

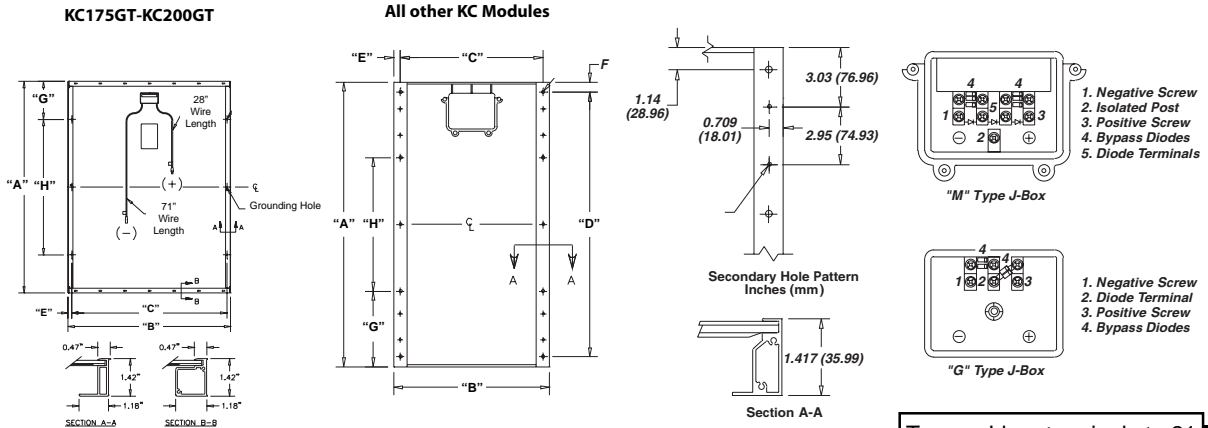
APPENDIX A

Kyocera Solar Module Mounting Hole Location

THE NEW VALUE FRONTIER
KYOCERA
 KYOCERA Solar, Inc.

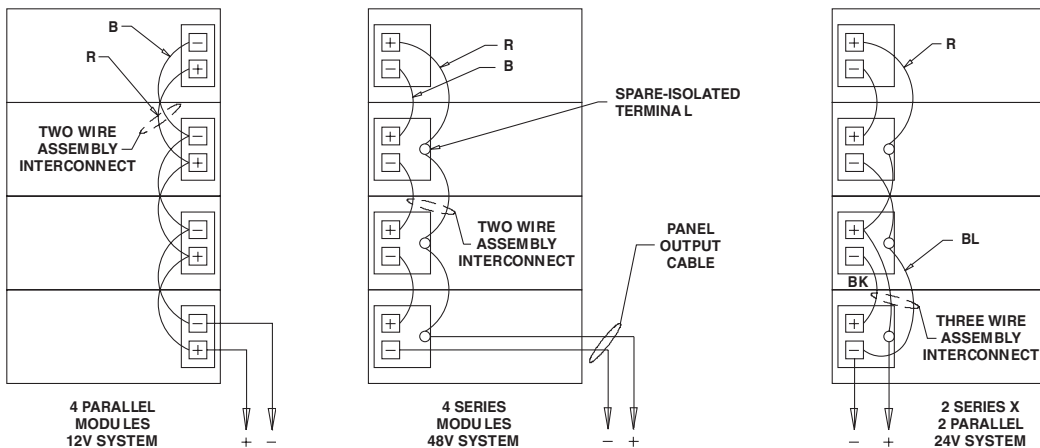
| Model | Dim. A | Dim. B | Dim. C | Dim. D | Dim. E | Dim. F | Dim. G | Dim. H | J-Box/ Connection |
|---------------|----------------|---------------|---------------|----------------|-------------|-------------|--------------|---------------|-------------------|
| KC200GT | 56.1 / 1425.0 | 39.0 / 990.0 | 37.24 / 945.9 | - | 0.87 / 22.1 | - | 9.49 / 241.0 | 37.13 / 943.0 | MC |
| KC175GT | 50.80 / 1290.0 | 39.00 / 990.0 | 37.24 / 945.9 | - | 0.87 / 22.1 | - | 9.15 / 232.5 | 32.48 / 825.0 | MC |
| KC130TM/130GT | 56.10 / 1425.0 | 25.67 / 652.0 | 24.13 / 613.0 | 53.82 / 1367.0 | 0.77 / 20.0 | 1.14 / 29.0 | 9.48 / 240.0 | 37.12 / 942.0 | MMC |
| KC85T/TS | 39.65 / 1007.0 | 25.67 / 652.0 | 24.13 / 613.0 | 37.36 / 949.0 | 0.77 / 20.0 | 1.14 / 29.0 | 9.48 / 240.0 | 20.67 / 525.0 | M |
| KC65T | 29.57 / 751.0 | 25.67 / 652.0 | 24.13 / 613.0 | 27.28 / 693.0 | 0.77 / 20.0 | 1.14 / 29.0 | 9.48 / 240.0 | 10.6 / 270.0 | G |
| KC50T | 25.16 / 639.0 | 25.67 / 652.0 | 24.13 / 613.0 | 22.87 / 581.0 | 0.77 / 20.0 | 1.14 / 29.0 | 6.0 / 152.0 | 13.19 / 335.0 | G |
| KC40T | 20.7 / 526.0 | 25.67 / 652.0 | 24.13 / 613.0 | 18.43 / 468.0 | 0.77 / 20.0 | 1.14 / 29.0 | 6.0 / 152.0 | 8.74 / 222.0 | G |

