0 Clamp (Mid Clamp)	Type 304 SS (P/N: 581-0418) - Secures mid clamp using 5/16-18 Type 18-8 Stainless Hardware
	Black Oxide Coated Type 304 SS (P/N: 581-0418-BO) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
RAD™ Clamp (End Clamp).....	Mill Finished Type 304 SS (P/N: 580-3028) - Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	Black Powder Coat Type 304 SS (P/N: 580-3028-B) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	Black Oxide Type 304 SS (P/N: 580-3028-BO) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	5810420-xx-SS; 304 SS; 5/16-18 Type 18-8 Stainless Hardware 5810420-xx-B ; 304 SS Black; 5/16-18 Type 18-8 Stainless Hardware 5810420-xx; 304 SS; Coated Steel 5/16 Hardware

Grounding Lug.....:	Burndy WEEB-LUG-8.0 – UL certified for Grounding/Bonding, and Photovoltaics UL File: E9999 (Grounding/Bonding) E351343 (Photovoltaics)
Installation Manual	SP3282-3

Table 2

Model	Power Rail P6
Fire Rating	Class A, Steep Slope, using Type 1, Listed Modules. Tested at 5” interstitial gap which allows installation at any stand-off height per section 31.2.2.1 of UL1703.
Mechanical Load Rating using Power Rail P6	30 PSF Downward, 30 PSF Upward, 13.67 Downslope.
Max branch circuit overcurrent-protection device (A)	25
Module Orientation	Portrait or Landscape
Torque Settings	
Splice Plate (5/16” x 3/4” Turn Bolt and Flange Nut)	15 ft-lbs
L-Feet (5/16” x 3/4” Turn Bolt and Flange Nut)	15 ft-lbs
RAD™ End Clamp (5/16” RAD Bolt and Flange Nut)	15 ft-lbs
AMP™ Module Mid Clamp (5/16” RAD Bolt and Flange Nut)	15 ft-lbs
WEEB-LUG-8.0	10 ft-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
Module Rail	Power Rail P6 Rail, 6000 series Mill Finished Aluminum. Utilized as supporting structure for modules. 5810020-xxx Mill Finish 5810020-xxx-BA; Black Anodized 5810020-xxx-CA; Clear Anodized
L-Feet.....:	2 1/2” Tall Type 5000 series Aluminum. (P/N: 581-0670 or 581-0670-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black. 3 1/2” Tall Type 5000 series Aluminum. (P/N: 581-0671 or 581-0671-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.

	5" Tall Type 5000 series Aluminum. (P/N: 581-0672 or 581-0672-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.
	6" Tall Type 5000 series Aluminum. (P/N: 581-0673 or 581-0673-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.
	7" Tall Type 5000 series Aluminum. (P/N: 581-0674 or 581-0674-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.
Splice Plate: (P/N: 581-1049)	6000 series Mill Finished Aluminum. Secures (2) sections of P6 Rail with 5/16-18 Type 18-8 Stainless Hardware
RAD™ Clamp (End Clamp).....:	Type 304 SS (P/N: 580-3028) - Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	Black Powder Coat Type 304 SS (P/N: 580-3028-B) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	Black Oxide Type 304 SS (P/N: 580-3028-BO) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	5810420-xx-SS; 304 SS; 5/16-18 Type 18-8 Stainless Hardware 5810420-xx-B ; 304 SS Black; 5/16-18 Type 18-8 Stainless Hardware 5810420-xx; 304 SS; Coated Steel 5/16 Hardware
AMP™ 2.0 Clamp (Mid Clamp)	Mill Finished Type 304 SS (P/N: 581-0418) - Secures mid clamp using 5/16-18 Type 18-8 Stainless Hardware
	Black Oxide Coated Type 304 SS (P/N: 581-0418-BO) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
Grounding Lug.....:	Burndy WEEB-LUG-8.0 – UL certified for Grounding/Bonding, and Photovoltaics UL File: E9999 (Grounding/Bonding) E351343 (Photovoltaics)
Installation Manual	SP3411-4

Model	Power Rail P6+
Fire Rating	Class A, Steep Slope, using Type 1, Listed Modules. Tested at 5" interstitial gap which allows installation at any stand-off height per section 31.2.2.1 of UL1703.
Mechanical Load Rating using Power Rail P6+	10 PSF Downward, 5 PSF Upward, 5 SF Downslope.
Max branch circuit overcurrent-protection device (A)	25
Module Orientation	Portrait or Landscape
Torque Settings	
Splice Plate (5/16" x 3/4" Turn Bolt and Flange Nut)	15 ft-lbs
L-Feet (5/16" x 3/4" Turn Bolt and Flange Nut)	15 ft-lbs
RAD™ End Clamp (5/16" RAD Bolt and Flange Nut)	15 ft-lbs
AMP™ Module Mid Clamp (5/16" RAD Bolt and Flange Nut)	15 ft-lbs
WEEB-LUG-8.0	10 ft-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
Module Rail	Power Rail P6+ Rail, 6000 series Mill Finished Aluminum. Utilized as supporting structure for modules. 5810020-XXX ; Mill Finish
L-Feet.....	2 1/2" Tall Type 5000 series Aluminum. (P/N: 581-0670 or 581-0670-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.
	3 1/2" Tall Type 5000 series Aluminum. (P/N: 581-0671 or 581-0671-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.
	5" Tall Type 5000 series Aluminum. (P/N: 581-0672 or 581-0672-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.
	6" Tall Type 5000 series Aluminum. (P/N: 581-0673 or 581-0673-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.
	7" Tall Type 5000 series Aluminum. (P/N: 581-0674 or 581-0674-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.

