



## **SOLARMOUNT**<sup>®</sup>

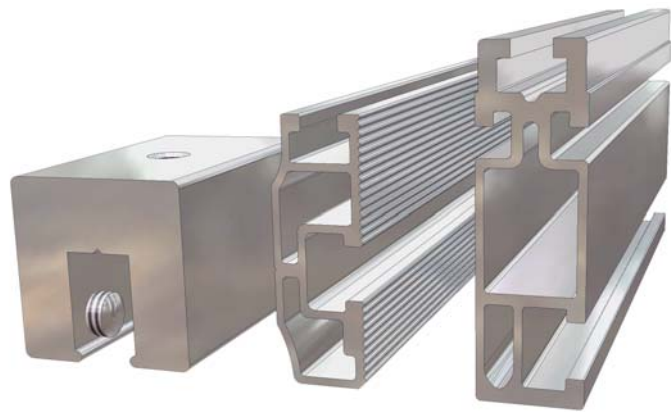
### SIZING CHARTS

SolarMount<sup>®</sup> is the most versatile system of components available for mounting PV modules. Its wide variety of options ensure a structurally sound and aesthetically pleasing installation for almost any framed PV module.

U.S. Des. Patent No. D496,248S. Other patents pending.

## Components and Configurations

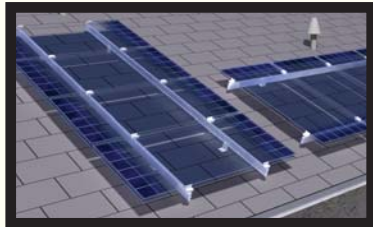
Thanks for using SolarMount®! Select the configuration checklist best suited for your installation.



**SolarMount S-5!**

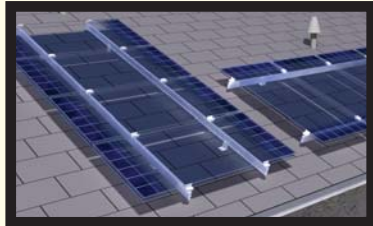
**SolarMount Light Rail**

**SolarMount Standard Rail**



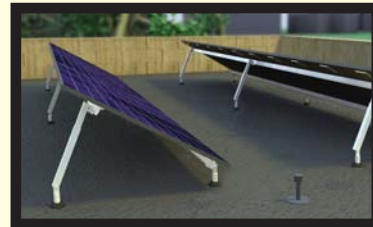
### LIGHT RAIL, FLUSH MOUNT

Easy handling light rail saves aluminum and expense without compromising structural integrity. Install an array flush to a roof or other mounting surface with footings up to 48 inches apart. Mount in high profile (rails parallel to rafters) or low. Accessories handle special circumstances, such as Spanish tile or an uneven roof.



### STANDARD RAIL, FLUSH MOUNT

Where foot spacing must exceed 48 inches, standard rail provides the extra strength. Install an array flush to a roof or other mounting surface in high profile (rails parallel to rafters) or low. Accessories handle special circumstances, such as Spanish tile or an uneven roof.



### STANDARD RAIL, LOW PROFILE TILT LEGS

Minimize the vertical height of your array—to hide an array behind a parapet, for example. You can also optimize tilt angle on a pitched roof to maximize system performance. Tilt angle depends on leg length and the make and model of your PV modules. Use standard rail with all tilt legs.



### STANDARD RAIL, HIGH PROFILE TILT LEGS

Maximize module density at a given site area on the ground or on a flat or pitched roof. Tilt angle depends on leg length and rail length. Use standard rail with all tilt legs.

*High profile legs require unspliced rails not exceeding 180 inches.*



### S-5 STANDING-SEAM METAL ROOF CLAMPS

SolarMount/S-5! secure PV modules to a standing-seam metal roof easily and inexpensively without penetrating the roof. Rails are not required, but can be used for special applications.

**TOP MOUNTING CLAMPS**

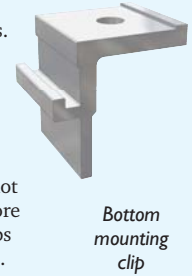
Select top mounting clamps if you prefer to install modules *after* securing the footings and the rails. This sequence is especially well suited for flush mounting.

Top mounting clamps do not use module mounting holes, thus allowing flexibility in rail placement. See the installation manual for details. Top mounting requires 1 inch between modules. Rails must extend 1½ inches beyond the last module on each end.

**BOTTOM MOUNTING CLIPS**

Select bottom mounting clips if you plan to attach modules to rails prior to final installation, a sequence well suited for pre-wired rows of modules. No space between modules is required, and rails need not extend past the end modules.

**Cautions:** (1) Module mounting holes determine spacing of the rails. If rails are parallel to rafters, stringers will likely be necessary under the roof since footings *must* attach to structural members, not decking alone. (2) Flush arrays are significantly more difficult to install when using bottom mounting clips because of access problems when securing footings. Use bottom mounting clips with flush mounts only if the PV modules you are installing have mounting holes near the ends.

**Light Rail, Flush Mount, Clamps: Checklist**

- Sizing: Rails and clamps, pp. 4–5.
- Kit pricing: Light rail kits, p.8; clamp kits, pp. 11–14.
- Pro-Pak pricing: Light rails, p. 9; L-feet, p. 9; clamps, pp. 11–14.
- Light rail splices, grounding clips, and grounding lugs, p. 10.
- Standoffs and flashings, p. 15.
- Accessories: hanger bolts, cable ties, shims, security hardware, p. 18.

**Standard Rail, Flush, Clamps: Checklist**

- Sizing: Rails and clamps, pp. 4–5.
- Kit pricing: Standard rail kits, p.8; clamp kits, pp. 11–14.
- Pro-Pak pricing: Standard rails, p. 9; L-feet, p. 9; clamps, pp. 11–14.
- Light rail splices, grounding clips, and grounding lugs, p. 10.
- Standoffs and flashings, p. 15.
- Accessories: hanger bolts, cable ties, shims, security hardware, p. 18.

**Flush Mount, Clips: Checklist**

- Sizing: Rails and clamps, pp. 6–7.
- Kit pricing: Standard rail kits, p.8; clips, p. 14.
- Pro-Pak pricing: Standard rails, p. 9; L-feet, p. 9; clips, p.14.
- Light rail splices, grounding clips, and grounding lugs, p. 10.
- Standoffs and flashings, p. 15.
- Accessories: Cable ties, shims, and security hardware, p. 18.  
*See Cautions 1 and 2 above. Consult UniRac before using aluminum standoffs or hanger bolts in this configuration.*

**Low Profile Tilt Legs, Clamps: Checklist**

Same as "Standard Rail, Flush, Clamps", plus:

- Sizing: Tilt angles, p. 16, and L-feet required, p. 17.
- Pricing: Low profile tilt legs, p. 17.

*Consult UniRac before using aluminum standoffs or hanger bolts in this configuration.*

**Low Profile Tilt Legs, Clips: Checklist**

Same as "Standard Rail, Flush, Clips", plus:

- Sizing: Tilt angles, p. 16, and L-feet required, p. 17.
- Pricing: Low profile tilt leg, p. 17.

*Requires mounting holes at ends of modules. Consult UniRac before using aluminum standoffs or hanger bolts in this configuration.*

**High Profile Tilt Legs, Clamps: Checklist**

Same as "Standard Rail, Flush, Clamps", plus:

- Sizing: Tilt angles, p. 17.
- Pricing: High profile tilt legs, p. 17.

*Do not use splices with this configuration. Consult UniRac before using aluminum standoffs or hanger bolts.*

**High Profile Tilt Legs, Clips: Checklist**

Same as "Standard Rail, Flush, Clamps", plus:

- Sizing: Tilt angles, p. 17.
- Pricing: High profile tilt legs, p. 17.

*Do not use rail splices with this configuration. Consult UniRac before using aluminum standoffs or hanger bolts.*

**SolarMount®/S-5!™: Checklist**

- Sizing: Clamp sets, pp. 19–20
- Pricing: Clamp sets, pp. 19–20.
- Clamp sets with L-feet for use with rails (p. 20).

# SOLARMOUNT



## Top Mounting

Size installations using top mounting clamps with SolarMount® light or standard rails

Sizing can take place as soon as you know the make, model, and number of modules you plan to mount. Call UniRac for modules not listed.

When sizing is complete, rails, clamps, splices, and L-feet may be ordered in either of two ways:

- Kits (pp. 11–12) contain just the right component quantities for a given installation.
- Pro-Pak pricing (p. 11) offers bulk components, best for installers who regularly use SolarMount.