Dimensions shown in inches / millimeters



Torque J-box terminals to 21 inch pounds (25 kg-cm)

Module Interconnect Wiring



Kyocera Solar Modules Standard Packaging Details

| Model | <i>KC200G</i> | <i>KC175G</i> | <i>KC130GT</i> <i>KC130TM</i> | <i>KC85T</i> |
|--|----------------|---------------|----------------------------------|---------------|
| Module Quantity Per Carton | 2 | 2 | 2 | 2 |
| Carton Size (in.) (L x W x D) | 59 x 42 x 4 | 55 x 44 x 4 | 60 x 28 x 3.5 | 43 x 28 x 3.5 |
| Carton Size (cm) (L x W x D) | 149 x 106 x 10 | 138 x 110 x 9 | 153 x 71 x 9 | 109 x 71 x 9 |
| Carton Gross Weight (lbs./kg) | 82.0 / 38.0 | 80.0 / 36.3 | 69.0 / 31.2 | 48.0 / 21.7 |
| Number of Cartons per Pallet | 10 | 10 | 10 | 20 |
| Number of Modules per Pallet | 20 | 20 | 20 | 40 |
| Maximum Pallet Dimensions (in.) (LxWxD) | 59 x 42 x 38 | 56 x 44 x 40 | 60 x 28 x 39 | 59 x 43 x 39 |
| Maximum Pallet Area (ft ³ /m ³) | 53.0 / 1.5 | 57.0 / 1.62 | 38.0 / 1.1 | 57.0 / 1.62 |
| Gross Weight of Max. Pallet (lbs. kg) | 881 / 399 | 844 / 385 | 690 / 312 | 900 / 408 |
| Number of Modules per 20' Container | 320 | 320 | 440 | 560 |
| Number of Modules per 40' Container | 640 | 640 | 960 | 1280 |

