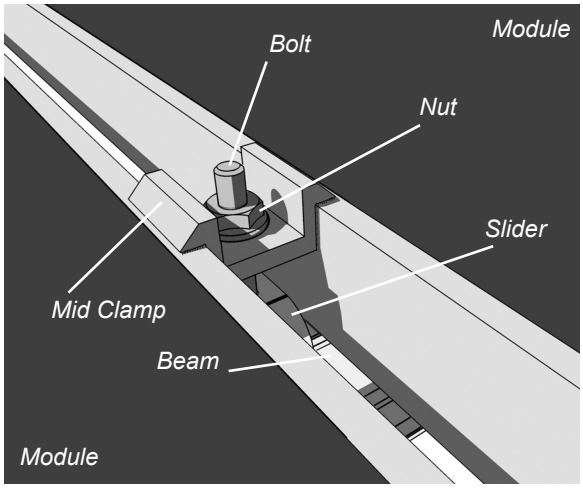
# SolarMount-I™ Roof Mount Technical Datasheet

Pub 100701-1td V1.0 July 2010

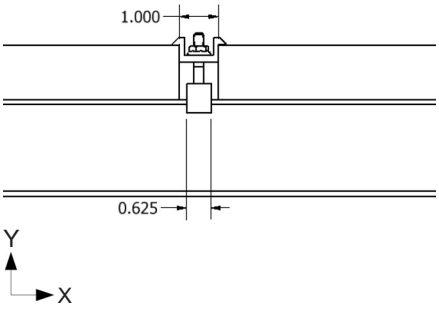


## SolarMount-I Module Connection Hardware

### SolarMount-I Series Slider with Mid Clamp
**Part No. 02027C, 02028C, 02029C, 02030C**




- **Slider and Mid Clamp Material:** One of the following mill finished extruded aluminum alloys: 6005-T5, 6105-T5, 6061-T6
  **Ultimate tensile:** 38ksi, Yield: 35 ksi
- **Slider weight:** 0.026 lbs (12g), **Mid Clamp Weight:** 0.050 lbs (23g)
- Allowable and design loads are valid when components are assembled with SolarMount-I Beams according to authorized UNIRAC documents
- Sliders are compatible with SolarMount-I Beams
- Assemble with one ¼-20 ASTM F593 bolt and one ¼-20 ASTM F594 serrated flange nut
- Use anti-seize and tighten to 10 ft-lbs of torque
- Resistance factors and safety factors are determined according to part 1 section 9 of the 2005 Aluminum Design Manual

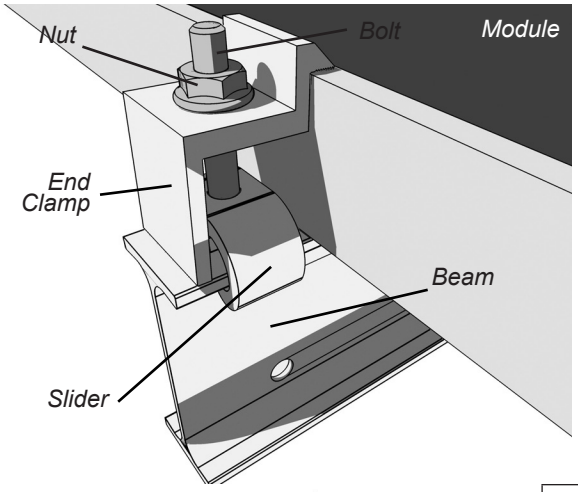


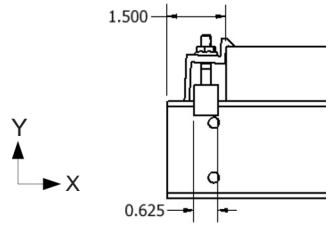

| Applied Load Direction | Average Ultimate lbs (N) | Allowable Load lbs (N) | Safety Factor, FS | Design Load lbs (N) | Resistance Factor, Φ |
|---|---|---|---|---|---|
| Sliding, X± | 1194 (5311) | 490 (2180) | 2.44 | 741 (3296) | 0.620 |
| Tension, Y+ | 1503 (6686) | 677 (3011) | 2.22 | 1024 (4555) | 0.682 |
| Transverse, Z± | 2080 (9252) | 915 (4070) | 2.27 | 1383 (6152) | 0.665 |