### Required rail lengths (inches) and top mounting clamp sizes

Module make and model	Clamp size	Number of modules to be mounted per row										
		2	3	4	5	6	7	8	9	10	11	12
<b>BP Solar</b>												
BP365	E	48	72	96	106	132	156	180	192	216	240	252
BP380, -485	E	48	72	96	120	144	168	180	204	226	252	276
BP3125	E	60	96	120	144	168	204	226	252	288	312	336
BP3150, -3160, -4175	E	72	106	132	168	204	240	264	300	324	360	396
BPSX160B, -170B	E	72	106	132	168	204	240	264	300	324	360	396
<b>Canadian Solar</b>												
CS5F-12, CS5E-15, CS5E-18, CS5E-20	A	36	48	60	72	84	96	106	120	132	144	156
CS6D-60, CS6D-65	C	60	84	120	144	168	204	228	252	276	312	336
CS5C-80, CS5C-90	C	48	72	96	120	144	168	192	216	228	252	276
CS5A-160, CS5A-170, CS5A-180	D	72	106	144	168	204	240	264	300	336	360	396
CS6A-160, CS6A-170, CS6P-170, CS6A180, CS6P-180, CS6P-190, CS6P-200, CS6P-210, CS6P-220, CS6P-230, CS6P-240	K	84	132	168	204	252	288	324	360	408	444	480
CS5P-200, CS5P-210, CS5P-220, CS5P-230, CS5P-240	D	96	132	180	216	264	312	348	396	432	480	516
<b>Evergreen</b>												
EC-110-GL, EC-115-GL, EC-120GL	C	60	84	120	144	168	192	216	252	276	300	324
ES-170, ES-180, ES-190, ES-195	K	84	120	156	204	240	276	312	360	396	432	468
ES-A-190, ES-A-195, ES-A-200, ES-A-205, ES-A-210	F	84	120	156	204	240	276	312	360	396	432	468
<b>GE Energy</b>												
GEPV072, -085	C	48	72	96	120	144	156	180	204	226	252	264
GEPV100, -110	C	60	84	120	144	168	192	226	252	276	300	336
GEPVp130	C	60	84	120	144	168	204	226	252	276	312	336
GEPV173	C	84	132	168	204	240	288	324	360	396	-	-
GEPVp185, -200	C	84	132	168	204	240	288	324	360	408	-	-
<b>Isotofón</b>												
I-100	D	60	84	120	144	168	192	216	252	276	300	324
I-150S	D	96	132	180	216	264	300	348	384	432	-	-
I-165	D	84	120	168	204	240	288	324	360	396	-	-

**Required rail lengths (inches) and top mounting clamp sizes** *(continued)*

Module make and model	Clamp Size	Number of modules to be mounted per row										
		2	3	4	5	6	7	8	9	10	11	12
<b>Kaneka</b>												
G-EA060, G-SA060	D	84	132	168	204	252	288	324	372	408	-	-
<b>Kyocera</b>												
KC40T, KC50T, KC65T, KC85T, KC85TS, KCI30GT, KCI30TM	C	60	84	120	144	168	192	216	252	276	300	324
KDI30GX-LP, KDI35GX-LP	C	60	84	120	144	168	204	228	252	276	312	336
KCI75GT, KDI80GX-LP, KC200GT, KD205GX-LP, KD210GX-LP	C	84	132	168	204	252	288	324	372	408	444	492
<b>Mitsubishi</b>												
PVMFI10EC3, -120EC3	F	60	84	120	144	168	192	216	240	276	300	324
PVMFI25EA2LF, -130EA2LF	F	72	106	144	168	204	240	264	300	336	372	396
PVMFI65EB3	F	72	106	132	168	204	240	264	300	336	360	396
<b>Photowatt</b>												
PW750	A	48	72	96	120	144	168	192	216	240	264	288
PWI650	D	96	144	180	226	264	312	360	396	-	-	-
<b>Sanyo</b>												
HIP190BA3, -195BA3, -200BA3	H	84	120	156	180	216	252	288	324	360	396	432
<b>Schott Solar</b>												
ASE300, -315, -330	E	106	168	216	264	312	372	420	-	-	-	-
<b>Sharp</b>												
ND-070ELU, ND-070ERU, ND-072ELU, ND-072ERU, ND-72ELUF, ND-72ERUF	F	84	132	168	204	252	288	324	372	408	444	492
ND-162UI & UIF, ND-167UIF, NDI67U3 & U3A	F	84	132	168	204	252	288	324	372	408	444	492
ND-187UI & UIF, ND-198UIF	N/A	84	132	168	204	252	288	324	372	408	444	492
ND-200UI & UIF, ND-205UI, ND-208UI & UIF & U2, ND-216UIF & U2	F	84	132	168	204	252	288	324	372	408	444	492
ND-60RU1, ND-62RU1 & RU2	C	36	60	72	96	106	120	144	156	168	192	204
ND-123-UJF, ND-L3EJE, ND-L3EJEA	F	60	84	120	144	168	192	228	252	276	300	336
ND-N0ECU, ND-N2ECU, ND-N2ECUF	F	84	132	168	204	252	288	324	372	408	444	492
NE-170UI-VE, NT-175UI-VE, NT-180UI-VE	F	72	106	144	180	204	240	276	312	348	372	408

**Required rail lengths (inches) and top mounting clamp sizes**

Module make and model	Clamp size	Number of modules to be mounted per row										
		2	3	4	5	6	7	8	9	10	11	12
<b>Sharp (continued)</b>												
ND-162UIY, ND167UI, ND-167UIY, ND-176UIY	F*	84	132	168	204	252	288	324	372	408	444	492
NE80-EJE, NE-80EJEA	F	48	72	96	120	144	168	180	204	228	252	276
ND-200UIF-VE (& UI-VE), ND-205UI-VE, ND-208UIF (& UI-VE & U2-VE), ND-216UIF-VE (& U2-VE), ND-220UIF (& UIF-VE, U2 & U2-VE), ND-224UIF (&UIF-VE, U2 & U2-VE)	F	84	132	168	204	252	288	324	372	408	444	492
NE-160UI, NE-170UI, NT-175UI, NT-180UI	F	72	106	144	180	204	240	276	312	348	372	408
NE-165UI (& U5)	F	72	106	144	180	204	240	276	312	348	372	408
<b>SolarWorld (Shell)</b>												
80P, 85P, SP75, SQ80	C	48	72	96	120	144	156	180	204	226	252	264
165P, -PC; 175P, -PC; SQ165	D	72	106	144	168	204	240	276	300	336	372	408
<b>SunPower</b>												
SPR90, -95	F	48	72	96	120	144	156	180	204	226	252	264
SPR200BLK, -210, -215BLK, -220	F	72	106	132	168	204	240	264	300	336	360	396
<b>Suntech</b>												
STP060-12/Sb	B	60	84	106	132	168	192	216	240	264	288	324
STP085S	B	48	72	96	120	144	168	192	204	226	252	276
STP110-12Tb; STP115-12Tc; STP120, -130, -140	C	60	96	120	144	168	204	226	252	288	312	336
STP110-24Ab, STP175-24Ab1	C	72	106	144	168	204	240	276	300	336	372	396
<b>SunWize</b>												
SW50A, SW55A, SW60A	C	60	84	106	120	144	168	192	216	240	264	288
SW50C, SW55C, SW60C	C	48	72	96	106	132	156	168	192	216	240	252
SW75A, SW80A	C	60	84	106	132	156	180	204	228	252	276	300
SW90C, SW100C	C	48	72	96	120	144	168	192	216	228	252	276
SW150	J	72	96	132	168	192	228	264	284	324	348	384
SW170, SW175, SW180	J	72	106	144	168	204	240	276	300	336	372	396
<b>UniSolar</b>												
ES62T	B	72	106	132	168	204	240	264	300	324	360	396
US64	B	72	96	132	156	192	216	252	276	312	336	372
<b>Yingli</b>												
YL80, -85	C	48	72	96	120	144	168	192	204	226	252	276

# SOLARMOUNT

## Bottom Mounting

Size installations using bottom mounting clips with SolarMount® standard rails

Sizing can take place as soon as you know the make, model, and number of modules you plan to mount. Call UniRac for any modules not listed. When sizing is complete, rails, splices, and L-feet may be ordered in two ways:

- Kits (p. 11-12) contain just the right quantities for a given installation.
- Pro-Pak pricing (p. 12) offers bulk components, best for installers who regularly use SolarMount.