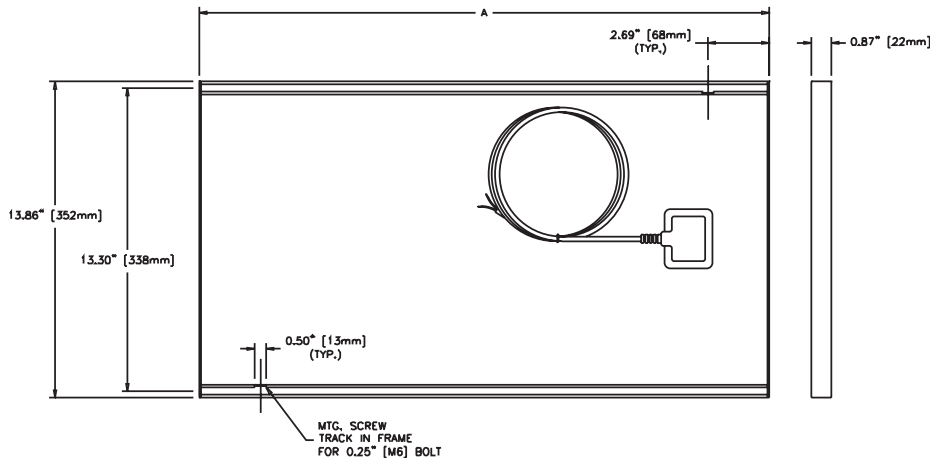
| Model | <i>KC65T</i> | <i>KC50T</i> | <i>KC40T</i> |
|--|---------------|--------------|--------------|
| Module Quantity Per Carton | 2 | 2 | 2 |
| Carton Size (in.) (L x W x D) | 34 x 28 x 3.5 | 28 x 30 x 4 | 25 x 28 x 4 |
| Carton Size (cm) (L x W x D) | 86 x 71 x 9 | 71 x 76 x 9 | 64 x 71 x 9 |
| Carton Gross Weight (lbs./kg) | 32.0 / 14.5 | 25.0 / 11.3 | 23.0 / 10.5 |
| Number of Cartons per Pallet | 20 | 20 | 40 |
| Number of Modules per Pallet | 40 | 40 | 80 |
| Maximum Pallet Dimensions (in.) (LxWxD) | 55 x 43 x 39 | 28 x 58 x 40 | 28 x 50 x 40 |
| Maximum Pallet Area (ft ³ /m ³) | 53.0 / 1.5 | 33.6 / 1.0 | 33.6 / 1.0 |
| Gross Weight of Max. Pallet (lbs. kg) | 662 / 301 | 560 / 254 | 960 / 435.4 |
| Number of Modules per 20' Container | 560 | 960 | 1040 |
| Number of Modules per 40' Container | 1280 | 2000 | 2160 |

- 1 All Kyocera KC series solar modules are supplied with bypass diodes installed inside of the junction box. Bypass diodes are installed across eighteen series cells, accomplished by the diode terminal in the J-Box. This diode terminal is not usable for interconnection wiring between modules. KC85T and KC125TM modules include an isolated post inside the J-Box for parallel splicing wiring from adjacent modules.
- 2 'M' style junction box standard with KC85T and KC125TM solar modules. 'G' style junction box standard with KC40T, KC55T and KC65T modules. Multi-contact connectors used on KC125GT, KC170GT & KC190GT. All Kyocera solar modules have one opening in the junction box for wiring purposes. In some cases, wiring multiple solar modules together may result in one module with a remaining opening in the J-Box. A sealing hole plug may be required.

Solartec KS Module Mounting Hole Location

Dimensions shown in inches / millimeters

| Model | Dim. A |
|-------|---------------|
| KS 20 | 20.50 / 520.0 |
| KS 10 | 12.00 / 304.0 |
| KS 5 | 8.10 / 205.0 |



Solartec KS Modules Standard Packaging Details

| Model | KS 20 | KS 10 | KS 5 |
|--|--------------------|--------------------|--------------------|
| Module Quantity Per Carton | 1 | 1 | 1 |
| Carton Size (in.) (L x W x D) | 21.25 x 15 x 1.6 | 12.2 x 15 x 1.6 | 8.5 x 15 x 1.6 |
| Carton Size (cm) (L x W x D) | 54 x 36.5 x 4 | 31.0 x 36.5 x 4 | 21.5 x 36.5 x 4 |
| Carton Gross Weight (lbs./kg) | 6.00 / 2.7 | 4.30 / 1.95 | 2.87 / 1.30 |
| Number of Cartons per Pallet | 90 | 150 | 240 |
| Number of Modules per Pallet | 90 | 150 | 240 |
| Maximum Pallet Dimensions (in.) (L X W x D) | 43.3 x 43.3 x 33.5 | 39.4 x 39.4 x 35.4 | 43.3 x 43.3 x 35.4 |
| Maximum Pallet Area (ft ³ /m ³) | 36.33 / 1.03 | 31.78 / 0.90 | 38.46 / 1.09 |
| Gross Weight of Max. Pallet (lbs./ kg) | 1190.0 / 540.0 | 645.0 / 292.5 | 688.0 / 312.0 |
| Number of Modules per 20' Container | 1800 | 3000 | 4800 |
| Number of Modules per 40' Container | 2000 | 6000 | 9600 |