Splice Plate: (P/N: 581-1049)	6000 series Mill Finished Aluminum. Secures (2) sections of P6 Rail with 5/16-18 Type 18-8 Stainless Hardware
RAD™ Clamp (End Clamp).....:	Type 304 SS (P/N: 580-3028) - Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	Black Powder Coat Type 304 SS (P/N: 580-3028-B) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	Black Oxide Type 304 SS (P/N: 580-3028-BO) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	5810420-xx-SS; 304 SS; 5/16-18 Type 18-8 Stainless Hardware 5810420-xx-B ; 304 SS Black; 5/16-18 Type 18-8 Stainless Hardware 5810420-xx; 304 SS; Coated Steel 5/16 Hardware
AMP™ 2.0 Clamp (Mid Clamp)	Mill Finished Type 304 SS (P/N: 581-0418) - Secures mid clamp using 5/16-18 Type 18-8 Stainless Hardware
	Black Oxide Coated Type 304 SS (P/N: 581-0418-BO) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
Grounding Lug.....:	Burndy WEEB-LUG-8.0 – UL certified for Grounding/Bonding, and Photovoltaics
	UL File: E9999 (Grounding/Bonding) E351343 (Photovoltaics)
Installation Manual	SP3602

Table 3

Model	Power Rail P8
Fire Rating	Class A, Steep Slope, using Type 1, Listed Modules. Tested at 5” interstitial gap which allows installation at any stand-off height per section 31.2.2.1 of UL1703.
Mechanical Load Rating	30 PSF Downward, 30 PSF Upward, 13.67 Downslope.
Max branch circuit overcurrent-protection device (A)	25
Module Orientation	Portrait or Landscape
Torque Settings	
Splice Plate (5/16” x 3/4” Turn Bolt and Flange Nut)	15 ft-lbs
L-Feet (5/16” x 3/4” Turn Bolt and Flange Nut)	15 ft-lbs

RAD™ End Clamp (5/16” RAD Bolt and Flange Nut)	15 ft-lbs
AMP™ Module Mid Clamp (5/16” RAD Bolt and Flange Nut)	15 ft-lbs
WEEB-LUG-8.0	10 ft-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
Module Rail	Power Rail P8 Rail. 6000 series Mill Finished Aluminum. Utilized as supporting structure for modules. 5810020-xxx Mill Finish 5810020-xxx-BA; Black Anodized 5810020-xxx-CA; Clear Anodized
L-Feet.....	2 ½” Tall Type 5000 series Aluminum. (P/N: 581-0670 or 581-0670-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.
	3 ½” Tall Type 5000 series Aluminum. (P/N: 581-0671 or 581-0671-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.
	5” Tall Type 5000 series Aluminum. (P/N: 581-0672 or 581-0672-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.
	6” Tall Type 5000 series Aluminum. (P/N: 581-0673 or 581-0673-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.
	7” Tall Type 5000 series Aluminum. (P/N: 581-0674 or 581-0674-B) Secures to module rails and roof using 5/16-18 Type 18-8 Stainless Hardware. May be Mill Finish or Black.
Splice Plate (P/N: 581-1050)	6000 series Mill Finished Aluminum. Secures (2) sections of P8 Rail with 5/16-18 Type 18-8 Stainless Hardware
RAD™ Clamp (End Clamp).....	Mill Finished Type 304 SS (P/N: 580-3028) - Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	Black Powder Coat Type 304 SS (P/N: 580-3028-B) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	Black Oxide Type 304 SS (P/N: 580-3028-BO) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.

	5810420-xx-SS; 304 SS; 5/16-18 Type 18-8 Stainless Hardware 5810420-xx-B ; 304 SS Black; 5/16-18 Type 18-8 Stainless Hardware 5810420-xx; 304 SS; Coated Steel 5/16 Hardware
AMP™ 2.0 Clamp (Mid Clamp)	Mill Finished Type 304 SS (P/N: 581-0418) - Secures mid clamp using 5/16-18 Type 18-8 Stainless Hardware Black Oxide Coated Type 304 SS (P/N: 581-0418-BO) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
Grounding Lug.....	Burndy WEEB-LUG-8.0 – UL certified for Grounding/Bonding, and Photovoltaics UL File: E9999 (Grounding/Bonding) E351343 (Photovoltaics)
Installation Manual	SP3412-4

Table 4

Type/Model	Power Rail P14
Fire Rating	Class A, Steep Slope, using Type 1, Listed Modules. Tested at 5” interstitial gap which allows installation at any stand-off height per section 31.2.2.1 of UL1703.
Mechanical Load Rating	30 PSF Downward, 30 PSF Upward, 13.67 Downslope.
Max branch circuit overcurrent-protection device (A)	25
Module Orientation	Portrait or Landscape
Torque Settings	
Splice Plate (5/16” x 3/4” Turn Bolt and Flange Nut)	15 ft-lbs
L-Feet (1/2” x 1-1/4” Carriage Bolt and Flange Nut)	43 ft-lbs
RAD™ End Clamp (5/16” RAD Bolt and Flange Nut)	15 ft-lbs
AMP™ Module Mid Clamp (5/16” RAD Bolt and Flange Nut)	15 ft-lbs
WEEB-LUG-8.0	10 ft-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
Module Rail	Power Rail P14 Rail. 6000 series Mill Finished Aluminum. Utilized as supporting structure for modules. 5810020-xxx Mill Finish 5810020-xxx-BA; Black Anodized 5810020-xxx-CA; Clear Anodized

