

1.0 Reference and Address			
Report Number	102675852LAX-002	Original 27-Sep-2016	Revised: 21-Mar-2025
Standard(s)	Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels [UL 2703:2015 Ed.1+R:11Jul2024]		
Applicant	Unirac, Inc		
Address	1411 Broadway Blvd NE Albuquerque, NM 87102		
Country	USA		

2.0 Product Description	
Product	PV Racking Bonding and Grounding Component for MLPE Mount PUB2025MAR05
Brand name	Unirac
Description	<p>The product covered by this report is the MLPE (Module Level Power Electronics) Mount for a Photovoltaic Rack Mounting System. This recognized component is designed to provide bonding and grounding of photovoltaic modules. Secures module level power electronics to module frames. Can pierce module frames with anodized coating up to 28 microns and a bottom flange length of more than 16 mm Bonds via the integral bonding pin. Length can be 3" or 4".</p> <p>This MLPE Mount has been tested for bonding only.</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.</p> <p>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	P27320077-004; P27320077-003; P27370077.
Model Similarity	Model P27320077-003 is 3 inches long and model P27320077-004 is 4 inches long.
Ratings	<p>Fuse Rating: 30A Pierce coatings up to 28 microns thick Bottom flange length of more than 16 mm</p> <p>See section 7.0 for a complete list of PV modules evaluated with these racking systems</p>
Other Ratings	NA
Conditions of Acceptability	<p>The products covered in this Report are incomplete in construction features or limited in performance capabilities and are intended for use and evaluation in other products. Consideration should be given to the following when the component is used in or with another product.</p> <ul style="list-style-type: none"> -The component is to be part of larger system as a recognized component of overall system. UL 2703 Grounding and bonding of complete racking system shall be verified in end use product including evaluation to standard under Section 8, Grounding and Grounding Devices and evaluation to standard under Section 9, Bonding -Additional testing may be required when used with other racking systems which may include but not limited to Humidity Freeze testing, Thermal Cycling testing, Bonding Path Resistance test, Bonding Conductor test.

6.0 Critical Features

Recognized Component - A component part, which has been previously evaluated by an accredited certification body with restrictions and must be evaluated as part of the basic product considering the restrictions as specified by the Conditions of Acceptability.

Listed Component - A component part, which has been previously Listed or Certified by an accredited Certification Organization with no restrictions and is used in the intended application within its ratings.

Unlisted Component - A part that has not been previously evaluated to the appropriate designated component standard. It may also be a Listed or Recognized component that is being used outside of its evaluated Listing or component recognition.

Critical Features/Components - An essential part, material, subassembly, system, software, or accessory of a product that has a direct bearing on the product's conformance to applicable requirements of the product standard.

Construction Details - For specific construction details, reference should be made to the photographs and descriptions. All dimensions are approximate unless specified as exact or within a tolerance. In addition to the specific construction details described in this Report, the following general requirements also apply.

3. Corrosion Protection - All ferrous metal parts are protected against corrosion by painting, plating or the equivalent. All parts are made of Aluminum and Stainless Steel.

5. Grounding - Grounding is accomplished by Micro Rail bonding pin that penetrate the anodized coating of the photovoltaic modules frame to contact the metal, creating a bonded connection from module to module when torqued. In addition, the end of row module is to have a dedicated ground lug installed in accordance with the provided installation instructions.

Alternatively, a minimum of 2 micro-inverters installed in parallel may be used as the grounding means, when installed as per the included installation instructions. See illustration 4.

9. Markings - Markings to be verified as stamped into the Micro Rails. Place of Manufacturer is marked through vendor code detailed below.
-- Manufacturer: Vendor ID Code

Marking labels to include the following:

- a) Applicant name
- b) Model number
- c) Date of manufacture. To appear in the format XX/YYYY (where xx may be 01-12, YYYY is the year).
- d) Manufacturer Vendor ID Code
- e) "Conforms to UL STD 2703"

11. Installation, Operating and Safety Instructions - Instructions for installation and use of this product are provided by the manufacturer.