APPENDIX B

Wire Sizing Tables

Use these tables to determine the appropriate wire size for charging circuits in your PV power system. These tables will show you the maximum one way wire distance the conductor will pass current at the rated voltage drop. Resistance in wiring has been calculated for the round trip based on one way distance. Cross-reference by wire gauge and current (amps) to find length. For example, on the 48V table, 30A with #6 wire will run a maximum distance of 81.5 feet. This is based on 5% voltage drop and maximum temperature of 75°C. R=Resistance in Ohms per 1000 feet of wire.

System Voltage: 48V

Voltage Drop: 5.00%

Temperature (°C): 75

| R | 3.14 | 1.98 | 1.24 | 0.778 | 0.491 | 0.308 | 0.245 | 0.194 | 0.154 | 0.122 | 0.0967 | 0.0766 | 0.0608 | 0.0515 |
|------------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|----------|
| Wire Gauge | | | | | | | | | | | | | | |
| Amps | #14 | #12 | #10 | #8 | #6 | #4 | #3 | #2 | #1 | #1/0 | #2/0 | #3/0 | #4/0 | 250MCM |
| 1.00 | 382.17 | 606.06 | 967.74 | 1542.42 | 2443.99 | 3896.10 | 4897.96 | 6185.57 | 7792.21 | 9836.07 | 12409.51 | 15665.80 | 19736.84 | 23300.97 |
| 2.00 | 191.08 | 303.03 | 483.87 | 771.21 | 1222.00 | 1948.05 | 2448.98 | 3092.78 | 3896.10 | 4918.03 | 6204.76 | 7832.90 | 9868.42 | 11650.49 |
| 4.00 | 95.54 | 151.52 | 241.94 | 385.60 | 611.00 | 974.03 | 1224.49 | 1546.39 | 1948.05 | 2459.02 | 3102.38 | 3916.45 | 4934.21 | 5825.24 |
| 6.00 | 63.69 | 101.01 | 161.29 | 257.07 | 407.33 | 649.35 | 816.33 | 1030.93 | 1298.70 | 1639.34 | 2068.25 | 2610.97 | 3289.47 | 3883.50 |
| 8.00 | 47.77 | 75.76 | 120.97 | 192.80 | 305.50 | 487.01 | 612.24 | 773.20 | 974.03 | 1229.51 | 1551.19 | 1958.22 | 2467.11 | 2912.62 |
| 10.00 | 38.22 | 60.61 | 96.77 | 154.24 | 244.40 | 389.61 | 489.80 | 618.56 | 779.22 | 983.61 | 1240.95 | 1566.58 | 1973.68 | 2330.10 |
| 12.00 | 31.85 | 50.51 | 80.65 | 128.53 | 203.67 | 324.68 | 408.16 | 515.46 | 649.35 | 819.67 | 1034.13 | 1305.48 | 1644.74 | 1941.75 |
| 14.00 | 27.30 | 43.29 | 69.12 | 110.17 | 174.57 | 278.29 | 349.85 | 441.83 | 556.59 | 702.58 | 886.39 | 1118.99 | 1409.77 | 1664.36 |
| 16.00 | 23.89 | 37.88 | 60.48 | 96.40 | 152.75 | 243.51 | 306.12 | 386.60 | 487.01 | 614.75 | 775.59 | 979.11 | 1233.55 | 1456.31 |
| 18.00 | 21.23 | 33.67 | 53.76 | 85.69 | 135.78 | 216.45 | 272.11 | 343.64 | 432.90 | 546.45 | 689.42 | 870.32 | 1096.49 | 1294.50 |
| 20.00 | 19.11 | 30.30 | 48.39 | 77.12 | 122.20 | 194.81 | 244.90 | 309.28 | 389.61 | 491.80 | 620.48 | 783.29 | 986.84 | 1165.0 |
| 25.00 | 15.29 | 24.24 | 38.71 | 61.70 | 97.76 | 155.84 | 195.92 | 247.42 | 311.69 | 393.44 | 496.38 | 626.63 | 789.47 | 932.04 |
| 30.00 | 12.74 | 20.20 | 32.26 | 51.41 | 81.47 | 129.87 | 163.27 | 206.19 | 259.74 | 327.87 | 413.65 | 522.19 | 657.89 | 776.70 |
