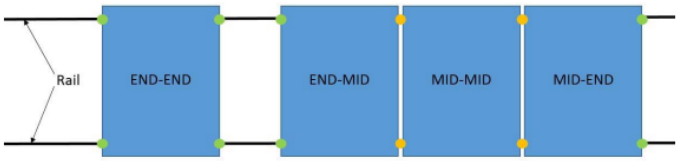
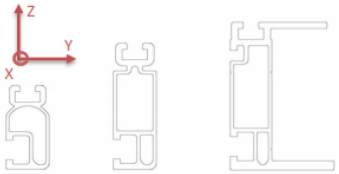
Midclamp and Endclamp Loads per Module





Module Condition Definitions:

END-END: The END-END module shown above, correlating with the loads below, indicates a module that is secured by 4 Endclamps on 2 rails.

END-MID/MID-END: The END-MID and MID-END modules shown above, correlating with the loads below, indicate modules that are secured by 2 Endclamps and 2 Midclamps on 2 rails.

MID-MID: The MID-MID module shown above, correlating with the loads below, indicate a module that is properly secured by 4 Midclamps on 2 rails.

Midclamp and Endclamp Loads per Module

Rail	Loading Condition (with Respect to the Rail)	Allowable Load (lbs)			Design Load (lbs)		
		End-End	End-Mid & Mid-End	Mid-Mid	End-End	End-Mid & Mid-End	Mid-Mid
SM/SM HD	Z+, Tension	1836	1751	1666	2780	2726	2672
	Y±, Transverse*	178*	315*	428	269*	476*	647
	X±, Sliding	244	244	850	368	368	1286
	Y±, Transverse w/33mm Module	67	248	428	102	373	647
SM LT	Z+, Tension	1260	1234	1208	1908	1867	1826
	Y±, Transverse*	139*	225*	419	211*	340*	634
	X±, Sliding	266	266	840	402	402	1270
	Y±, Transverse w/33mm Module	67	225	419	102	340	634

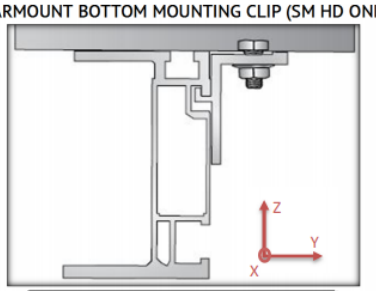
*For transverse loads associated with using "C" Endclamps and 33 mm Modules, please see "Y±, Transverse w/33mm Module"

Midclamp: Part No. - 302027C, 302027D, 302028C, 302028D, 302029C, 302029D. Material - Stainless Steel 300 Series. Ultimate Tensile Strength - 85 ksi. Finish - Clear or Black Oxide. Weight - 0.05 lbs (23 g).

Endclamp: Part No. - 302021C, 302021D, 302022C, 302022D, 302023C, 302023D, 302024C, 302024D, 302025C, 302025D, 302026C, 302026D. Material - 6000 Series Aluminum Alloys. Ultimate Tensile Strength - 38 ksi. Yield Strength - 35 ksi. Finish - Clear or Dark Anodized. Weight ~ 0.06 lbs (26 g)

***NOTE: See NOTES on Page H2.

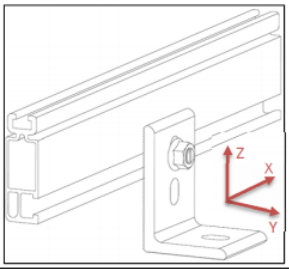
SOLARMOUNT BOTTOM MOUNTING CLIP (SM HD ONLY)



Bottom Mounting Clip (SM HD Only)		
Direction	Allowable Load (lbs)	Design Load (lbs)
	SM HD	SM HD
X ±, Sliding	27	41
Y ±, Transverse	329	497
Z +, Tension	686	746

Part No. 302000C
Bottom Mounting Clip Material: 6000 Series Aluminum Alloys
Ultimate Tensile Strength: 38 ksi, Yield Strength: 35 ksi
Finish: Clear Anodized

SOLARMOUNT L-FOOT



L-Foot with 3/8" T-Bolt				
Direction	Allowable Load (lbs)		Design Load (lbs)	
	SM/SM HD	SM LT	SM/SM HD	SM LT
X ±, Sliding	565	594	854	898
Y ±, Transverse	146	172	220	261
Z +, Tension	938	603	1419	911
Z -, Compression	1357	1297	2052	1962

Part No. 304001C, 304001D
L-Foot material: 6000 Series Aluminum Alloys
Ultimate Tensile: 38 ksi, Yield: 35 ksi
Finish: Clear or Dark Anodized
L-Foot Weight: 0.215 lbs (98g)

NOTES:

Allowable and design loads are valid when components are assembled according to authorized UNIRAC documents.

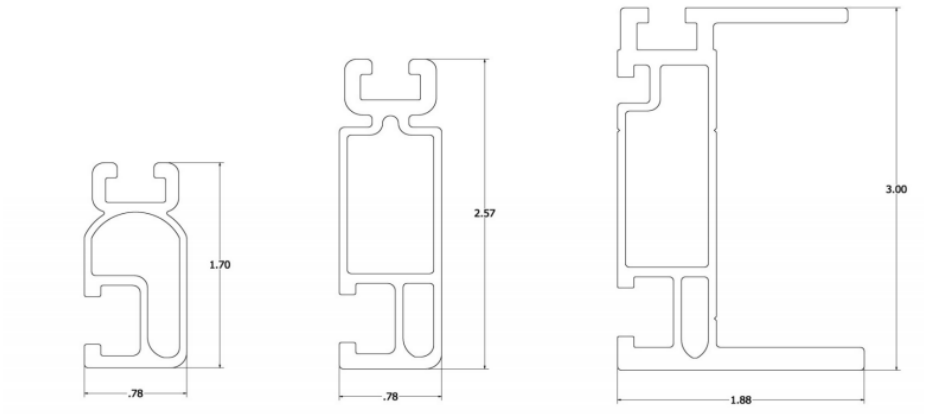
For the beam to L-Foot connection: Assemble with one Unirac $^{5}/_{8}$"-20 T-Bolt and one $^{5}/_{8}$"-20 ASTM F594 serrated flange nut.