Instructions for installation and use of this product are provided by the manufacturer. Instructions shall include the following:

- a) Installation instructions describing the methods of installation. Verify the installation instructions on site for the order in which components are connected, and the respective torque values for each component.
- b) Assembly instructions shall be provided with a product shipped in subassemblies and shall be detailed to facilitate total assembly of the product.
- c) The mounting instructions furnished with the rack mounting system shall specify mounting hardware that is readily available commercially.
- d) Torque values.
- e) Evaluated list of PV modules in Section 7.0.

7.0 Illustrations	
Illustration 1- Other ratings	
Evaluated Module List	
Manufacturer	Model
Aleo	P18/P19/S18/S19/S59/S79.
AU Optronics	PM Series
Auxin	AXN6M610Txxx, AXN6P610Txxx, AXN6M612Txxx, AXN6P612Txxx.
Axitec	AXIblackpremium 60 (35mm), AXIpower 60 (35mm), AXIpower 72 (40mm), AXIpremium 60 (35mm), AXIpremium 72 (40mm).
Boviet	BVM6610, BVM6612, BNM6612
BYD	P6K Series (35mm), MHK-36
Canadian Solar	CS6V-xxxM, CS6P-xxxP, CS6K-xxxM, CS6K-xxxMS CS6U-P, CS6U-M, CS6X-P, CS6K-MS, CS6K-M, CS6K-P, CS6P-P, CS6P-M, CS3U-P, CS3U-MS, CS3K-P, CS3K-MS, CS1K-MS, CS3K, CS3K, CS3U, CS3U-MB-AG, CS3K-MB-AG, CS3K-MB-AG, CS6K, CS6U, CS3L and CS3W.
Centrosolar America	C-Series, E-Series.
Certainteed	CTxxxMxx-01, CTxxxPxx-01, CTxxxMxx-02 Where "xx" denotes frame and backsheet color.
Eco Solargy	ORION 1000 ECOXXXH156P-60, APOLLO 1000 ECOXXXT156M-60, and APOLLO 1000 ECOXXXA156M-60.
ET Solar	ETAC Module, ET Module
GCL	40mm frame: GCL-P6/72. 35mm frame: GCL-P6/72, GCL-P6/72H, GCL-M6/72, GCL-M6/72H. 35mm frame (Black frame): GCL-P6/60, GCL-M6/60.
Hansol	TD-AN3 (40mm), TD-AN4, UB-AN1 (35mm), UD-AN1 (40mm).
Heliene	36M, 60M, 72M, 60P, and 72P.
Hyundai	KG, MG, TG, RI, RG, TI, MI and KI series (35mm and 40mm).
Hanwha SolarOne	HSL 60, HSL 72.
Hanwha Q-Cells	G3, L-G4 and L-G2, Q.PLUS G4 xxx, Q.PLUS BFR G4.1/TAA xxx, Q.PLUS BFR, G4.1/MAX xxx, Q.PLUS BFR G4.1 xxx, Q.PRO-G4 xxx, Q.PRO EC-G4.4 xxx, Q.PRO BFR G4 xxx, Q.PRO BFR G4.1 xxx, Q.PRO BFR G4.3 xxx, Q.PEAK-G4.1 xxx Q.PEAK- G4.1/MAX xxx, Q.PEAK BLK G4.1 xxx, Q.PEAK-G4.1/TAA xxx Q.PEAK BLK G4.1/TAA xxx, B.LINE PRO BFR G4.1 xxx, B.LINE PLUS BFR G4.1 xxx, B.LINE PRO BFR G4.1 xxx, Q.PEAK DUO-G5-xxx, Q.PEAK DUO-G5.X-xxx and Q.PEAK DUO BLK-G5-xxx, Q.PEAK L G4.2, Q.PLUS L G4.2, Q.PLUS L G4.1 -35mm, Q.PLUS L G4 - 35mm, Q.PRO L G4 -35mm, Q.PRO L G4.1 - 35mm, Q.PRO L G4.2 - 35mm, B.LINE PLUS L G4.2 - 35mm, B.LINE PRO L G4.1 - 35mm, B.LINE PRO L G4.2 - 35mm, Q.PLUS L-G4.2/TAA -35mm, Q.PEAK DUO L-G5.2, Q.PEAK DUO L-G5.3 (380-395), Q.Peak Duo L-G6 xxx, Q.Peak Duo L-G6.2 xxx, Q.Peak Duo L-G6.3 xxx, Q.Peak Duo G6 xxx, Q.Peak Duo BLK-G6 xxx.
HT Solar	HT60-156(M) (NDV) (-F), HT 72-156(M/P).
ITEK	iT-xxx, iT-xxx-HE, iT-xxx-SE, iT-xxx-SE-72 (40mm).
JA Solar	JAP6 60-xxx, JAM6-60-xxx/SI, JAM6(K)-60/xxx, JAP6(k)-72-xxx/4BB, JAP72SYY-xxx/ZZ, JAP6(k)-60-xxx/4BB, JAP60SYY-xxx/ZZ, JAM6(k)-72-xxx/ZZ, JAM72SYY-xxx/ZZ, JAM6(k)-60-xxx/ZZ, JAM60SYY-xxx/ZZ, JAM 72S09 i. YY: 01 white backsheet, 02 black backsheet, 03 half-cell and white backsheet, 09 M4 cell, 10 M4 1/2 cell ii. ZZ: SC standard cell, PR = perc, BP = bifacial, HiT = HIT, IB = IBC, MW = MWT
Japan Solar	JPS-xxxP-60 (35mm), JPS-xxxM-60 (35mm), JPS-xxx-P-72 (40mm), JPS-xxxM-60-BB (35mm), JPS-xxx-P-72-BB (40mm).