Dimensions specified in inches unless noted

# SolarMount-I Module Connection Hardware

## SolarMount-I Slider with End Clamp
### Part No. 02001C through 02006C, 02009C, 02010C



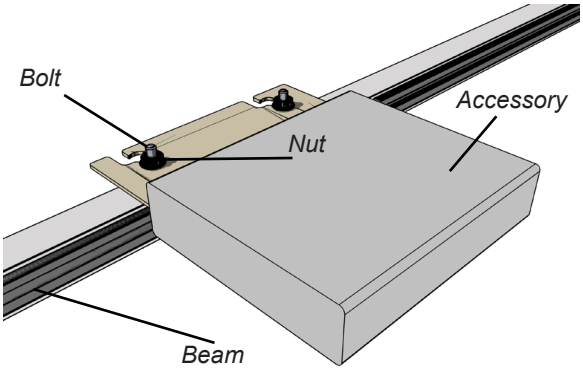



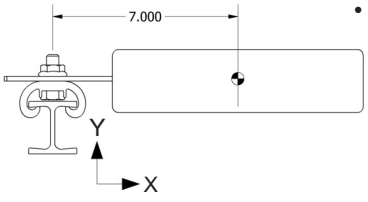

- **Slider and End Clamp Material:** One of the following mill finished extruded aluminum alloys: 6005-T5, 6105-T5, 6061-T6
  **Ultimate tensile:** 38 ksi, Yield: 35 ksi
- **Slider weight:** 0.026 lbs (12g), end clamp weight varies based on height: ~0.058 lbs (26g)
- Allowable and design loads are valid when components are assembled with SolarMount-I 1.0 or 2.5 Beams according to authorized UNIRAC documents
- Sliders are compatible with SolarMount-I Beams
- Assemble with one ¼-20 ASTM F593 bolt and one ¼-20 ASTM F594 serrated flange nut
- Use anti-seize and tighten to 10 ft-lbs of torque
- Resistance factors and safety factors are determined according to part 1 section 9 of the 2005 Aluminum Design Manual
- Modules must be installed at least 1.5" from either end of a beam

| Applied Load Direction | Average Ultimate lbs (N) | Allowable Load lbs (N) | Safety Factor, FS | Design Loads lbs (N) | Resistance Factor, Φ |
|---|---|---|---|---|---|
| Sliding, X± | 283 (1259) | 104 (463) | 2.72 | 157 (698) | 0.555 |
| Tension, Y+ | 332 (1477) | 88 (391) | 3.77 | 133 (592) | 0.401 |
| Transverse, Z± | 1367 (6081) | 533 (2371) | 2.56 | 806 (3585) | 0.590 |

Dimensions specified in inches unless noted

## SolarMount-I Accessory Mount
### Part No. 08010M




- **Slider Material:** One of the following mill finished extruded aluminum alloys: 6005-T5, 6105-T5, 6061-T6
  **Ultimate tensile:** 38 ksi, Yield: 35 ksi
- **Slider weight:** 0.026 lbs (12g)
- Allowable and design loads are valid when components are assembled with SolarMount-I 1.0 or 2.5 Beams according to authorized UNIRAC documents
- SolarMount-I Series Accessory Mounts are compatible with SolarMount-I Beams
- Use two Accessory Mounts per accessory
- **Assemble each pair of clamps with the following stainless steel hardware:** two ¼-20 set screws, two ¼-20 heavy hex jam nuts, and two ¼-20 F594 serrated flange nuts
- Use anti-seize and tighten to 5-10 ft-lbs of torque
- Resistance factors and safety factors are determined according calculations and UNIRAC testing

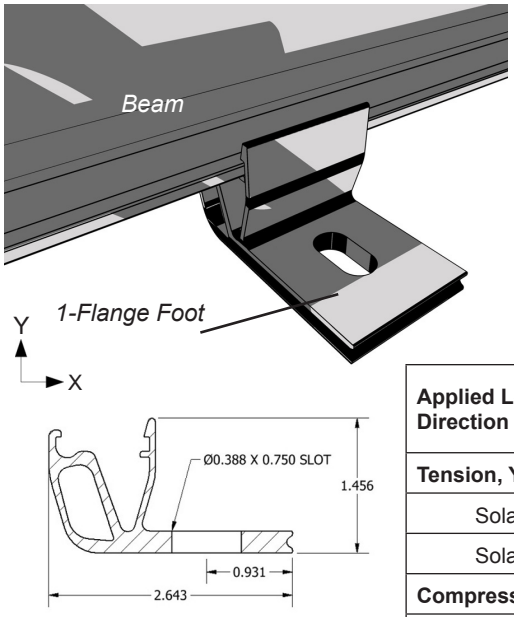
| Maximum distance of accessory center of gravity from beam center in (mm) | Maximum weight of accessory lbs (kg) |
|---|---|
| 7 (178) | 32 (14.5) |