Order 4 bottom mounting clips (p. 25) for every module to be mounted.

BOTTOM  
MOUNTING CLIP



### Required rail lengths (inches) for bottom mounting

Module make and model	Number of modules to be mounted per row										
	2	3	4	5	6	7	8	9	10	11	12
<b>AEE</b>											
AE80J	48	72	96	120	132	156	180	192	216	240	264
<b>BP Solar</b>											
BP365	48	60	84	106	120	144	168	180	204	226	240
BP380, -485	48	72	96	106	132	156	180	192	216	240	264
BP3125	60	84	106	144	168	192	216	240	276	300	324
BP3150, -3160, -4175	72	96	132	156	192	226	252	288	312	348	384
BPSX160B, -170B	72	96	132	168	192	226	252	288	324	348	384
<b>Canadian Solar</b>											
CS5F-12, CS5E-15, CS5E-18, CS5E-20	24	36	48	60	72	84	96	106	120	132	144
CS6D-60, CS6D-65	60	84	106	132	168	192	216	240	264	300	324
CS5C-80, CS5C-90	48	72	96	120	132	156	180	204	216	240	264
CS5A-160, CS5A-170, CS5A-180	72	96	132	168	192	228	264	288	324	348	384
CS6A-160, CS6A-170, CS6P-170, CS6A180, CS6P-180, CS6P-190, CS6P-200, CS6P-210, CS6P-220, CS6P-230, CS6P-240	84	120	156	204	240	276	312	360	396	432	468
CS5P-200, CS5P-210, CS5P-220, CS5P-230, CS5P-240	84	132	168	216	252	300	336	384	420	468	504
<b>Evergreen</b>											
EC-110-GL, EC-115-GL, EC-120GL	60	84	106	132	156	180	216	240	264	288	312
ES-170, ES-180, ES-190, ES-A-190, ES-195, ES-A-195, ES-A-200, ES-A-205, ES-A-210	84	120	156	192	228	264	300	348	384	420	456
<b>GE Energy</b>											
GEPV072, -085	48	72	84	106	132	156	168	192	216	240	252
GEPV100, -110	60	84	106	132	156	192	216	240	264	288	312
GEPVp130	60	84	106	132	168	192	216	240	264	300	324
GEPV173	84	120	156	192	240	276	312	348	384	432	-
GEPVp185, -200	84	120	156	204	240	276	312	360	396	-	-
<b>Isotofón</b>											
I-100	60	84	106	132	156	192	216	240	264	288	312
I-150S	84	132	168	216	252	300	336	372	420	-	-
I-165	84	120	156	192	240	276	312	348	384	420	-
<b>Kaneka</b>											
G-EA060, G-SA060	84	120	156	204	240	276	312	360	396	432	-

**Required rail lengths (inches) for bottom mounting (continued)**

Module make and model	Number of modules to be mounted per row										
	2	3	4	5	6	7	8	9	10	11	12
<b>Kyocera</b>											
KC40T, KC50T, KC65T, KC85T, KC85TS, KC130GT, KC130TM	60	84	106	132	156	180	216	240	264	288	312
KD130GX-LP, KD135GX-LP	60	84	106	132	168	192	216	240	264	300	324
KC175GT, KD180GX-LP, KC200GT, KD205GX-LP, KD210GX-LP	84	120	156	204	240	276	312	252	396	432	468
<b>Mitsubishi</b>											
PVMF110EC3, -I20EC3	60	84	106	132	156	180	204	240	264	288	312
PVMF125EA2LF, -I30EA2LF	72	96	132	168	192	226	264	288	324	360	384
PVMF165EB3	72	96	132	168	192	226	252	288	324	348	384
<b>Photowatt</b>											
PW750	48	72	96	120	132	156	180	204	226	252	264
PW1650	96	132	180	216	264	300	348	384	432	-	-
<b>Sharp</b>											
ND-070ELU, ND-070ERU, ND-072ELU, ND-072ERU, ND-72ELUF, ND-72ERUF	84	120	156	204	240	276	312	360	396	432	468
ND-162UI & UIF, ND-167UIF, ND167U3 & U3A	84	120	168	204	240	276	324	360	396	432	480
ND-187UI & UIF, ND-198UIF	84	120	168	204	240	276	324	360	396	432	480
ND-200UI & UIF, ND-205UI, ND-208UI & UIF & U2, ND-216UIF & U2	84	120	168	204	240	276	324	360	396	432	480
ND-60RUI, ND-62RUI & RU2	36	48	72	84	96	120	132	144	156	180	192
ND-123-UJF, ND-L3EJE, ND-L3EJEA	60	84	106	132	168	192	216	240	264	288	324
ND-N0ECU, ND-N2ECU, ND-N2ECUF	84	120	156	204	240	276	312	360	396	432	468
NE-170UI-VE, NT-175UI-VE, NT-180UI-VE	72	106	132	168	204	228	264	300	336	360	396
ND-162UIY, ND167UI, ND-167UIY, ND-176UIY	84	120	168	204	240	276	324	360	396	432	480
NE80-EJE, NE-80EJEA	48	72	96	106	132	156	180	192	216	240	264
ND-200UIF-VE (& U1-VE), ND-205UI-VE, ND-208UIF (& U1-VE & U2-VE), ND-216UIF-VE (& U2-VE), ND-220UIF (& UIF-VE & U2 & U2-VE), ND-224UIF (&UIF-VE & U2 & U2-VE)	84	120	168	204	240	276	324	360	396	432	480
NE-160UI, NE-170UI, NT-175UI, NT-180UI	72	106	132	168	204	228	264	300	336	360	396
NE-165UI (& U5)	72	106	132	168	204	228	264	300	336	360	396
<b>Schott Solar</b>											
ASE300, -315, -330	106	156	204	264	312	360	408	-	-	-	-
<b>SolarWorld (Shell)</b>											
80P, 85P, SP75, SQ80	48	72	84	106	132	156	168	192	216	240	252
165P, -PC; 175P, -PC; SQ165	72	106	132	168	204	226	264	300	324	360	396

**Required rail lengths (inches) for bottom mounting** *(continued)*

Module make and model	Number of modules to be mounted per row										
	2	3	4	5	6	7	8	9	10	11	12
<b>SunPower</b>											
SPR90, -95	48	72	84	106	132	156	168	192	216	240	252
SPR200BLK, -210, -215BLK, -220	72	96	132	168	192	226	252	288	324	348	384
<b>Suntech</b>											
STP060-12/Sb	60	84	106	132	156	180	204	226	252	276	312
STP085S	48	72	96	120	132	156	180	204	216	240	264
STPI10-12Tb; STPI15-12Tc; STPI20, -130, -140	60	84	120	144	168	192	216	252	276	300	324
STPI10-24Ab, STPI75-24AbI	72	96	132	168	192	226	264	288	324	360	384
<b>SunWize</b>											
SW50A, SW55A, SW60A	48	72	96	120	144	168	192	204	228	252	276
SW50C, SW55C, SW60C	48	60	84	106	120	144	168	180	204	228	240
SW75A, SW80A	48	72	96	120	144	168	192	216	240	264	288
SW90C, SW100C	48	72	96	120	132	168	180	204	216	240	264
SWI50	72	96	132	156	192	216	252	276	312	336	372
SWI70, SWI75, SWI80	72	96	132	168	192	228	264	288	324	360	384
<b>UniSolar</b>											
ES62T	72	96	132	168	192	226	252	288	324	348	384
US64	60	96	120	156	180	216	240	264	300	324	360
<b>Yingli</b>											
YL80, -85	48	72	96	120	132	156	180	204	216	240	264

## Pro-Pak Rails and L-feet

Use Pro-Pak component pricing when regularly using SolarMount on multiple installations.



### Standard rail

**PRO-PAK:** Standard rail bundles consist of 8 rails. Bundles listed here do not include L-feet or hardware. See the sizing chart (pp. 4–5 or 6–7) to determine rail length appropriate to your installation. If desired rail length exceeds 240 inches, order a splice and two segments. Spliced segments should be as close to equal in length as possible.