7.0 Illustrations

Illustration 1a- Other Ratings Cont.

Jinko	JKM xxx P-60, JKM xxx PP-60, JKM xxx M-60, JKM xxx M-60B, JKMS xxx PP-60 JKMS xxx P-60, JKMSxxx-72, JKMxxxP-72, JKMSxxxP-72, JKMxxxM-72, JK07A (JKMSxxxPP-60 & JKMSxxxPP-72), JK07B (JKMSxxxPP-60), JKM xxx PP-60(Plus), JKM xxx PP-60B, JKM xxx M-60B, JKMSxxxM-60, JKMSxxxM-60-EP, JKM xxx P-72B, JKMxxxPP-72, JKMxxxPP-72B, JKMxxxPP-72(Plus), JKMSxxxPP-72, JKMxxxM-72-V, JKMxxxPP-72-V, JKMxxx-72L-V, JKMxxx-72HL-V, JKMxxxM-60L, JKMxxxM-60BL, JKMxxxM-60HL, JKMxxxM-72HL-V, JKMxxxM-72L-V.
Kyocera	KD-F Series, KU26x-6MCA where x is 0 or 5.
LG	MONO X, MONO X 2, Mono X Plus, Mono Neon 2, Mono Neon 2 LG xxx S1C-L4, LG xxx N1C-G4 LG xxx S1C-A5, LG xxx N1C-A5, LGxxxQ1C(Q1K)-A5, LGxxxN1C(N1K)-A5, LGxxxS1C- A5, LGxxxA1C-A5, LGxxxN2T-A4, LGxxxN2T-A5, LGxxxN2W-A5 LGxxxS2W-A5, LGxxxE1C-A5, LGxxxN1C(N1K)-G4, LGxxxN2W-G4, LGxxxS2W-G4 LGxxxS1C-G4, LGxxxE1K-A5.
LONGi	LR6-60 (40mm), LR6-72 (40mm), LR6-60 HV (40mm), LR6-72 HV (40mm), LR6-60 PH (40mm), LR6-72 PH (40mm), LR6-60 PE (40mm), LR6-72 PE (45mm), LR6-60 BK (40mm Black frame), LR6-72 BK (40mm Black frame), LR6-60 PB (40mm Black frame), LR6-72 PB (45mm Black frame) Number in paranthesis signifies frame profile height.
Mission Solar	MSE series
Mitsubishi	MJE, MLE
NSP	D6M and D6P
Panasonic	VBHNxxxSA16/VBHNxxxSA16B, VBHNxxxSA15/VBHNxxxSA15B, VBHNxxxKA01, VBHN SA17/18/KA03/04, VBHNxxxSA17G, VBHNxxxSA17E/18E. where "xxx" is the module power rating
Peimar	SGXXXM (FB), SGXXXM (BF), SGXXXM
Phono Solar Technology	Diamond series
Risen	RSM72-6 (MDG) (M), RSM60-6
REC Solar	Eco PEAK Energy Series, PEAK Energy BLK2 Series, PEAK Energy 72 Series TWINPEAK 2 SERIES, TWINPEAK 2 BLK2 SERIES, TWINPEAK SERIES
Renesola	Virtus II with module ratings of 250-260 in increments of 5. 156 series with module ratings of 270-275.
S-Energy	SN3xxM-10/SN3xxP-10 (40mm), SNxxxM-10/SN2xxP-10 (40mm), SNxxxP-15 (40mm)

7.0 Illustrations

Illustration 1aa- Other Ratings Cont.