L-Foot (P/N: 581-0681)	Type 6000 series Mill Finish Aluminum. Secures to module rails and roof using Type 18-8 Stainless Hardware, 1/2"-13 Carriage Bolt (587-0112) and Flange Bolt (587-1803).
Splice Plate (P/N: 581-1056)	6000 series Mill Finished Aluminum. Secures (2) sections of P14 Rail with 5/16-18 Type 18-8 Stainless Hardware
RAD™ Clamp (End Clamp).....	Type 304 SS (P/N: 580-3028) - Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	Black Powder Coat Type 304 SS (P/N: 580-3028-B) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	Black Oxide Type 304 SS (P/N: 580-3028-BO) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hex Flange Nut.
	5810420-xx-SS; 304 SS; 5/16-18 Type 18-8 Stainless Hardware 5810420-xx-B ; 304 SS Black; 5/16-18 Type 18-8 Stainless Hardware 5810420-xx; 304 SS; Coated Steel 5/16 Hardware
AMP™ 2.0 Clamp (Mid Clamp)	Type 304 SS (P/N: 581-0418) - Secures mid clamp using 5/16-18 Type 18-8 Stainless Hardware Hex Flange Nut.
	Black Oxide Coated Type 304 SS (P/N: 581-0418-BO) – Secures mid clamp using 5/16-18 Type 18-8 Stainless Hardware Hex Flange Nut.
Grounding Lug.....	Burndy WEEB-LUG-8.0 – UL certified for Grounding/Bonding, and Photovoltaics
	UL File: E9999 (Grounding/Bonding) E351343 (Photovoltaics)
Installation Manual	SP3413-3

Table 5

Type/Model	Power Rail™ D-series rails
Max branch circuit overcurrent-protection device (A)	25
Module Orientation	Portrait or Landscape
Fire Rating	Class A, Low Slope, using Type 1, Listed Modules. Tested at 5” interstitial gap which allows installation at any stand-off height per section 31.2.2.1 of UL1703.
Mechanical Load Rating	30 PSF Downward, 15 PSF Upward, 5 PSF Downslope.
Torque Settings	

Rail Bracket and Rail Clamp (5/16"-18 x 3/4" Turn Bolt and Flange Nut or 5/16"-18 x 1" Turn Bolt and Flange Nut)	15 ft-lbs
End Clamp-Grounded D-Hole (5/16"-18 x 2" RAD Bolt and Flange Nut)	15 ft-lbs
Module Mid Clamp (5/16" RAD Bolt and Flange Nut)	15 ft-lbs
WEEB-LUG-8.0	10 ft-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
D-Series Module Rails.....: ("xxx" designates the length)	Power Rail XD Rail. 6000 series Aluminum 5810026-xxx Mill Finish 5810026-xxx-BA; Black Anodize 5810026-xxx-CA; Clear Anodize
	Power Rail UD Rail. 6000 series Aluminum 5803033-xxx Mill Finish 5803033-xxx-BA; Black Anodize 5803033-xxx-CA; Clear Finish
	Power Rail LD Rail. 6000 series Aluminum 5803020-xxx Mill Finish 5803020-xxx-BA; Black Anodize 5803020-xxx-CA; Clear Anodize
	Power Rail MD Rail. 6000 series Aluminum 5803021-xxx Mill Finish 5803021-xxx-BA; Black Anodize 5803021-xxx-CA; Clear Anodize
Splice Plate:	6000 series Mill Finished Aluminum. Secures (2) sections of D-series Rail with 4 self-drilling screws
	XD Splice Plate: 5810951; Mill Finish 5810951-B; Black Finish
	UD Splice Plate: 5803032; Mill Finish 5803032-B; Black Finish
	LD Splice Plate: 5803030; Mill Finish 5803030-B; Black Finish
	MD Splice Plate: 5803031; Mill Finish 5803031-B; Black Finish
Rail Bracket and Clamp.....:	6000 series Extruded Aluminum XD/UD, P/N 5803146 and 5803147 LD/MD, P/N 5803038 and 5803039 5/16-18 x 3/4" 1/4 Turn Bolt Kit, P/N 5810240-SS 5/16-18 x 1" 1/4 Turn Bolt Kit, P/N 5810241-SS

Mid Clamp Assembly	<p>Type 304 SS, Mid Clamp secured with 5/16-18 Type 18-8 Stainless Hardware- T-bolt and Flange Nut</p> <p>P/N 5803066-2833-SS, Frame Height 28-33mm P/N 5803066-3439-SS, Frame Height 34-39mm P/N 5803066-4046-SS, Frame Height 40-46mm P/N 5803066-4752-SS, Frame Height 47-52mm P/N 5803066-5359-SS, Frame Height 53-59mm</p>
End Clamp Grounded-D hole	<p>Type 304 SS, End Clamp secured with 5/16-18 Type 18-8 Stainless Hardware- T-bolt and Flange Nut</p> <p>5810420-xx-SS; 304 SS; 18-8 5/16 Hardware 5810420-xx-B ; 304 SS Black; 18-8 5/16 Hardware 5810420-xx; 304 SS; Coated Steel 5/16 Hardware</p>
Grounding Lug.....	<p>Burndy WEEB-LUG-8.0 – UL certified for Grounding/Bonding, and Photovoltaics</p> <p>UL File: E9999 (Grounding/Bonding) E351343 (Photovoltaics)</p>
Installation Manual	SP3474-1