Rail length (inches)	Bundle of 8 rails		
	Nominal ship size (inches)	Nominal ship weight (lbs)	Item no.
48	51 x 5 x 3	30	300101
60	63 x 5 x 3	36	300102
72	75 x 5 x 3	44	300103
84	87 x 5 x 3	50	300104
96	99 x 5 x 3	55	300105
106	109 x 5 x 3	61	300106
120	123 x 5 x 3	67	300107
132	135 x 5 x 3	72	300108
144	147 x 5 x 3	78	300109
156	159 x 5 x 3	92	300110
168	171 x 5 x 3	100	300111
180	183 x 5 x 3	108	300112
192	195 x 5 x 3	114	300113
204	207 x 5 x 3	120	300114
216	219 x 5 x 3	128	300115
228	229 x 5 x 3	135	300116
240	243 x 5 x 3	142	300117



### Serrated L-foot

**PRO-PAK:** Each L-foot includes a stainless steel bolt and flange nut to attach the foot to a SolarMount rail. Lag bolts are not included. Rail set pricing (p. 8) lists the appropriate number of L-feet per pair of rails.

Quantity	Nominal ship wt. (lbs)	Part no.
1		310068
20	5	310067



### Light rail

**PRO-PAK:** Light rail bundles consist of 10 rails. Bundles listed here do not include L-feet or hardware. See the top mounting sizing chart in (pp. 6–7) to determine rail length appropriate to your installation. If desired rail length exceeds 216 inches, order a splice and two segments. Spliced segments should be as close to equal in length as possible.

Rail length (inches)	Bundle of 10 rails		
	Nominal ship size (inches)	Nominal ship weight (lbs)	Item no.
48	51 x 5 x 3	25	303101
60	63 x 5 x 3	30	303102
72	75 x 5 x 3	36	303103
84	87 x 5 x 3	41	303104
96	99 x 5 x 3	45	303105
106	109 x 5 x 3	50	303106
120	123 x 5 x 3	55	303107
132	135 x 5 x 3	59	303108
144	147 x 5 x 3	64	303109
156	159 x 5 x 3	75	303110
168	171 x 5 x 3	82	303111
180	183 x 5 x 3	88	303112
192	195 x 5 x 3	93	303113
204	207 x 5 x 3	98	303114
216	219 x 5 x 3	104	303115

## Rail Kits

Each kit mounts a single row of modules and consists of rails plus L-feet and hardware to attach feet to rails. Splice bars are also included in four-rail kits. To determine row lengths required from your installation, see the sizing chart on pages 4–5 for arrays with top mounting clamps, or pages 6–7 for arrays employing bottom mounting clips.

Rails, L-feet, and splices are clear anodized.



### Standard 2-rail kits

Each kit contains 2 rails equal to the row length, L-feet, and hardware to join L-feet to rails.

Row length (inches)	No. of L-feet	Nom. shipping data			Item no.
		inches	lbs		
48	4	51 x 4 x 3	13		300201
60	4	63 x 4 x 3	14		300202
72	4	75 x 4 x 3	16		300203
84	4	87 x 4 x 3	17		300204
96	4	99 x 4 x 3	19		300205
106	4	109 x 4 x 3	20		300206
120*	6	123 x 4 x 3	22		300207
132*	6	133 x 4 x 3	24		300208
144*	6	147 x 4 x 3	25		300209
156*	6	159 x 4 x 3	27		300210
168*	6	169 x 4 x 3	28		300211
180*	6	183 x 4 x 3	30		300212
192*	8	195 x 4 x 3	31		300213
204*	8	207 x 4 x 3	33		300214
216†	8	219 x 4 x 3	34		300215

\* Rail kits from 120 to 204 inches normally ship truck freight. For UPS shipment, add one cut and splice fee per rail set (item no. 990201, \$30.00).

† Ships via truck freight only.

### Standard 4-rail kits for long rows

Each kit contains four rail segments, two splices, L-feet, and hardware to join L-feet to rails. Rail segments and splices assemble into two spliced rails equal to the row length. These kits ship via truck freight only.

Row length (inches)	Segment lengths (in)	No. of L-feet	Nom. shipping data			Item no.
			inches	lbs		
226	106/120	10	123 x 5 x 3	40		300224
240	120/120	10	123 x 5 x 3	42		300225
252	132/120	10	135 x 5 x 3	44		300226
264	132/132	10	135 x 5 x 3	46		300227
276	144/132	10	147 x 5 x 3	47		300228
288	144/144	10	147 x 5 x 3	48		300229
300	156/144	12	159 x 5 x 3	50		300230
312	156/156	12	159 x 5 x 3	52		300231
324	168/156	12	171 x 5 x 3	53		300232
336	168/168	12	171 x 5 x 3	54		300233
348	180/168	14	183 x 5 x 3	56		300234
360	180/180	14	183 x 5 x 3	58		300235
372	192/180	14	195 x 5 x 3	59		300236
384	192/192	14	195 x 5 x 3	60		300237
396	204/192	14	207 x 5 x 3	62		300238
408	204/204	14	207 x 5 x 3	64		300239
420	216/204	16	219 x 5 x 3	65		300240
432	216/216	16	219 x 5 x 3	66		300241



### Light 2-rail kits

Each kit contains 2 rails equal to the row length, L-feet, and hardware to join L-feet to rails.

Row length (inches)	No. of L-feet	Nom. shipping data			Item no.
		inches	lbs		
48	4	51 x 5 x 3	9		303201
60	4	63 x 4 x 3	10		303202
72	4	75 x 4 x 3	11		303203
84	4	87 x 4 x 3	12		303204
96	6	99 x 4 x 3	13		303205
106	6	106 x 4 x 3	14		303206
120*	6	123 x 4 x 3	15		303207
132*	8	135 x 4 x 3	17		303208
144*	8	147 x 4 x 3	18		303209
156*	8	159 x 4 x 3	19		303210
168*	8	171 x 4 x 3	20		303211
180*	10	183 x 4 x 3	21		303212
192*	10	195 x 4 x 3	22		303213
204*	10	207 x 4 x 3	23		303214
216†	10	219 x 4 x 3	22		303215

\* Kits for row lengths 120 to 204 inches normally ship truck freight. For UPS shipment, add one light rail cut and splice fee per kit (item no. 990211, \$30.00).

† Ships via truck freight only.

### Light 4-rail kits, spliced

Each kit contains four rail segments, two splices, L-feet, and hardware to join L-feet to rails. Rail segments and splices assemble into two spliced rails equal to the row length. These kits ship via truck freight only.

Row length (inches)	Segment lengths (in)	No. of L-feet	Nom. shipping data			Item no.
			inches	lbs		
226	106/120	12	123 x 5 x 3	28		303216
240	120	12	123 x 5 x 3	29		303217
252	132/120	12	136 x 5 x 3	31		303218
264	132	14	136 x 5 x 3	32		303219
276	144/132	14	147 x 5 x 3	33		303220
288	144	14	147 x 5 x 3	34		303221
300	156/144	16	159 x 5 x 3	35		303222
312	156	16	159 x 5 x 3	36		303223
324	168/156	16	171 x 5 x 3	37		303224
336	168	16	171 x 5 x 3	38		303225
348	180/168	18	183 x 5 x 3	39		303226
360	180	18	183 x 5 x 3	41		303227
372	192/180	18	195 x 5 x 3	41		303228
384	192	20	195 x 5 x 3	42		303229
396	204/192	20	207 x 5 x 3	43		303230
408	204	20	207 x 5 x 3	45		303231
420	216/204	20	219 x 5 x 3	46		303232
432	216	20	219 x 5 x 3	46		303233

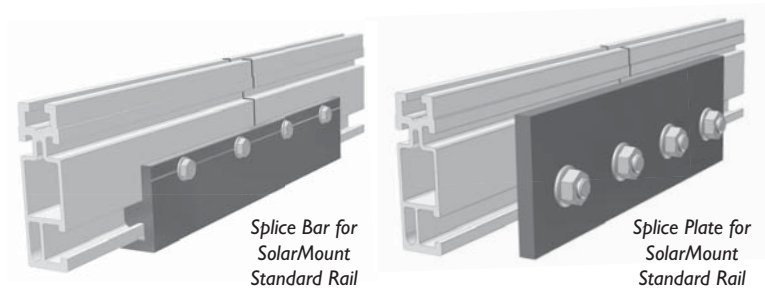
## Pro-Pak Splices

Use Pro-Pak component pricing when regularly using SolarMount on multiple installations.