Seraphim	SEG-6PA-XXXWB (XXX=280 to 335), SEG-6PA-XXXBB (XXX=280 to 335), SEG-6PB-XXXWW (XXX=240 to 275), SEG-6PB-XXXWB (XXX=240 to 275), SEG-6PB-XXXBB (XXX=240 to 275), SEG-6MA-XXXWW (XXX=290 to 370), SEG-6MA-XXXWB (XXX=290 to 370), SEG-6MA-XXXBB (XXX=290 to 370), SEG-6MB-XXXWW (XXX=250 to 305), SEG-6MB-XXXWB (XXX=250 to 305), SEG-6MB-XXXBB (XXX=250 to 305) SEG-E01A-XXX (XXX=325 to 400), SEG-E01B-XXX (XXX=275 to 330) SEG-E11A-XXX (XXX=325 to 385), SEG-E11B-XXX (XXX=275 to 320) SRP-XXX-6QA-WX-XX (XXX=345 to 370) (XX=40 or 50 mm) (X=B or S for Black or Silver frame), SRP-XXX-6QA-BX-XX (XXX=345 to 370) (XX=40 or 50 mm) (X=B or S for Black or Silver frame), SRP-XXX-6QB-WX-XX (XXX=280 to 300) (XX=40 or 50 mm) (X=B or S for Black or Silver frame), SRP-XXX-6QB-BX-XX (XXX=280 to 300) (XX=40 or 50 mm) (X=B or S for Black or Silver frame)
Sharp	ND-24CQCJ ND-25CQCS ND-Q235F4 ND-F4Q300 60 and 72 NUSA-xxx/NUSC-xxx
Silfab	SLA-M and SLG-M
SolarWorld	Sunmodule Protect Sunmodule Plus
Solaria	PowerXT-xxxy-zz, PowerXT-xxxR-PD/BD, PowerXT-xxxR-AC, PowerXT-xxxC where xxx is power in watts y is module size (R for residential, C for commercial) zz is other PowerXT-xxxy-zz all share the same rail profiles
SunEdison/ Flextronics	F-Series / FXS, R-Series / FXS
Suniva	MVX xxx-60-72, OPT xxx-60-4-100
Sun Edison	F-Series R-Series
Sunpower	E20-xxx-COM, X21-xxx, X22-360-C-AC. **Evaluated with both the G3 and G5 frame** SPR-P17-xxx-COM where "xxx" is the module power rating
Suntech	STP "XXX"

7.0 Illustrations

Illustration 1aaa- Other Ratings Cont.

Talesun	TP572, TP596, TP654, TP660 (35mm/40mm), TP672, Hipor M350+ (40mm), Talesun Smart (35mm) M = Mono P = Poly B = Black T = Transparent (H) = 1500V without (H) is 1000V
Trina Solar	PA05, PD05, PD15, PE14 TSM-xxx PA05.08, TSM-xxx PD05.10, TSM-xxx PD05.08, TSM-xxx DD05.08 TSM-xxx DD05A.05(II), TSM-xxx DD05A.05(II), TSM-DD14/PE14/PD14, TSM- DE14
Upsolar	UP-MxxxP, UP-MxxxP-B, UP-MxxxM, UP-MxxxM-B
Yingli	YL xxx P-29b, YLM 60, YLM 72, YGE/YLM, YL xxx P-35b, YL xxx D-30b, YL xxx D-36b
Waaree	AC, Adiya 60/72 Mono/Poly Black, Adiya 60/72 Multi
Winaico	WST (35mm), WSP (40mm)