| 35.00 | 10.92 | 17.32 | 27.65 | 44.07 | 69.83 | 111.32 | 139.94 | 176.73 | 222.63 | 281.03 | 354.56 | 447.59 | 563.91 | 665.74 |
| 40.00 | 9.55 | 15.15 | 24.19 | 38.56 | 61.10 | 97.40 | 122.45 | 154.64 | 194.81 | 245.90 | 310.24 | 391.64 | 493.42 | 582.52 |
| 45.00 | 8.49 | 13.47 | 21.51 | 34.28 | 54.31 | 86.58 | 108.84 | 137.46 | 173.16 | 218.58 | 275.77 | 348.13 | 438.60 | 517.80 |
| 50.00 | 7.64 | 12.12 | 19.35 | 30.85 | 48.88 | 77.92 | 97.96 | 123.71 | 155.84 | 196.72 | 248.19 | 313.32 | 394.74 | 466.02 |
| 55.00 | 6.95 | 11.02 | 17.60 | 28.04 | 44.44 | 70.84 | 89.05 | 112.46 | 141.68 | 178.84 | 225.63 | 284.83 | 358.85 | 423.65 |
| 60.00 | 6.37 | 10.10 | 16.13 | 25.71 | 40.73 | 64.94 | 81.63 | 103.09 | 129.87 | 163.93 | 206.83 | 261.10 | 328.95 | 388.35 |
| 65.00 | 5.88 | 9.32 | 14.89 | 23.73 | 37.60 | 59.94 | 75.35 | 95.16 | 119.88 | 151.32 | 190.92 | 241.01 | 303.64 | 358.48 |
| 70.00 | 5.46 | 8.66 | 13.82 | 22.03 | 34.91 | 55.66 | 69.97 | 88.37 | 111.32 | 140.52 | 177.28 | 223.80 | 281.95 | 332.87 |
| 75.00 | 5.10 | 8.08 | 12.90 | 20.57 | 32.59 | 51.95 | 65.31 | 82.47 | 103.90 | 131.15 | 165.46 | 208.88 | 263.16 | 310.68 |
| 80.00 | 4.78 | 7.58 | 12.10 | 19.28 | 30.55 | 48.70 | 61.22 | 77.32 | 97.40 | 122.95 | 155.12 | 195.82 | 246.71 | 291.26 |
| 85.00 | 4.50 | 7.13 | 11.39 | 18.15 | 28.75 | 45.84 | 57.62 | 72.77 | 91.67 | 115.72 | 145.99 | 184.30 | 232.20 | 274.13 |
| 90.00 | 4.25 | 6.73 | 10.75 | 17.14 | 27.16 | 43.29 | 54.42 | 68.73 | 86.58 | 109.29 | 137.88 | 174.06 | 219.30 | 258.90 |
| 95.00 | 4.02 | 6.38 | 10.19 | 16.24 | 25.73 | 41.01 | 51.56 | 65.11 | 82.02 | 103.54 | 130.63 | 164.90 | 207.76 | 245.27 |
| 100.00 | 3.82 | 6.06 | 9.68 | 15.42 | 24.44 | 38.96 | 48.98 | 61.86 | 77.92 | 98.36 | 124.10 | 156.66 | 197.37 | 233.01 |
| 125.00 | 3.06 | 4.85 | 7.74 | 12.34 | 19.55 | 31.17 | 39.18 | 49.48 | 62.34 | 78.69 | 99.28 | 125.33 | 157.89 | 186.41 |
| 150.00 | 2.55 | 4.04 | 6.45 | 10.28 | 16.29 | 25.97 | 32.65 | 41.24 | 51.95 | 65.57 | 82.73 | 104.44 | 131.58 | 155.34 |
| 175.00 | 2.18 | 3.46 | 5.53 | 8.81 | 13.97 | 22.26 | 27.99 | 35.35 | 44.53 | 56.21 | 70.91 | 89.52 | 112.78 | 133.15 |
| 200.00 | 1.91 | 3.03 | 4.84 | 7.71 | 12.22 | 19.48 | 24.49 | 30.93 | 38.96 | 49.18 | 62.05 | 78.33 | 98.68 | 116.50 |
| 225.00 | 1.70 | 2.69 | 4.30 | 6.86 | 10.86 | 17.32 | 21.77 | 27.49 | 34.63 | 43.72 | 55.15 | 69.63 | 87.72 | 103.56 |
| 250.00 | 1.53 | 2.42 | 3.87 | 6.17 | 9.78 | 15.58 | 19.59 | 24.74 | 31.17 | 39.34 | 49.64 | 62.66 | 78.95 | 93.20 |
| 275.00 | 1.39 | 2.20 | 3.52 | 5.61 | 8.89 | 14.17 | 17.81 | 22.49 | 28.34 | 35.77 | 45.13 | 56.97 | 71.77 | 84.73 |
| 300.00 | 1.27 | 2.02 | 3.23 | 5.14 | 8.15 | 12.99 | 16.33 | 20.62 | 25.97 | 32.79 | 41.37 | 52.22 | 65.79 | 77.67 |
| 400.00 | 0.96 | 1.52 | 2.42 | 3.86 | 6.11 | 9.74 | 12.24 | 15.46 | 19.48 | 24.59 | 31.02 | 39.16 | 49.34 | 58.25 |