### Splices for SolarMount® standard rail

**PRO-PAK:** Order one splice wherever two segments are to be joined into a single rail.

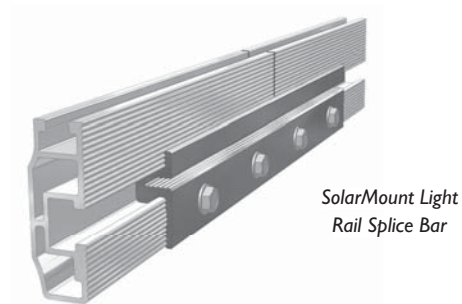
Type	Qty.	Nom. ship wt. (lbs)	Part no.
Plate w/ bolts, flange nuts	1	1	310214
Plate w/ bolts, flange nuts	20	14	310216
Bar w/ hardware	1	1	310230
Bar w/ hardware	20	10	310229



### Splices for SolarMount® light rail

**PRO-PAK:** Each splice joins two rail segments.

Type	Qty.	Nom. ship wt. (lbs)	Part no.
Bar w/ hardware	1	1	310231
Bar w/ hardware	20	5	310232

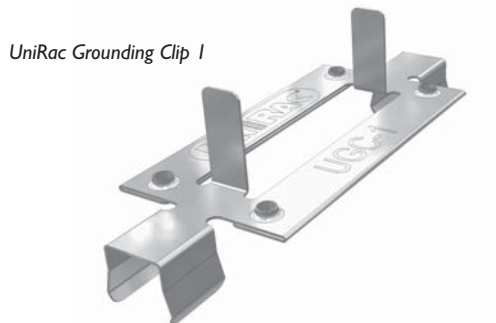


## Pro-Pak Grounding Hardware

### UniRac grounding clip 1 (UGC-1)

**PRO-PAK:** Order a grounding clip for every two top mounting clamps (end clamps + mid clamps) in your installation. Only one of the two rails in each row requires grounding clips.

Quantity	Nominal ship weight (lbs)	Item no.
10	1	980005
50	1	980006
100	1	980002
250	2	980003
500	4	980004

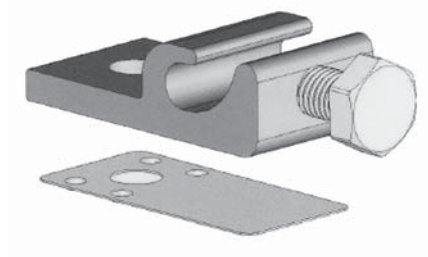


### WEEBLug

**PRO-PAK:** Order two grounding lugs for each rail splice and one additional lug for each rail.

Quantity	Nominal ship weight (lbs)	Item no.
1	1	980010
10	2	980011
100	8	980012

WEEBLug



## Top Mounting Clamps

For individual installations, order 1 kit for each row of modules you plan to mount.

Use Pro-Pak component prices when regularly using SolarMount on multiple installations. See page 4 for the clamp size for your module type. **End clamps:** Order 4 for each row of modules you plan to mount. **Mid clamps:** For each row, take one less than the number of modules in the row and multiply that figure by 2. For example, a row of 4 modules requires 6 mid clamps:  $(4 - 1) \times 2 = 6$ .

Clamps are sized to the thickness of the PV modules you are mounting.

### A for modules 24–26 mm thick

Photowatt 750

**KITS:** End clamps, mid clamps, T-bolts, and flange nuts for one row of modules

Modules per row	Clear anodized		Nominal ship wt. (lbs)
	Part no.		
2	320024		1
3	320032		2
4	320040		2
5	320048		2
6	320056		2
7	320062		2
8	320068		2
9	320125		3
10	320126		3
11	320127		3
12	320128		3

**PRO-PAK:** Clamps with T-bolts and flange nuts

Clamp	Qty	Clear anodized		Nominal ship wt. (lbs)
		Part no.		
End	1	320001		2
	20	320012		
Mid	1	320008		2
	20	320020		

### B for modules 30–32 mm thick

Suntech (<100 watts), UniSolar

**KITS:** End clamps, mid clamps, T-bolts, and flange nuts for one row of modules

Modules per row	Clear anodized		Nominal ship wt. (lbs)
	Part no.		
2	320025		1
3	320033		2
4	320041		2
5	320049		2
6	320057		2
7	320063		2
8	320069		3
9	320129		3
10	320130		3
11	320131		3
12	320132		3

**PRO-PAK:** Clamps with T-bolts and flange nuts

Clamp	Qty	Clear anodized		Nominal ship wt. (lbs)
		Part no.		
End	1	320002		2
	20	320013		
Mid	1	320008		2
	20	320020		



Mid clamp, sizes A–F and J–K



End clamp, sizes A–F and J–K

### C for modules 34–36 mm thick

Evergreen (EC), GE Energy, Kyocera, SolarWorld (<100 watts), Suntech (see p. 5 for specifics), SunWize (<150 watts), Yingli.

**KITS:** End clamps, mid clamps, T-bolts, and flange nuts for one row of modules

Modules per row	Clear anodized		Dark bronze anodized		Nominal ship wt. (lbs)
	Part no.		Part no.		
2	320026		320088		1
3	320034		320089		2
4	320042		320090		2
5	320050		320091		2
6	320058		320092		2
7	320064		320093		2
8	320070		320094		3
9	320133		320149		3
10	320134		320150		3
11	320135		320151		3
12	320136		320152		3

**PRO-PAK:** Clamps with T-bolts and flange nuts

Clamp	Qty	Clear anodized		Nominal ship wt. (lbs)
		Part no.		
End	1	320003		2
	20	320014		
Mid	1	320008		2
	20	320020		
Clamp	Qty	Dark bronze anodized		Nominal ship wt. (lbs)
		Part no.		
End	1	320117		2
	20	320081		
Mid	1	320119		2
	20	320084		

**Top Mounting Clamps (continued)**

**D for modules 38–40 mm thick**

Isofotón, Kaneka, Photowatt PW1650, SolarWorld (>100 watts), See illustrations, page 11.

<b>KITS:</b> End clamps, mid clamps, T-bolts, and flange nuts for one row of modules				<b>PRO-PAK:</b> Clamps with T-bolts and flange nuts			
Modules per row	<u>Clear anodized</u> Part no.	<u>Dark bronze anodized</u> Part no.	Nominal ship wt. (lbs)	Clamp	Qty	<u>Clear anodized</u> Part no.	Nominal ship wt. (lbs)
2	320027	320174	1	End	1	320004	
3	320035	320175	2		20	320015	2
4	320043	320176	2	Mid	1	320009	
5	320051	320177	2		20	320021	2
6	320059	320178	2	<b>Dark bronze anodized</b>			
7	320065	320179	2	Clamp	Qty	Part no.	Nominal ship wt. (lbs)
8	320071	320180	3	End	1	320173	
9	320137	320181	3		20	320185	2
10	320138	320182	3	Mid	1	320120	
11	320139	320183	3		20	320085	2
12	320140	320184	3				

**E for modules 50–52 mm thick**

BP Solar, Schott Solar, Suntech (see p. 5 for specifics). See illustrations, page 11.

<b>KITS:</b> End clamps, mid clamps, T-bolts, and flange nuts for one row of modules				<b>PRO-PAK:</b> Clamps with T-bolts and flange nuts			
Modules per row	<u>Clear anodized</u> Part no.	<u>Dark bronze anodized</u> Part no.	Nominal ship wt. (lbs)	Clamp	Qty	<u>Clear anodized</u> Part no.	Nominal ship wt. (lbs)
2	320028	320095	1	End	1	320005	
3	320036	320096	2		20	320016	3
4	320044	320097	2	Mid	1	320009	
5	320052	320098	2		20	320021	2
6	320060	320099	2	<b>Dark bronze anodized</b>			
7	320066	320100	2	Clamp	Qty	Part no.	Nominal ship wt. (lbs)
8	320072	320101	3	End	1	320118	
9	320141	320153	3		20	320082	3
10	320142	320154	3	Mid	1	320120	
11	320143	320155	3		20	320085	2
12	320144	320156	3				

**F for modules 45–47 mm thick**

Mitsubishi, Sharp (>100 watts, excluding ND-N2ECU), SunPower. See illustrations, page 11.