Power Peak systems:

Table 6

Model	Power Peak AL
Max branch circuit overcurrent-protection device (A)	25
Module Orientation	Portrait
Torque Settings	
Strongback Slide Attachment (5/8"-11 x 2" hardware)	85-90 ft-lbs
Strongback (5/8"-11 x 4" hardware)	85-90 ft-lbs
Strut (5/8"-11 x 4" hardware)	85-90 ft-lbs
Strap Plate	85-90 ft-lbs
Strut Attachment to I-Beam (5/8"-11 x 4" hardware)	85-90 ft-lbs
Rail Clamp	15 ft-lbs
RAD End Clamp (5/16" Flange Nut)	15 ft-lbs
AMP™ Module Mid Clamp (5/16" Flange Nut)	15 ft-lbs
Splice Plate (1/4" x 3/4" self drilling screws)	8 ft-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
Module Rail : P/N: 5803033	6000 series Mill Finished Aluminum. Utilized as supporting structure for modules.
Strongback Assembly :	Strongback (P/N: 580-3016) – 6000 series Mill Finished Aluminum. Secures Module Rails to Strongback using Rail Brackets and Clamps.
	Channel Nut Plate (P/N: 580-3018) – 6000 series Mill Finish Aluminum.
	Strongback Slide Attachment (P/N: 580-3000) – 7 Gauge Structural Steel ASTM A-36. Minimum coating designation of 45 as per ASTM A123 or G90 as per ASTM A653
	Square Washer (P/N: 53054) – AISI-C1010 or AISI-C1008 Steel, minimum coating designation of Class D per ASTM A153.
	Spacer Bushing (P/N: 580-3015) - 6000 series Mill Finish Aluminum.
	Rail Bracket (P/N: 580-3146) - 6000 series Mill Finish Aluminum.
	Rail Clamp (P/N: 580-3147) - 6000 series Mill Finish Aluminum.
	Strongback Attachment (P/N: 580-3003) - 60-40-18 or 65-45-12 Ductile iron, minimum coating designation grade of 45 per ASTM A123.

	Wire Management Clip (P/N: 580-3012) – 22 Gauge, Type 304 Stainless Steel.
Strut Attachment Assembly	Strut Arm (P/N: 580-3010) - 6000 series Mill Finish Aluminum
	Strut Attachment (P/N: 580-3002) – 60-40-18 or 65-45-12 Ductile iron, minimum coating designation grade of Class D per ASTM A153.
	Strut Attachment Clamp (P/N: 580-3004) - 60-40-18 or 65-45-12 Ductile iron, minimum coating designation grade of Class D per ASTM A153.
AMP™ Clamp (Mid Clamp): Assembly P/N's: 580-3066 or 580-3066-SS	RAD Bolt (P/N: 5810xxx) - Where xxx is either 206,207,208,209, or 210, denoting OAL. Type 300 SS. Secures mid clamp using 5/16"-18 Type 300 Hex Flange Nut.
	Module Mid Clamp (P/N: 581-0418) – Type 300 SS. Finish may be mill or coated black.
RAD™ Clamp (End Clamp).....: Assembly P/N's: 580-3090 or 580-3070	RAD Bolt (P/N: 5810xxx) - Where xxx is either 206,207,208,209, or 210, denoting OAL. Type 300 SS. Secures mid clamp using 5/16"-18, Type 300 SS Hex Flange Nut.
	Module End Clamp – (P/N: 580-3028) Type 300 SS. Secures using 5/16"-18 RAD Bolt and Flange Nut.
Grounding Lug.....:	Burndy WEEB-LUG-8.0 – UL certified for Grounding/Bonding, and Photovoltaics UL File: E9999 (Grounding/Bonding) E351343 (Photovoltaics)
Installation Manual	SP3284-1

Table 7

Model	Power Peak GS
Max branch circuit overcurrent-protection device (A)	25
Module Orientation	Portrait
Torque Settings	
Strongback Attachment Bracket (1/2"-13 x 1.5" hardware)	65-70 ft-lbs
Strongback (1/2"-13 x 1.5")	65-70 ft-lbs
Strut Bracket (1/2"-13 x 1.5")	65-70 ft-lbs
Strut (1/2"-13 x 1.5")	65-70 ft-lbs
Strut Reinforcement Bracket (1/2"-13 x 1.5")	65-70 ft-lbs
Rail to Strongback (1/2"-13 x 1.5")	65-70 ft-lbs
Rail Reinforcement Bracket (1/2"-13 x 1.5")	65-70 ft-lbs
End Clamp (5/16" Flange Nut)	15 ft-lbs