Use anti-seize and torque the Midclamp, Endclamp, and Bottom Mounting Clip to 10 ft-lbs. Use anti-seize and torque the L-Foot to 30 ft-lbs.

Values for the L-Foot and Bottom Mounting Clip represent the capacity of a single part when used with a SOLARMOUNT series rail to retain a module in the direction indicated.

Assemble Midclamp and Endclamp with one Unirac ¼"-20 T-Bolt and one ¼"-20 ASTM F594 serrated flange nut.

SM = SOLARMOUNT Standard Rail, SM HD = SOLARMOUNT Heavy Duty Rail, SM LT = SOLARMOUNT Light Rail



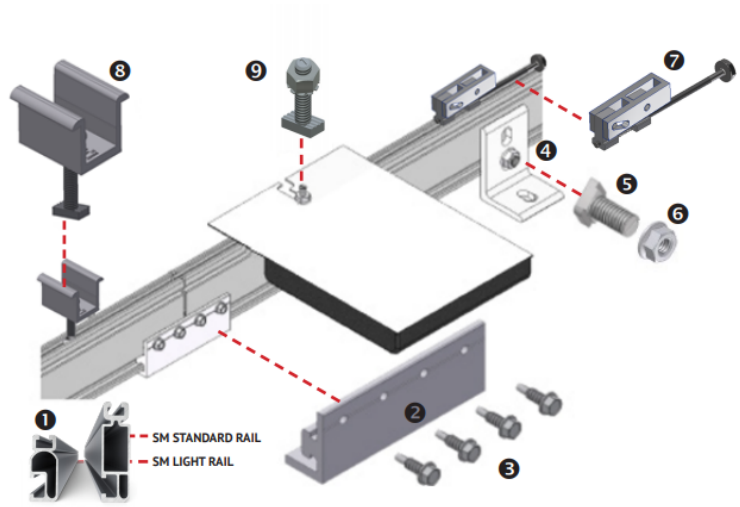
Properties	SOLARMOUNT Light	SOLARMOUNT Rail Profile 2	SOLARMOUNT HD	Units
BEAM HEIGHT	1.70	2.57	3.00	in
APPROX WEIGHT	0.491	0.728	1.271	plf
CROSS SECTION AREA	0.409	0.625	1.059	in^2
SECTION MODULUS (X-AXIS)	0.15	0.363	0.898	in^3
SECTION MODULUS (Y-AXIS)	0.067	0.113	0.221	in^3
MOMENT OF INERTIA (X-AXIS)	0.13	0.467	1.45	in^4
MOMENT OF INERTIA (Y-AXIS)	0.026	0.045	0.267	in^4
RADIUS OF GYRATION (X-AXIS)	0.564	0.865	1.17	in
RADIUS OF GYRATION (Y-AXIS)	0.254	0.269	0.502	in

SM SOLAR MOUNT

STANDARD SYSTEM COMPONENTS

INSTALLATION GUIDE

A PAGE



❶RAIL: Supports PV modules. Use at least two per row of modules. Aluminum extrusion, available in mill, clear anodized, or dark anodized.

❷RAIL SPLICE: Non structural splice joins, aligns, and electrically bonds rail sections into single length of rail. Forms a rigid splice joint, 4 inches long, predrilled (see page I). Anodized aluminum extrusion available in clear or dark.

❸SELF-DRILLING SCREW: (No. 12 x ¾") – Use 4 per rigid splice. Stainless steel. Supplied with splice. In combination with rigid splice, provides rail to rail bond.

❹L-FOOT: Use to secure rails through roofing material to building structure. Refer to loading tables or U-Builder for spacing.

❺ L-FOOT T- BOLT: (3/8" x ¾" or 1") – Use one per L-foot to secure rail to L-foot. Stainless steel. Supplied with L-foot in combination with flange nut, provides electrical bond between L-foot and rail.

❻SERRATED FLANGE NUT : Use one per L-foot to secure and bond rail to Lfoot. Stainless steel. Supplied with L-foot.

❼MODULE ENDCLAMP: Pre-assembled universal clamp that secures module to rail at module flange by tightening 1/2" hex head bolt.

❽MODULE MIDCLAMP: Pre-assembled clamp provides module to module and module to rail bond. Aluminum clamp with stainless steel bonding pins and T-bolt. Available in clear or dark finish.

❾MICROINVERTER MOUNTING BOLT: Preassembled bolt, nut, and captive star washer attaches and bonds microinverter to rail.

NOTE - POSITION INDICATOR: T-bolts have a slot in the hardware end corresponding to the direction of the T-Head.

Wrenches and Torque

	Wrench or Socket Size	Recommended Torque (ft-lbs)
Mid Clamp ❽	1/2"	11
MLPE Mount ❽	1/2"	10
End Clamp ❽	1/2"	3
L-Foot to Rail ❽	1/2"	30
Rail Splice ❽	5/16"	10

Anti-Seize ❻❾

Stainless steel hardware can seize up, a process called galling. To significantly reduce its likelihood:
1. Apply minimal lubricant to bolts only where indicated in installation process, preferably Anti-Seize commonly found at auto parts stores (Anti-seize has been factory applied to mid clamp bolts)
2. Shade hardware prior to installation, and
3. Avoid spinning stainless nuts onto bolts at high speed.