Dimensions specified in inches unless noted

# SolarMount-I Beam Connection Hardware

## SolarMount-I 1- Flange Foot

### Part No. 04011M



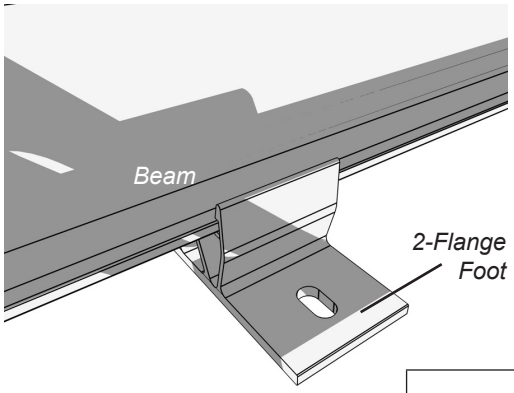

Dimensions specified in inches unless noted

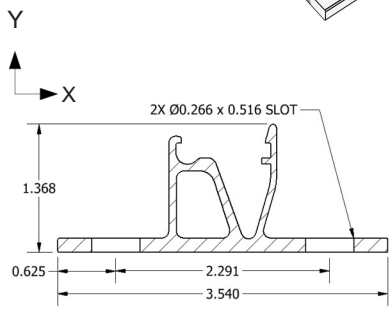
- **1-Flange Foot Material:** One of the following mill finished extruded aluminum alloys: 6005-T5, 6105-T5, 6061-T6
  **Ultimate tensile:** 38 ksi, Yield: 35 ksi
- **1-Flange Foot weight:** 0.101 lbs (46 g)
- Allowable and design loads are valid when components are assembled with SolarMount-I 1.0 or 2.5 Beams according to authorized UNIRAC documents
- 1-Flange feet are compatible with SolarMount-I Beams
- Resistance factors and safety factors are determined according to part 1 section 9 of the 2005 Aluminum Design Manual
- Design and allowable loads are for the beam to foot connection
- **Be sure to check load limits for roof attachments and standoffs**

| Applied Load Direction | Average Ultimate lbs (N) | Allowable Load lbs (N) | Safety Factor, FS | Design Load lbs (N) | Resistance Factor, Φ |
|---|---|---|---|---|---|
| **Tension, Y+** | | | | | |
| SolarMount-I 1.0 Beam | 1388 (5952) | 591 (2629) | 2.26 | 894 (3977) | 0.668 |
| SolarMount-I 2.5 Beam | 1514 (6735) | 648 (2882) | 2.34 | 980 (4359) | 0.647 |
| **Compression, Y-** | | | | | |
| SolarMount-I 1.0 Beam | 2931 (13038) | 1288 (5729) | 2.28 | 1948 (8665) | 0.664 |
| SolarMount-I 2.5 Beam | 2750 (12233) | 1223 (5440) | 2.25 | 1849 (8225) | 0.672 |
| **Transverse, X-, downhill** | 635 (2825) | 313 (1392) | 2.03 | 473 (2104) | 0.745 |
| Transverse, X+, uphill | 42 (187) | 20 (89) | 2.15 | 30 (133) | 0.705 |
| Sliding, Z± | (see Beam Splice) | | | | |

## SolarMount-I 2 - Flange Foot

### Part No. 04002M, 04003M



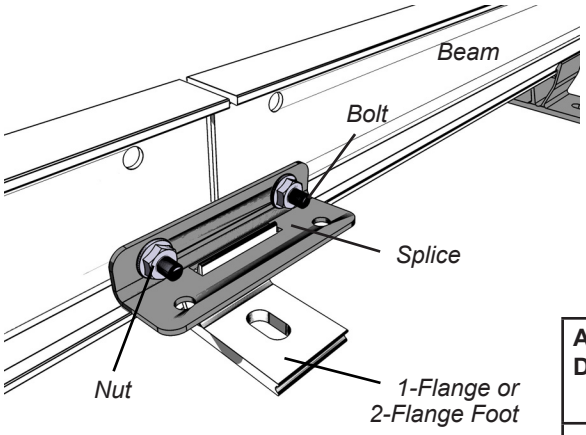

Dimensions specified in inches unless noted

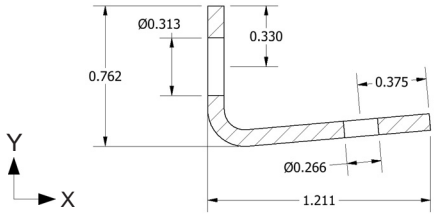
- **2-Flange Foot Material:** One of the following mill finished extruded aluminum alloys: 6005-T5, 6105-T5, 6061-T6
  **Ultimate tensile:** 38 ksi, Yield: 35 ksi
- **2-Flange Foot weight:** 0.103 lbs (47 g)
- Allowable and design loads are valid when components are assembled with SolarMount-I 1.0 or 2.5 Beams according to authorized UNIRAC documents
- 2-Flange Feet are compatible with SolarMount-I Beams
- Resistance factors and safety factors are determined according to part 1 section 9 of the 2005 Aluminum Design Manual
- Design and allowable loads are for the beam to foot connection
- **Be sure to check load limits for roof attachments and standoffs**