Module Mid Clamp (5/16" Flange Nut)	15 ft-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
Z-Rail: (P/N: 580-50xx) where xx may be 30-37 in increments of 1 to denote OAL.	12 Gauge Thickness, Grade 50 Steel. Coating designation of G90 per ASTM A653. Hardware Stack – ½"-13 Hex Bolt (587-0297), ½" Flat Washer (587-0516), Z-Rail Flat Washer (580-5044 or 580-5042), ½" Lock Washer (587-1022), ½" Hex Nut (587-1604).
Strongback Assembly:	Strongback-72 Cell (P/N: 580-5011-14G) – Gr 50 Steel, G90 coating designation per ASTM A653.
	Strongback-60 Cell (P/N: 580-5014-14G) – Gr 50 Steel, G90 coating designation per ASTM A653.
	Strongback Attachment (P/N: 580-5040) – 0.187" Thk, A-36 Steel. Minimum Coating Designation of Class D per ASTM A153.
Strut Assembly:	Strut (P/N: 580-5020) – ASTM A653 12 Gauge Gr 50 Steel, G90 coating designation.
	Strut Arm Attachment (P/N: 580-5045) - 0.187" Thk, A- 36 Steel. Minimum Coating Designation of Class D per ASTM A153.
	Strut Reinforcement Bracket (P/N: 580-5043) - 11 Gauge 1018 CRS Steel. Minimum coating designation of Class D per ASTM A153
I-Beam: (P/N: 580-5004)	W-6x8.5 I-Beam ASTM A572 Gr 50. Minimum Coating Grade of 45 per ASTM A-123.
Module Mid Clamp Assembly.....: (P/N: 580-5080)	Module Mid Clamp (P/N: 580-0009) – 16 Gauge, Type 304 Stainless Steel. Secures modules using 5/16"-18 Carriage Bolt and Flange Nut.
	Module Bottom Clamp (P/N: 580-5055) – 10 Gauge CS Type B ASTM A653, Galvanized Steel G90 coating designation.
Module End Clamp Assembly.....: (P/N: 580-5090)	Module End Clamp (P/N: 580-3028) - Type 300 SS. Secures using 5/16"-18 RAD Bolt and Flange Nut.
	Module Bottom Clamp (P/N: 580-5056) – 11 Gauge 1018 CRS Steel. Minimum coating designation of Class D per ASTM A153
Grounding Lug.....:	Burndy WEEB-LUG-8.0 – UL certified for Grounding/Bonding, and Photovoltaics UL File: E9999 (Grounding/Bonding) E351343 (Photovoltaics)
Installation Manual	SP3283-1

Table 8

Type/Model	Power Peak GSC
Max branch circuit overcurrent-protection device (A)	25
Module Orientation	Portrait
Torque Settings	
Strongback Attachment Bracket (1/2"-13 x 1.5" hardware)	65-70 ft-lbs
Strongback (1/2"-13 x 1.5")	65-70 ft-lbs
Strut Attachment Plate (1/2"-13 x 1.5")	65-70 ft-lbs
Strut (1/2"-13 x 1.5")	65-70 ft-lbs
Strut Reinforcement Bracket (1/2"-13 x 1.5")	65-70 ft-lbs
Rail to Strongback (1/2"-13 x 1.5")	65-70 ft-lbs
Rail Reinforcement Bracket (1/2"-13 x 1.5")	65-70 ft-lbs
End Clamp (5/16" Flange Nut)	15 ft-lbs
Module Mid Clamp (5/16" Flange Nut)	15 ft-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
C-Channel Pile: (P/N: 580-5008-10G)	3.5x6 CEE – ASTM A653 Gr 50, Galvanized Steel, G235 coating designation.
Strongback Assembly:	Strongback-72 Cell (P/N: 580-5011-14G) – Gr 50 Steel, G90 coating designation per ASTM A653.
	Strongback-60 Cell (P/N: 580-5014-14G) – Gr 50 Steel, G90 coating designation per ASTM A653.
Strut Assembly.....:	Strut (P/N: 580-5020) - ASTM A653 12 Gauge Gr 50 Steel, G90 coating designation.
	Strut Arm Attachment (P/N: 580-5046) – 3/16" A-36 Plate Steel. Minimum coating designation of Class D per ASTM A153
	Strut Reinforcement Bracket (P/N: 580-5043) - 11 Gauge 1018 CRS Steel. Minimum coating designation of Class D per ASTM A153
Z-Rail: (P/N: 580-50xx) where xx may be 30-37 in increments of 1 to denote OAL.	12 Gauge Thickness, Grade 50 Steel. Coating designation of G90 per ASTM A653. Hardware Stack – 1/2"-13 Hex Bolt (587-0297), 1/2" Flat Washer (587-0516), Z-Rail Flat Washer (580-5044 or 580-5042), 1/2" Lock Washer (587-1022), 1/2" Hex Nut (587-1604).
Module Mid Clamp Assembly.....: (P/N: 580-5080)	Module Mid Clamp (P/N: 580-0009) - 16 Gauge, Type 304 Stainless Steel. Secures modules using 5/16"-18 Carriage Bolt and Flange Nut.
	Module Bottom Clamp (P/N: 580-5055) – 10 Gauge CS Type B ASTM A653, Galvanized Steel G90 coating designation.