7.0 Illustrations

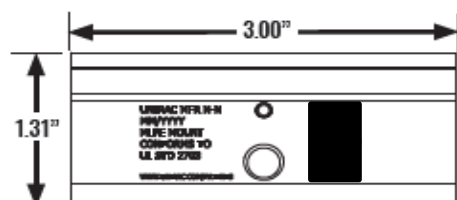
Illustration 13 - MLPE Mount Installation Manual

MLPE MOUNT

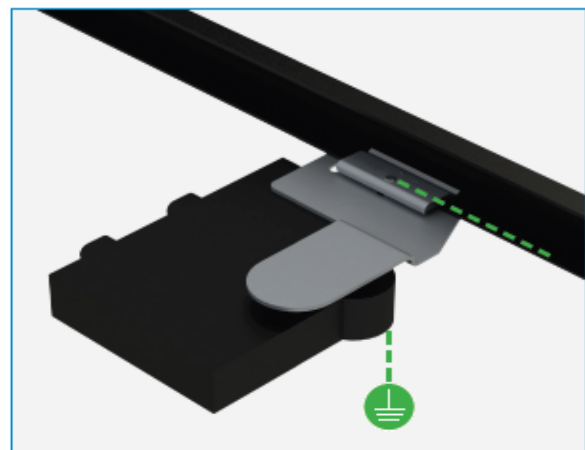
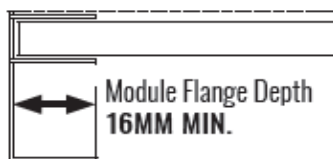
For microinverters and power optimizers, compatible with all module frame heights



TECHNICAL DATA



PART NUMBER	DESCRIPTION	RECOMMENDED TORQUE (FT-LBS)	TOOL
008114M	MLPE MOUNT ASSEMBLY	20	1/4" Allen Wrench
MLPEMNT-US	UNIVERSAL MLPE MOUNT	20	1/2" Socket

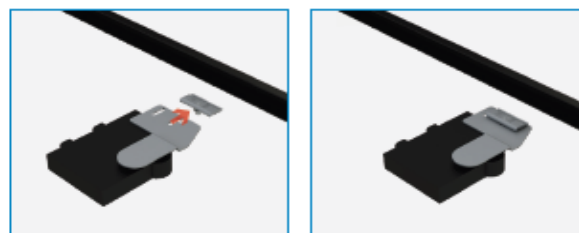


The MLPE Mount's bolt and bonding pin establish bonding between MLPE Mount and module. It is Single Use only.

INSTALLATION STEPS



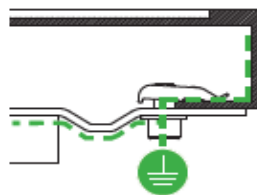
POSITION MLPE MOUNT PARALLEL TO MODULE FRAME



SLIDE MOUNT ONTO MLPE



ENGAGE MLPE & MOUNT ONTO MODULE FRAME FLANGE AND TIGHTEN
Required Torque - 20ft-lbs



INSTALLED CROSS SECTION

TIP: Use module frame wire clips during system installation to manage MLPE cables.

FEATURES

- COMPATIBLE WITH ALL PV RACKING SYSTEMS
- Allows single tool (1/2" Socket) installation with NXT, SM, and RM10 EVO
- For use with Microinverters and Power Optimizers
- Compatible with All Module Frame Heights

MAINTENANCE NOTES

Conduct periodic inspections for loose components, loose fasteners or any corrosion, immediately replace any affected components.

PUB2025MAR05

7.0 Illustrations

Illustration 14 - Added modules

Freedom Forever: FF-MP-BBB 370

Heliene:HSPE 144HC M6 Mono & Bifacial

**Panasonic: EVPV 350 PK, EVPVxxx 360, 370,
EVPVxxx 370, 380, EVPVxxxH 400, 410,
EVPVxxxK 350, 360, EVPVxxxK 360, 370,
EVPVxxxPK 360, 370**

SEG: SEG-XXX-BMD-HV

SolarEver: SE-166_83-xxxM-120N

**Sonali: SS-M Bi Facial 144 Cell,
SS-M-360 to 390 Series, SS-M-390 to 400
Series, SS-M-440 to 460 Series**

Wuxi Suntech STPXXS - B60/Wnhb

**Sunpower: A-Series A400-BLK, SPR-MAX3-
XXX-R**

Tesla: TxxxH

Z Shine: ZXM6-NH144-166_2094