| Applied Load Direction | Average Ultimate lbs (N) | Allowable Load lbs (N) | Safety Factor, FS | Design Load lbs (N) | Resistance Factor, Φ |
|---|---|---|---|---|---|
| Tension, Y+ | | | | | |
| SolarMount-I 1.0 Beam | 1931 (8950) | 864 (3843) | 2.23 | 1307 (5814) | 0.667 |
| SolarMount-I 2.5 Beam | 2478 (11023) | 1111 (4942) | 2.23 | 1681 (7477) | 0.678 |
| Compression, Y- | | | | | |
| SolarMount-I 1.0 Beam | 3788 (16850) | 1706 (7589) | 2.22 | 2581 (11481) | 0.681 |
| SolarMount-I 2.5 Beam | 3694 (16432) | 1562 (6948) | 2.36 | 2363 (10511) | 0.640 |
| Transverse, X-, downhill | 635 (2825) | 313 (1392) | 2.03 | 473 (2104) | 0.745 |
| Transverse, X+, uphill | 42 (187) | 20 (89) | 2.15 | 30 (133) | 0.705 |
| Sliding, Z± | (see Beam Splice) | | | | |

# SolarMount-I Beam Connection Hardware

## SolarMount-I Beam Splice
### Part No. 03020M, 03021M



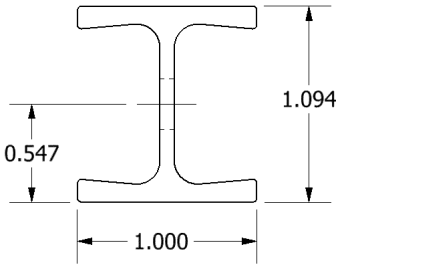

Dimensions specified in inches unless noted

- **Beam Splice Material:** Aluminum 5052-H32
  **Ultimate tensile:** 31 ksi, Yield: 23 ksi
- **Beam Splice weight:** 0.053 lbs (24 g)
- Allowable and design loads are valid when components are assembled according to authorized UNIRAC documents
- Beam Splices are compatible with SolarMount-I Beams when used with 1-Flange or 2-Flange feet
- Resistance factors and safety factors are determined according to part 1 section 9 of the 2005 Aluminum Design Manual

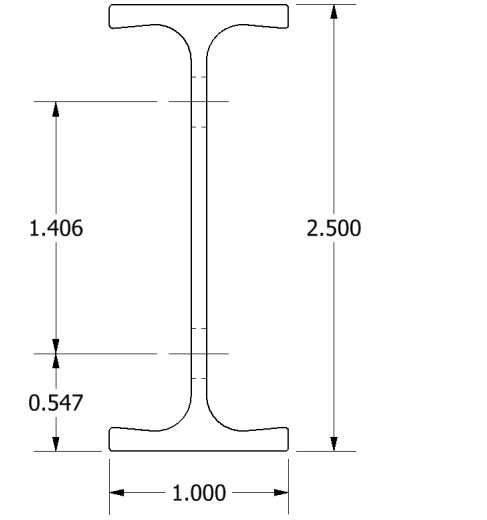
| Applied Load Direction | Average Ultimate lbs (N) | Allowable Load lbs (N) | Safety Factor, FS | Design Load lbs (N) | Resistance Factor, Φ |
|---|---|---|---|---|---|
| Sliding, ± | 1428 (6352) | 620 (2758) | 2.30 | 938 (4172) | 0.657 |

## SolarMount-I Beam

| MATERIAL: One of the following extruded aluminum alloys: 6005-T5, 6105-T5, or 6061-T6, Mill Finish | | | |
|---|---|---|---|
| **Properties** | **Units** | **Beam Height (in)** | |
| | | **1.094** | **2.500** |
| Approximate Weight (per linear ft) | plf | 0.356 | 0.548 |
| Total Cross Sectional Area | $in^2$ | 0.3037 | 0.4665 |
| Section Modulus (X-Axis) | $in^3$ | 0.1101 | 0.3687 |
| Section Modulus (Y-Axis) | $in^3$ | 0.0390 | 0.0422 |
| Moment of Inertia (X-Axis) | $in^4$ | 0.0602 | 0.4609 |
| Moment of Inertia (Y-Axis) | $in^4$ | 0.0195 | 0.0211 |
| Radius of Gyration (X-Axis) | in | 0.4453 | 0.9940 |
| Radius of Gyration (Y-Axis) | in | 0.2536 | 0.2127 |




SolarMount 1.0 Beam Height = 1.094”
Part No. 10144M
One Ø0.281 hole is 1.188”
from each end of the beam




SolarMount 2.5 Beam Height = 2.500”
Part No. 11192M
Two Ø0.281 holes are 1.188”
from each end of the beam

Dimensions specified in inches unless noted