Module End Clamp Assembly: (P/N: 580-5090)	Module End Clamp (P/N: 580-3028) - Type 300 SS. Secures using 5/16"-18 RAD Bolt and Flange Nut.
	Module Bottom Clamp (P/N: 580-5056) – 11 Gauge 1018 CRS Steel. Minimum coating designation of Class D per ASTM A153
Grounding Lug.....:	Burndy WEEB-LUG-8.0 – UL certified for Grounding/Bonding, and Photovoltaics UL File: E9999 (Grounding/Bonding) E351343 (Photovoltaics)
Installation Manual	SP3373-4

Table 9

Model	Power Peak GSH
Max branch circuit overcurrent-protection device (A)	25
Module Orientation	Portrait
Torque Settings	
Strongback Attachment (1/2"-13 x 1.5" hardware)	65-70 ft-lbs
Strongback (1/2"-13 x 1.5" hardware)	65-70 ft-lbs
Strut (1/2"-13 x 1.5" hardware)	65-70 ft-lbs
Strut Attachment to H-Beam (1/2"-13 x 1.5" hardware)	65-70 ft-lbs
Strut Reinforcement Bracket (1/2"-13 x 1.5" hardware)	65-70 ft-lbs
Rail Clamp	15 ft-lbs
RAD End Clamp (5/16" Flange Nut)	15 ft-lbs
AMP™ Module Mid Clamp (5/16" Flange Nut)	15 ft-lbs
Splice Plate (1/4" x 3/4" self drilling screws)	8 ft-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
UD Rail Assembly	UD Rail (P/N: 580-3033) – 6000 series Mill Finished Aluminum.
	Rail Bracket (P/N: 580-3146) – 6000 series Mill Finished Aluminum.
	Rail Clamp (P/N: 580-3147) - 6000 series Mill Finished Aluminum.
I-Beam	W-6x8.5 I-Beam per ASTM A572 Gr 50. Minimum Coating Grade of 45 per ASTM A-123.
Strongback Assembly	Strongback-72 Cell (P/N: 580-5011-14G) – Gr 50 Steel, G90 coating designation per ASTM A653.

	Strongback-60 Cell (P/N: 580-5014-14G) – Gr 50 Steel, G90 coating designation per ASTM A653.
	Strongback Attachment (P/N: 580-5040) – 0.187” Thk, A-36 Steel. Minimum Coating Designation of Class D per ASTM A153.
	Hardware Stack - ½”-13 Hex Bolt (587-0297), ½” Flat Washer (587-0516), Z-Rail Flat Washer (580-5044 or 580-5042), ½” Lock Washer (587-1022), ½” Hex Nut (587-1604).
Strut Assembly	Strut (P/N: 580-5020) - ASTM A653 12 Gauge Gr 50 Steel, G90 coating designation.
	Strut Arm Attachment (P/N: 580-5046) – 3/16” A-36 Plate Steel. Minimum coating designation of Class D per ASTM A153
	Strut Reinforcement Bracket (P/N: 580-5043) - 11 Gauge 1018 CRS Steel. Minimum coating designation of Class D per ASTM A153
AMP™ Clamp (Mid Clamp) Assembly P/N: 580-3066	RAD Bolt (P/N: 5810xxx) - Where xxx is either 206,207,208,209, or 210, denoting OAL. Type 300 SS. Secures mid clamp using 5/16”-18, Type 300 SS Hex Flange Nut.
	Module Mid Clamp (P/N: 581-0418) – Type 300 SS. Finish may be mill or coated black.
RAD™ Clamp (End Clamp)..... Assembly P/N’s: (580-3090 or 580-3070)	RAD Bolt (P/N: 5810xxx) - Where xxx is either 206,207,208,209, or 210, denoting OAL. Type 300 SS. Secures mid clamp using 5/16”-18, Type 300 SS Hex Flange Nut.
	Module End Clamp – (P/N: 580-3028) Type 300 SS. Secures using 5/16”-18 RAD Bolt and Flange Nut.
Splice Kit (P/N: 580-3044)	UD Splice Plate (P/N: 580-3032) – 0.125” Thick, 5052-H32 Mill Finished Aluminum
	Self Tapping Screw (P/N: 587-0220) – Type 410 SS.
Keyed Plate..... (P/N: 580-5047)	11 Gauge 1018 CRS Steel. Minimum coating designation of Class D per ASTM A153 or G90 per ASTM A653.
Grounding Lug.....	Burndy WEEB-LUG-8.0 – UL certified for Grounding/Bonding, and Photovoltaics
	UL File: E9999 (Grounding/Bonding) E351343 (Photovoltaics)
Installation Manual	SP3374

