



Listing Constructional Data Report (CDR)

1.0 Reference and Address			
Report Number	102393982LAX-002	Original 11-Apr-2016	Revised: 3-May-2016
Standard(s)	UL 2703 Issued: 2015/01/28 Ed: 1 Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels		
Applicant	Unirac, Inc	Manufacturer 1	Jiaying Pacific Energy Equipment Corp.
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2.0 Product Description	
Product	Sun Frame Micro Rail
Brand name	Unirac
Description	<p>The product covered by this report is the Sun Frame Micro Rail roof mounted Photovoltaic Rack Mounting System. This system is designed to provide bonding and grounding to photovoltaic modules. The mounting system employs anodized aluminum brackets that are roof mounted using the slider, outlined in section 4 of this report. There are no rails within this product, whereas the 3" Micro Rail, 8" Floating Splice, and 9" Attached Splice electrically bond the modules together forming the path to ground.</p> <p>The Micro Rails are installed onto the module frame by using a stainless steel bolt anodized with black oxide with a stainless type 300 bonding pin, torqued to 20 ft-lbs, retaining the modules to the bracket. The bonding pin of the Micro Rail when bolted and torqued, penetrate the anodized coating of the photovoltaic module frame to contact the metal, creating a bonded connection from module to module.</p> <p>The grounding of the entire system is intended to be in accordance with the latest edition of the National Electrical Code, including NEC 250: Grounding and Bonding, and NEC 690: Solar Photovoltaic Systems. Any local electrical codes must be adhered in addition to the national electrical codes. The Grounding Lug is secured to the photovoltaic module, torqued in accordance with the installation manual provided in this document.</p> <p>Other optional grounding includes the use of the Enphase UL2703 certified grounding system, which requires a minimum of 2 micro-inverters mounted to the same rail, and using the same engage cable.</p>
Models	Unirac SFM
Model Similarity	NA
Ratings	<p>Fuse Rating: 30A</p> <p>Module Orientation: Portrait or Landscape</p> <p>Maximum Module Size: 17.98 ft²</p> <p>UL2703 Design Load Rating: 33 PSF Downward, 33 PSF Upward, 10 PSF Down-Slope</p> <p>**Tested Loads - 50 psf/2400Pa Downward, 50psf/2400Pa Uplift, 15psf/720Pa Down Slope**</p> <p>**Trina TSM-255PD05.08 and Sunpower SPR-E20-327 used for Mechanical Loading**</p> <p>Fire Class Resistance Rating:</p> <ul style="list-style-type: none"> - Class A for Steep Slope Applications when using Type 1 Modules. Can be installed at any interstitial gap. Installations must include Trim Rail. - Class A for Steep Slope Applications when using Type 2 Modules. Can be installed at any interstitial gap. Installations must include Trim Rail.

2.0 Product Description		
Other Ratings	Evaluated Module List	
	Manufacturer	Model
	Trina Solar	TSM-xxx PA05.18 where xxx is 240-260 in increments of 5. TSM-xxx PD05.10 where xxx is 255-265 in increments of 5 TSM-xxx PD05.18 where xxx is 255-265 in increments of 5
	Canadian Solar	CS6V-xxxM where xxx is 225 or 230. CS6P-xxxP where xxx is 250-260 in increments of 5. CS6K-xxxM where xxx is 265 or 270. CS5A-xxxM where xxx is 160-180 in increments of 5
	Hanwha Q-Cells	Q.PLUS-G4 xxx where xxx is 270-280 in increments of 5. Q.PLUS BFR G4.1 XXX where xxx is 270-280 in increments of 5. Q.PRO-G4 xxx where xxx is 255-265 in increments of 5. Q.PRO BFR G4.1 xxx where xxx is 260-270 in increments of 5. Q.PRO BFR G4.3 xxx where xxx is 260 or 265 B.LINE PLUS BFR G4.1 xxx where xxx is either 262, 277, or 292. B.LINE PRO BFR G4.1 xxx where xxx is either 247, 262, or 277.
	Jinko	JKM xxx P-60 where xxx is 200-280 in increments of 5. JKM xxx PP-60 where xxx is 200-265 in increments of 5. JKM xxx M-60 where xxx is 200-280 in increments of 5.
	Kyocera	KU26x-6MCA where x is 0 or 5.
	LG	LG xxx S1C-L4 where xxx is 280-290 in increments of 5. LG xxx N1C-G4 where xxx is 305-320 in increments of 5.
	Yingli	YL xxx P-29b where xxx is 250-270 in increments of 5.
	JA Solar	JAP6 60-xxx/3BB where xxx is 245-265 in increments of 5. JAM6-60-xxx/SI where xxx is 250-270 in increments of 5.
	Renesola	Virtus II with module ratings of 250-260 in increments of 5. 156 series with module ratings of 270-275.
	Suniva	MVX xxx-60 where xxx is 240-255 in increments of 5. OPT xxx-60-4-100 where xxx is 275-290 in increments of 5.
	Sunpower	E20-xxx-COM where xxx is 310 or 327. X21-xxx where xxx 335 or 345. X22-360-C-AC. **Evaluated with both the G3 and G5 frame**