<b>KITS:</b> End clamps, mid clamps, T-bolts, and flange nuts for one row of modules				<b>PRO-PAK:</b> Clamps with T-bolts and flange nuts			
Modules per row	<u>Clear anodized</u> Part no.	<u>Dark bronze anodized</u> Part no.	Nominal ship wt. (lbs)	Clamp	Qty	<u>Clear anodized</u> Part no.	Nominal ship wt. (lbs)
2	320029	320102	1	End	1	320006	
3	320037	320103	2		20	320017	3
4	320045	320104	2	Mid	1	320009	
5	320053	320105	2		20	320021	2
6	320061	320106	2	<b>Dark bronze anodized</b>			
7	320067	320107	2	Clamp	Qty	Part no.	Nominal ship wt. (lbs)
8	320073	320108	3	End	1	320124	
9	320145	320157	3		20	320123	3
10	320146	320158	3	Mid	1	320120	
11	320147	320159	3		20	320085	2
12	320148	320160	3				

**Top Mounting Clamps (continued)****G for Sharp lipped modules**  
Sharp Solar ND-N2ECU (140W).**KITS:** End clamps, mid clamps, T-bolts, and flange nuts for one row of modules

Modules per row	<b>Dark bronze anodized only</b>		Nominal ship wt. (lbs)
	Part no.		
2	320031		1
3	320039		1
4	320047		1
5	320055		2
6	320112		2
7	320113		2
8	320114		2
9	320169		3
10	320170		3
11	320171		3
12	320172		3

**PRO-PAK:** Clamps with T-bolts and flange nuts

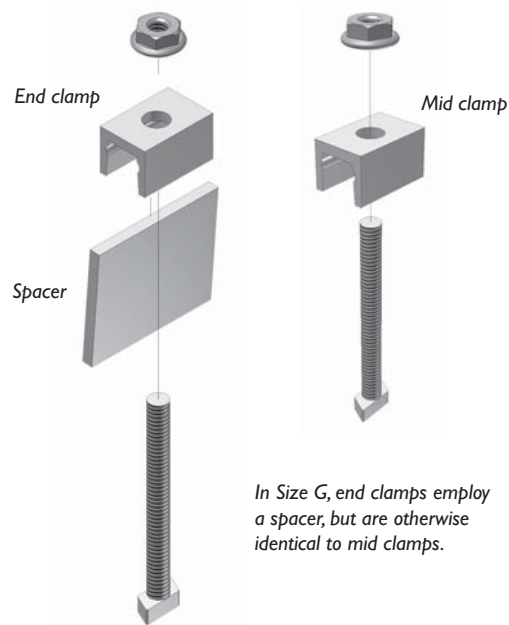
Clamp	Qty	<b>Dark bronze anodized only</b>	
		Part no.	Nominal ship wt. (lbs)
End	1	320007	
	20	320083	2
Mid	1	320122	
	20	320087	2

**H for Sanyo lipped modules**  
Sanyo HIP series.**KITS:** End clamps, mid clamps, hexhead bolts, and flange nuts for one row of modules

Modules per row	<b>Dark bronze anodized only</b>		Nominal ship wt. (lbs)
	Part no.		
2	320030		1
3	320038		1
4	320046		1
5	320054		1
6	320109		2
7	320110		2
8	320111		2
9	320165		3
10	320166		3
11	320167		3
12	320168		3

**PRO-PAK:** Clamps with hexhead bolts and flange nuts

Clamp	Qty	<b>Dark bronze anodized only</b>	
		Part no.	Nominal ship wt. (lbs)
All*	1	320121	
	20	320086	2

\* In size H, end clamps and mid clamps are identical.  
Hexhead bolts replace T-bolts.

In Size G, end clamps employ a spacer, but are otherwise identical to mid clamps.



### Top Mounting Clamps (continued)

#### K for modules 39–41 mm thick

Evergreen (ES series). See illustrations, page 11.

<b>KITS:</b> End clamps, mid clamps, T-bolts, and flange nuts for one row of modules				<b>PRO-PAK:</b> Clamps with T-bolts and flange nuts			
Modules per row	<u>Clear anodized</u> Part no.	<u>Dark bronze anodized</u> Part no.	Nominal ship wt. (lbs)	Clamp	Qty	<u>Clear anodized</u> Part no.	Nominal ship wt. (lbs)
2	320209	320222	1	End	1	320220	
3	320210	320223	2		20	320221	3
4	320211	320224	2	Mid	1	320008	
5	320212	320225	2		20	320020	3
6	320213	320226	2	<b>Dark bronze anodized</b>			
7	320214	320227	2	Clamp	Qty	Part no.	Nominal ship wt. (lbs)
8	320215	320228	3	End	1	320233	
9	320216	320229	3		20	320234	3
10	320217	320230	3	Mid	1	320120	
11	320218	320231	3		20	320085	3
12	320219	320232	3				

#### J for modules 41–43 mm thick

SunWize SW155, SW165. See illustrations, page 11.

<b>KITS:</b> End clamps, mid clamps, T-bolts, and flange nuts for one row of modules			<b>PRO-PAK:</b> Clamps with T-bolts and flange nuts			
Modules per row	<u>Clear anodized</u> Part no.	Nominal ship wt. (lbs)	Clamp	Qty	<u>Clear anodized</u> Part no.	Nominal ship wt. (lbs)
2	320074	1	End	1	320080	
3	320075	2		20	320079	3
4	320076	2	Mid	1	320009	
5	320077	2		20	320021	2
6	320078	2				
7	320115	2				
8	320116	3				
9	320161	3				
10	320162	3				
11	320163	3				
12	320164	3				

### Bottom Mounting Clips

Clips for all modules with mounting holes

Order 4 clips for each module in your array. Clips are packed with stainless steel bolts and flange nuts. See the sizing chart on pages 6–7 for modules that can be used with bottom mounting clips.

#### Bottom Mounting Clips

Quantity	PV modules to be mounted	Nominal ship wt. (lbs)	Part no.
1			321001
4	1	1	321218
20	5	1	321002



## Standoffs

For applications information, consult our Installation Manual 907: *Standoffs and Flashings*. Each standoffs is packed with two zinc plated lag bolts. Each flat top standoff also has a stainless steel bolt and lock washer.

### Two-piece aluminum flat top standoffs

Use in conjunction with L-feet. See also "Flashings for aluminum standoffs" (below). Consult the SunFrame Price List for dark bronze standoffs. Consult UniRac before using aluminum standoffs in tilt-leg installations.

Height (inches)	Quantity	Nominal ship wt. (lbs)	Part no.
3	1		310503
3	12	9	310553
4	1		310504
4	12	10	310554
6	1		310506
6	12	12	310556
7	1		310507
7	12	13	310557



### One-piece, zinc plated steel flat top standoffs

Use in conjunction with L-feet. See also "Flashings for steel standoffs" (below).

Height (inches)	Quantity	Nominal ship wt. (lbs)	Part no.
3	1	2	310009
3	12	16	310051
4	1	2	310010
4	12	18	310052
6	1	2	310011
6	12	22	310053
7	1	2	310012
7	12	24	310054



### Raised flange, zinc plated steel standoffs

Use without L-feet. See also "Flashings for steel standoffs" (below).

Height (inches)	Quantity	Nominal ship wt. (lbs)	Part no.
3	1	2	310017
3	12	16	310047
4	1	2	310018
4	12	18	310048
6	1	2	310019
6	12	22	310049
7	1	2	310020
7	12	25	310050



### Custom steel standoffs and lag bolt credit

	Description
310043	Surcharge for added height, per standoffs, per inch (12 in. max height—steel standoffs only)
990341	Lag bolt removal credit, per standoff

## Flashings

These flashings work with our steel and aluminum standoffs. Soft aluminum flashings can be molded to fit curved roofing material, such as Spanish tile.

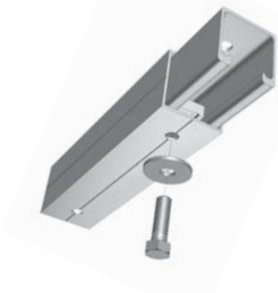
### Flashings for steel and aluminum standoffs

Packages each include 12 flashings. Fits standoff O.D. of 1<sup>5</sup>/<sub>8</sub> inches.

Description	Nom. ship wt. (lbs)	Part no.
Galvanized, 12 <sup>1</sup> / <sub>2</sub> " x 8 <sup>3</sup> / <sub>4</sub> " base, No-Calk collar (Oatey # O-11840)	11	990101
Aluminum, 12 <sup>1</sup> / <sub>2</sub> " x 8 <sup>3</sup> / <sub>4</sub> " base, No-Calk collar (Oatey # O-12920)	6	990102
Soft aluminum, 18" x 18" base, No-Calk collar (Oatey # O-12836)	12	990103



No-Calk® collared flashing



## Tilt Leg Kits — Low and High Profile Adjustable

### Tilt leg kits — low profile adjustable

If ordering kits for use with SolarMount rail kits (p. 6), no other items are required. If ordering for use with Pro-Pak rails, then L-feet must also be ordered (p. 9).