Table 10

Type/Model	Power Peak GSHC
Max branch circuit overcurrent-protection device (A)	25
Module Orientation	Portrait
Torque Settings	
Strut Attachment Plate (1/2"-13 x 1.5")	65-70 ft-lbs
Strut (1/2"-13 x 1.5")	65-70 ft-lbs
Strut Reinforcement Bracket (1/2"-13 x 1.5")	65-70 ft-lbs
Rail to Strongback (1/2"-13 x 1.5")	65-70 ft-lbs
Rail Clamp	15 ft-lbs
RAD End Clamp (5/16" Flange Nut)	15 ft-lbs
AMP™ Module Mid Clamp (5/16" Flange Nut)	15 ft-lbs
Splice Plate (1/4" x 3/4" self drilling screws)	8 ft-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
UD Rail Assembly	UD Rail (P/N: 580-3033) – 6000 series Mill Finished Aluminum.
	Rail Bracket (P/N: 580-3146) – 6000 series Mill Finished Aluminum.
	Rail Clamp (P/N: 580-3147) - 6000 series Mill Finished Aluminum.
Strongback Assembly	Strongback-72 Cell (P/N: 580-5011-14G) – Gr 50 Steel, G90 coating designation per ASTM A653.
	Strongback-60 Cell (P/N: 580-5014-14G) – Gr 50 Steel, G90 coating designation per ASTM A653.
	Hardware Stack - 1/2"-13 Hex Bolt (587-0297), 1/2" Flat Washer (587-0516), Z-Rail Flat Washer (580-5044 or 580-5042), 1/2" Lock Washer (587-1022), 1/2" Hex Nut (587-1604).
Strut Assembly	Strut (P/N: 580-5020) - ASTM A653 12 Gauge Gr 50 Steel, G90 coating designation.
	Strut Arm Attachment (P/N: 580-5046) – 3/16" A-36 Plate Steel. Minimum coating designation of Class D per ASTM A153
	Strut Reinforcement Bracket (P/N: 580-5043) - 11 Gauge 1018 CRS Steel. Minimum coating designation of Class D per ASTM A153
C-Channel Pile	3.5x6 CEE ASTM A653 Gr 50 Steel. Coating designation of G235 per ASTM A653.
AMP™ Clamp (Mid Clamp) Assembly P/N: 580-3066	RAD Bolt (P/N: 5810xxx) - Where xxx is either 206,207,208,209, or 210, denoting OAL. Type 300 SS. Secures mid clamp using 5/16"-18, Type 300 SS Hex Flange Nut.

	Module Mid Clamp (P/N: 580-0418) – Type 300 SS. Finish may be mill or coated black.
RAD™ Clamp (End Clamp).....: Assembly P/N’s: (580-3090 or 580-3070)	RAD Bolt (P/N: 5810xxx) - Where xxx is either 206,207,208,209, or 210, denoting OAL. Type 300 SS. Secures mid clamp using 5/16”-18, Type 300 SS Hex Flange Nut.
	Module End Clamp – (P/N: 580-3028) Type 300 SS. Secures using 5/16”-18 RAD Bolt and Flange Nut.
Splice Kit: (P/N: 580-3044)	UD Splice Plate (P/N: 580-3032) – 0.125” Thick, 5052-H32 Mill Finished Aluminum
	Self Tapping Screw (P/N: 587-0220) – Type 410 SS.
Keyed Plate.....: (P/N: 580-5047)	11 Gauge 1018 CRS Steel. Minimum coating designation of Class D per ASTM A153 or G90 per ASTM A653.
Grounding Lug.....:	Burndy WEEB-LUG-8.0 – UL certified for Grounding/Bonding, and Photovoltaics UL File: E9999 (Grounding/Bonding) E351343 (Photovoltaics)
Installation Manual	SP3421-1

Table 11

Type/Model	Ballasted Power Peak
Max branch circuit overcurrent-protection device (A)	25
Module Orientation	Portrait
Torque Settings	
Strongback Attachment Bracket (1/2”-13 x 1.5” hardware)	65-70 ft-lbs
Strongback (1/2”-13 x 1.5”)	65-70 ft-lbs
Strut Attachment Plate (1/2”-13 x 1.5”)	65-70 ft-lbs
Strut (1/2”-13 x 1.5”)	65-70 ft-lbs
Strut Reinforcement Bracket (1/2”-13 x 1.5”)	65-70 ft-lbs
Rail to Strongback (1/2”-13 x 1.5”)	65-70 ft-lbs
Rail Reinforcement Bracket (1/2”-13 x 1.5”)	65-70 ft-lbs
End Clamp (5/16” Flange Nut)	15 ft-lbs
Module Mid Clamp (5/16” Flange Nut)	15 ft-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
Roll Formed Vertical: (P/N: 580-5008-10G or 11G)	ASTM A653 Gr 50, Galvanized Steel, G235 coating designation.
C-Channel Adjustable Base.....: (P/N: 580-5050)	Hot Dip Galvanized Per ASTM A153

Strongback Assembly	Strongback-72 Cell (P/N: 580-5011-14G) – Gr 50 Steel, G90 coating designation per ASTM A653.
	Strongback-60 Cell (P/N: 580-5014-14G) – Gr 50 Steel, G90 coating designation per ASTM A653.
Strut Assembly.....	Strut (P/N: 580-5020) - ASTM A653 12 Gauge Gr 50 Steel, G90 coating designation.
	Strut Arm Attachment (P/N: 580-5046) – 3/16” A-36 Plate Steel. Minimum coating designation of Class D per ASTM A153
	Strut Reinforcement Bracket (P/N: 580-5043) - 11 Gauge 1018 CRS Steel. Minimum coating designation of Class D per ASTM A153
Z-Rail	12 Gauge Thickness , Grade 50 Steel. Coating designation of G90 per ASTM A653.
(P/N: 580-50xx) where xx may be 30-37 in increments of 1 to denote OAL.	Hardware Stack – ½”-13 Hex Bolt (587-0297), ½” Flat Washer (587-0516), Z-Rail Flat Washer (580-5044 or 580-5042), ½” Lock Washer (587-1022), ½” Hex Nut (587-1604).
Module Mid Clamp Assembly..... (P/N: 580-5080)	Module Mid Clamp (P/N: 580-0009) - 16 Gauge, Type 304 Stainless Steel. Secures modules using 5/16”-18 Carriage Bolt and Flange Nut.
	Module Bottom Clamp (P/N: 580-5055) – 10 Gauge CS Type B ASTM A653, Galvanized Steel G90 coating designation.
Module End Clamp Assembly	Module End Clamp (P/N: 580-3028) - Type 300 SS. Secures using 5/16”-18 RAD Bolt and Flange Nut.
	Module Bottom Clamp (P/N: 580-5056) – 11 Gauge 1018 CRS Steel. Minimum coating designation of Class D per ASTM A153
Grounding Lug.....	Burndy WEEB-LUG-8.0 – UL certified for Grounding/Bonding, and Photovoltaics
	UL File: E9999 (Grounding/Bonding) E351343 (Photovoltaics)
Installation Manual	SP3459 -1