### Sizing Chart: Tilt angles for low profile leg kits

In low profile arrays, tilt angles depend on leg length and module length.

Module make and model	Leg kit model number		
	310121	310122	310123
<b>AEE</b>			
AE80J*	15-19°	31-49°	45-60°
<b>BP Solar</b>			
BP365	16-20°	34-53°	49-60°
BP380, -485	15-20°	32-51°	47-60°
BP3125	11-14°	24-37°	34-56°
BP3150, -3160, -4175	11-14°	22-35°	32-53°
BPSX160B, -170B	11-13°	22-35°	32-53°
<b>Evergreen</b>			
EC102, -110, -115	12-15°	24-38°	35-58°
ES170RL, -180RL, -190RL	16-20°	34-53°	48-60°
<b>GE Energy</b>			
GEPV072, -085	15-19°	31-49°	45-60°
GEPV100, -110	21-27°	45-60°	60°
GEPVp130	13-16°	26-41°	38-60°
GEPV173	21-27°	45-60°	60°
GEPVp185†, -200†	12-16°	26-41°	38-60°
<b>Isofoton</b>			
I-100	17-21°	36-56°	51-60°
I-150S	17-21°	36-56°	51-60°
I-165	17-21°	36-56°	51-60°
<b>Kaneka</b>			
G-EA060†, G-SA060†	19-24°	40-60°	58-60°
<b>Kyocera</b>			
KC65T, -85T, I30GT, -I30TM	11-15°	24-38°	35-57°
KCI75GT	16-21°	35-55°	50-60°
KC200GT	14-18°	30-47°	43-60°
<b>Mitsubishi</b>			
PVMFI10EC3†, -120EC3†	13-17°	27-43°	39-60°
PVMFI25EA2LF, -I30EA2LF	15-19°	31-50°	45-60°
PVMFI65EB3	12-15°	26-40°	37-60°
<b>Photowatt</b>			
PW750, -1650	14-17°	29-45°	41-60°

Module make and model	Leg kit model number		
	310121	310122	310123
<b>Sanyo</b>			
HIP-190BA3†, -195BA3†, -200BA3†	14-18°	30-47°	42-60°
<b>Schott Solar</b>			
ASE300, -315, -330	15-19°	31-49°	44-60°
<b>Sharp</b>			
NE-80EJEA	14-18°	31-48°	44-60°
ND-L3EJEA (123w), -L5EIU (125w)	13-17°	28-44°	40-60°
ND-N2ECU	17-21°	36-56°	51-60°
ND-162UI, -162UIF, -167U3, -167UIF	17-21°	36-56°	51-60°
NE-165UI†, NT-175UI†	12-15°	25-39°	36-59°
NEI70UI, -175UI	15-19°	31-50°	45-60°
ND-200UI, -200UIF, -208UI, 208UIF	13-16°	27-42°	39-60°
<b>SolarWorld (Shell)</b>			
80P, 85P, SP75, SQ80	14-18°	30-47°	43-60°
65P, -PC; 75P, -PC; SQ165	12-15°	25-39°	36-60°
<b>SunPower</b>			
SPR90, -95	17-21°	35-55°	50-60°
SPR200BLK, -210, -215BLK, -220	17-22°	37-58°	53-60°
<b>Suntech</b>			
STP060-12/Sb, STP085S	17-21°	35-56°	51-60°
STPI10-12Tb; STPI15-12Tc; STPI20, -130, -140	10-13°	21-33°	30-49°
STPI10-24Ab; STPI75-24AbI	9-12°	19-30°	28-45°
<b>SunWize</b>			
SW85, -90, -95	12-15°	25-40°	36-60°
SW100, -110, -115, -120	12-15°	25-40°	36-60°
SW155, -165	11-14°	23-36°	33-54°
<b>UniSolar</b>			
ES62T†	15-19°	31-49°	44-60°
US64	17-21°	35-56°	51-60°
<b>Yingli</b>			
YL80, -85†	16-20°	33-52°	48-60°

\*Mount with bottom mounting clips only.

†In low profile tilt-up applications, mount with top mounting clamps only.

## Tilt leg kits — low profile adjustable (continued)

### Sizing Chart: Quantity of low profile tilt legs required

The number of tilt legs required in a low profile array depends on the length of the mounting rails.

Rail length per row	Tilt legs required per row
48" to 106"	2
120" to 180"	3
192" to 216"	4
226" to 288"	5
300" to 336"	6
348" to 408"	7
420" to 432"	8

### Price List: Low profile tilt legs (1 leg per kit)

Each low profile tilt leg kit contains one square tube and one strut insert, two L-feet, and stainless steel hardware for use with SolarMount rail kit.

Part no.	Maximum leg extension (inches)	Nom. shipping data	
		inches	lbs
310121	12	10 x 3 x 3	2
310122	30	19 x 3 x 3	3
310123	44	26 x 3 x 3	4

## Tilt leg kits — high profile adjustable

Order one high profile tilt leg kit for each rail kit. If ordering rails from the Pro-Pak price list (p. 9), order one high profile tilt leg kit for each pair of rails required in your installation.

Never use high profile legs with spliced rails or with rails longer than 180 inches.



### Sizing Chart: Tilt angles for high profile legs

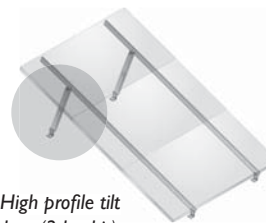
In high profile arrays, tilt angles depend on leg and rail lengths.

Rail length (inches)	Leg kit model number			Rail length (inches)	Leg kit model number		
	310107	310108	310109		310110	310111	310112
48	9–21°	30–60°		120	26–60°	5–12°	16–47°
60	7–17°	24–60°	37–60°	132	24–60°	5–11°	15–42°
72	6–14°	19–54°	31–60°	144	22–60°	4–10°	13–38°
84	5–12°	17–46°	26–60°	156	20–60°	4–9°	12–35°
96	4–10°	14–40°	23–60°	168	18–55°	4–9°	11–33°
106	4–9°	13–36°	21–60°	180	17–51°	3–8°	11–30°

### Part List: High profile tilt legs (2 leg kit)

Each kit contains two square tubes, two strut inserts, and fasteners for use with SolarMount rail kits (p. 8).

Part no.	Maximum leg extension (inches)	Nom. shipping data	
		inches	lbs
310107	12	10 x 2 x 4	3
310108	44	26 x 2 x 4	7
310109	72	40 x 2 x 4	10



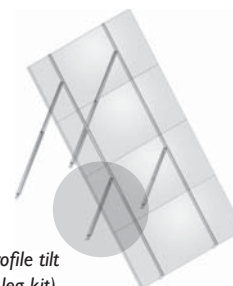
High profile tilt legs (2 leg kit)

For rails 48 to 106 inches long, use leg kits with a single leg per rail, 2 legs per kit.

### Part List: High profile tilt legs (4 leg kit)

Each kit contains four square tubes, four strut inserts, and fasteners for use with SolarMount rail kits (p. 8).

Part no.	Maximum leg extension (inches)	Nom. shipping data	
		inches	lbs
310110	104	56 x 4 x 4	20
310111	18	13 x 4 x 4	7
310112	64	36 x 4 x 4	16



High profile tilt legs (4 leg kit)

Rails 120 to 180 inches long require leg kits with a long and a short leg for each rail, 4 legs per kit.

See [www.unirac.com](http://www.unirac.com) for your nearest UniRac distributor.

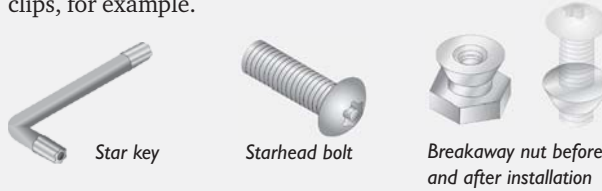
## Accessories

Solve problems specific to your site and ensure a secure, aesthetically pleasing installation .

### Security hardware

Security hardware dramatically increases the difficulty and time required for a thief to dismantle a PV array and steal its components. Breakaway nuts work well in conjunction with top mounting clamps and footing bolts.

Note that starhead bolt heads do not fit into SolarMount rail slots (where standard bolt heads are inaccessible). Use them where heads are exposed—with bottom mounting module clips, for example.

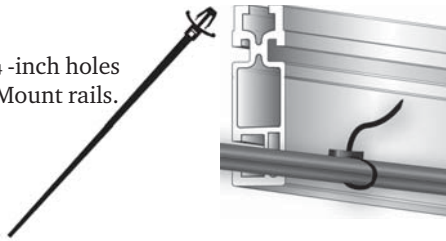


### Security hardware

Description	Quantity	Part no.
Starhead bolt, s/s, 1/4" x 3/4"	1	321205
	20	321220
Starhead bolt, s/s, 3/8" x 1 1/4"	1	321206
	20	321221
Breakaway nut, aluminum, 1/4"	1	321207
	20	321222
Breakaway nut, aluminum, 3/8"	1	321208
	20	321223
Star key, 1/4"	1	321209
Star key, 3/8"	1	321210

### Cable ties

Cable ties fit into 1/4 -inch holes drilled along SolarMount rails.



### Shims

Shims level or raise standoffs and L-feet and precisely align rails. Horseshoe shims come in three color-coded thicknesses. Our tapered shim is particularly useful in leveling.



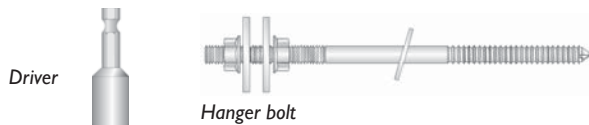
### Cable ties and shims

Description	Qty	Nom. ship wt. (lbs)	Part no.
Push mount cable tie, black	100	1	990104
Shim, 1 1/2" x 2" x 1/16", blue plastic	20	1	990105
Shim, 1 1/2" x 2" x 1/8", red plastic	20	1	990106
Shim, 1 1/2" x 2" x 1/4", black plastic	20	1	990107
Tapered shim, 1 1/2" x 3 3/8", black plastic	20	1	990108

### Hanger bolts and driver

Used in conjunction with L-feet, 8-inch hanger bolts support SolarMount rails above tile or corrugated metal roofs. A driver allows easy insertion into 3/16-inch pilot holes in the rafters.

Description	Quantity	Nominal ship wt. (lbs)	Part no.
8" x 3/8" s/s hanger bolt with s/s nut and washers	1	1	310025
	20	5	310046
3/8" hanger bolt driver	1	1	310026



### Standard fasteners

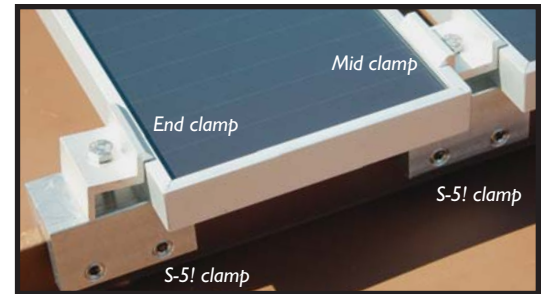
Avoid chasing fasteners after job-site drop. Frequent SolarMount users can keep spares handy in their toolboxes.

#### Standard stainless steel fasteners

Description	Qty	Nom. ship wt. (lbs)	Part no.
<b>Clear finish</b>			
Bolt, 1/4" x 5/8", flange nut	1		321202
	4		321203
	20	1	321204
Bolt, 3/8" x 3/4", flange nut	1		990335
	20	3	990336
Bolt, 3/8" x 1 1/4", flange nut	1		990337
	20	3	990338
T-bolt, 1/4" x 2", flange nut	1		321212
	20	1	321213
T-bolt, 1/4" x 2 1/2", flange nut	1		321214
	20	1	321215
<b>Dark finish</b>			
T-bolt, 1/4" x 2", flange nut	1		321272
	20	1	321273
T-bolt, 1/4" x 2 1/2", flange nut	1		321274
	20	1	321275

## SolarMount® / S-5!™ PV Clamp Sets

S-5! PV clamps provide non-penetrating attachment points to standing seam metal roofs. Select SolarMount end clamps and mid clamps and attach modules directly to the S-5! clamp without mounting rails. Use end clamps on the edge of the array and mid clamps between rows within the array. End clamps and mid clamps are anodized. S-5! clamps are mill finish.



### C for modules 34–36 mm thick

Evergreen (EC), GE Energy, Kyocera, Sharp NE-80EJEA, SolarWorld (<100 watts), Suntech (see p. 5 for specifics), SunWize (<150 watts), Yingli.

	Clear Anodized		Dark Bronze Anodized		Nominal ship wt. (lbs)
	Quantity	Part no.	Quantity	Part no.	
S-5! + Mid Clamp Set	1	321224	1	321226	1
	20	321236	20	321238	10
S-5! + End Clamp Set	1	321228	1	321232	1
	20	321240	20	321244	10

### D for modules 38–40 mm thick

Isofotón, Kaneka, Photowatt PW1650, SolarWorld (>100 watts),

	Clear Anodized		Dark Bronze Anodized		Nominal ship wt. (lbs)
	Quantity	Part no.	Quantity	Part no.	
S-5! + Mid Clamp Set	1	321224	1	321226	1
	20	321236	20	321238	10
S-5! + End Clamp Set	1	321229	1	321233	1
	20	321241	20	321245	10

### E for modules 50–52 mm thick

BP Solar, Schott Solar, Suntech (see p. 5 for specifics).

	Clear Anodized		Dark Bronze Anodized		Nominal ship wt. (lbs)
	Quantity	Part no.	Quantity	Part no.	
S-5! + Mid Clamp Set	1	321225	1	321227	1
	20	321237	20	321239	10
S-5! + End Clamp Set	1	321230	1	321234	1
	20	321242	20	321246	10

### F for modules 45–47 mm thick

Mitsubishi, Sharp (>100 watts, excluding ND-N2ECU), SunPower.

	Clear Anodized		Dark Bronze Anodized		Nominal ship wt. (lbs)
	Quantity	Part no.	Quantity	Part no.	
S-5! + Mid Clamp Set	1	321225	1	321227	1
	20	321237	20	321239	10
S-5! + End Clamp Set	1	321231	1	321235	1
	20	321243	20	321247	10

## Design Tools

We'll quote an installation for your unique site

Complete our brief, on-line SolarMount/S-5! Questionnaire at [www.unirac.com](http://www.unirac.com) and you'll receive:

- A bill of materials for all required components;
- Price quote and delivery lead time.

**G for Sharp lipped modules**  
Sharp Solar ND-N2ECU (140W).

	Dark Bronze Anodized		Nominal ship wt. (lbs)
	Quantity	Part no.	
S-5! + Mid Clamp Set	1	321251	1
	20	321250	20
S-5! + End Clamp Set	1	321253	1
	20	321252	20

**H for Sanyo lipped modules**  
Sanyo HIP series.

	Dark Bronze Anodized		Nominal ship wt. (lbs)
	Quantity	Part no.	
S-5! + Mid Clamp Set (Mid & end are identical.)	1	321248	1
	20	321249	10

**K for modules 39–41 mm thick**  
Evergreen (ES series).

	Clear Anodized		Dark Bronze Anodized		Nominal ship wt. (lbs)
	Quantity	Part no.	Quantity	Part no.	
S-5! + Mid Clamp Set	1	321224	1	321226	1
	20	321236	20	321238	10
S-5! + End Clamp Set	1	321268	1	321270	1
	20	321269	20	321271	10

**For mounting modules with rails**

Includes 3/8-inch hardware to fasten L-foot to clamp and rail (not included) to L-foot.

	Clear Anodized		Dark Bronze Anodized		Nominal ship wt. (lbs)
	Quantity	Part no.	Quantity	Part no. List price	
S-5! with L-foot	1	321255	1	321257	1
	20	321256	20	321258	10

**Code Compliant**

The SolarMount® system is PE certified. Call UniRac for documentation applicable to your building code.

**Component Specifications**

*6105-T5 aluminum extrusion*

- SolarMount® rails
- Mounting clips and clamps
- Tilt legs and L-feet
- Two-piece standoffs

*Severe Condition 4 (very severe) zinc-plated welded steel*

- One-piece standoffs

*18-8 stainless steel*

- Fasteners

**Warranty**

SolarMount® is covered by a 10-year limited product warranty and a 5-year limited finish warranty. For complete warranties, download any SolarMount® installation manual from our web site.

**Start at [www.unirac.com](http://www.unirac.com)**

Generate quick price estimates with our on-line **SolarMount® Estimator**.