PV Cable Mount system

Table 22

Model	PV Cable Mount
Max branch circuit overcurrent-protection device (A)	25 A
Module Orientation	Portrait
Torque Settings	

5/16-18 Flange Nut	180 in-lbs
1/4-20 Flange Nut	96 in-lbs
Burndy, Wiley lug 8.0	180 in-lbs
Burndy, UC25R2RS	180 in-lbs
IDENTIFICATION OF COMPONENTS AND MATERIALS	
Strong Back..... :	PLP part # 999911166 14 gauge or 12 gauge thickness Gr 50 Steel, G90 coating designation per ASTM A653
Backing Plate :	PLP part # 9999111057 Material: Gr 50 Steel, G90 coating designation per ASTM A653 5/16-18 x 1-1/4 Carriage Bolt, 18-8 SS 5/16-18 Flange Nut, 18-8 SS
Top Mount :	PLP part # 9999101067 Material: 304 SS 5/16-18 x 1-1/4 Carriage Bolt, 18-8 SS 5/16-18 Flange Nut, 18-8 SS
Wear Plate..... :	PLP part # 999911254 Material: 304 SS 5/16-18 x 1-1/4 Carriage Bolt, 18-8 SS 5/16-18 Flange Nut, 18-8 SS
PV Clamp assemblies :	Module Clamp. Option 1: PV Clamp, PLP part # 999911013_R1, Material: 304 SS PV Clamp Keeper, PLP part # 9999101037_R1, Material: 304 SS 1/4-20x3/4" bolt, Material: 18-8 SS 1/4-20 Flange Nut, Material: 18-8 SS

	<p>Module Clamp Option 2:</p> <p>PV Clamp, PLP part # 999911013_R2, Material: 304 SS</p> <p>PV Clamp Keeper, PLP part # 9999101037_R1, Material: 304 SS</p> <p>1/4-20x3/4" bolt, Material: 18-8 SS</p> <p>1/4-20 KEP nut, Material: 18-8 SS</p>
EHS Strand..... :	5/16 EHS Strand, Galvanized Steel Strand ASTM A475, 275 G/m2 (G90)
Ground Lug..... :	<p>Burndy, Wiley lug 8.0, UL 467, ETL UL 2703, UL file # E351343</p> <p>Material: Copper, Tin-Electro plated, hardware stainless steel.</p> <p>Burndy, UC25R2RS Evaluated and tested to UL 467 Material: Aluminum Alloy</p>
Manuals..... :	SP3567

TEST HISTORY

Edition 1: Project 70106311

The subject equipment was found to comply with the following requirements of UL Standard 2703, first edition. The following tests were performed on samples of the Ballasted Power Rail, Power Rail P6, Power Rail P8, Power Rail P14, and representative module samples listed in the test report. Details of the test results are being kept in the CSA Group document control system:

Bonding Path Resistance: Section 13
Terminal Torque: Section 14
Temperature Cycling Test: Section 17
Humidity Test: Section 18
Bonding Conductor Test: Section 22
Mechanical Loading Test: Section 21
Fire Tests: Section 15

The following tests were considered not applicable, were satisfied through design review, or some other means of evaluation for acceptability:

Metallic Coating Thickness: Section 20
Accelerated Aging: Section 16
Corrosive Atmosphere Test: Section 19
Bonding Strap Pull Test: Section 23

Edition 2: Project 70161643

Updated marking label with current company logo and name. Updated Assembly Instructions revisions.

Edition 3: Project 70194551

The subject equipment was found to comply with the following requirements of UL Standard 2703, first edition. Updated PV module list by evaluation, no testing was required.

The following tests were performed on samples of the anodized coated XD UD LD & MD rails, mid clamps, end clamps and representative module samples. Updated all installation instructions. Details of the test results are being kept in the CSA Group document control system:

Bonding Path Resistance: Section 13
Temperature Cycling Test: Section 17
Humidity Test: Section 18
Bonding Conductor Test: Section 22
Mechanical Loading Test: Section 21

The following tests were considered not applicable, were satisfied through design review, or some other means of evaluation for acceptability:

Metallic Coating Thickness: Section 20
Accelerated Aging: Section 16
Corrosive Atmosphere Test: Section 19
Bonding Strap Pull Test: Section 23
Fire Tests: Section 15
Terminal Torque: Section 14

Edition 4: Project 80042340

Update Report 70106311 to consolidate PV List into one document for all systems in this report. Update PV list with approved modules by evaluation.

Added P6+ Power Rail. Below test was found compliant for new components.

Bonding Path Resistance: Section 13

Humidity Test: Section 18

Bonding Conductor Test: Section 22

Mechanical Loading Test: Section 21

Combined following reports into this one:

70106319

70220119

Construction Review:

Construction review performed with satisfactory results.

This Edition supersedes all previous editions.

---End of Report---