Wire Sizing Tables

Use these tables to determine the appropriate wire size for charging circuits in your PV power system. These tables will show you the maximum one way wire distance the conductor will pass current at the rated voltage drop. Resistance in wiring has been calculated for the round trip based on one way distance. Cross-reference by wire gauge and current (amps) to find length. For example, on the 24V table, 30A with #6 wire will run a maximum distance of 32.5 feet. This is based on 4% voltage drop and maximum temperature of 75°C. R=Resistance in Ohms per 1000 feet of wire.

| System Voltage: 24V | | Voltage Drop: 4.00% | | | | | | Temperature (°C): 75 | | | | | | |
|---------------------|--------|---------------------|--------|--------|--------|---------|---------|----------------------|---------|---------|---------|---------|---------|---------|
| R | 3.14 | 1.98 | 1.24 | 0.778 | 0.491 | 0.308 | 0.245 | 0.194 | 0.154 | 0.122 | 0.0967 | 0.0766 | 0.0608 | 0.0515 |
| Wire Gauge | | | | | | | | | | | | | | |
| Amps | #14 | #12 | #10 | #8 | #6 | #4 | #3 | #2 | #1 | #1/0 | #2/0 | #3/0 | #4/0 | 250MCM |
| 1.00 | 152.87 | 242.42 | 387.10 | 616.97 | 977.60 | 1558.44 | 1959.18 | 2474.23 | 3116.88 | 3934.43 | 4963.81 | 6266.32 | 7894.74 | 9320.39 |
| 2.00 | 76.43 | 121.21 | 193.55 | 308.48 | 488.80 | 779.22 | 979.59 | 1237.11 | 1558.44 | 1967.21 | 2481.90 | 3133.16 | 3947.37 | 4660.19 |
| 4.00 | 38.22 | 60.61 | 96.77 | 154.24 | 244.40 | 389.61 | 489.80 | 618.56 | 779.22 | 983.61 | 1240.95 | 1566.58 | 1973.68 | 2330.10 |
| 6.00 | 25.48 | 40.40 | 64.52 | 102.83 | 162.93 | 259.74 | 326.53 | 412.37 | 519.48 | 655.74 | 827.30 | 1044.39 | 1315.79 | 1553.40 |
| 8.00 | 19.11 | 30.30 | 48.39 | 77.12 | 122.20 | 194.81 | 244.90 | 309.28 | 389.61 | 491.80 | 620.48 | 783.29 | 986.84 | 1165.05 |
| 10.00 | 15.29 | 24.24 | 38.71 | 61.70 | 97.76 | 155.84 | 195.92 | 247.42 | 311.69 | 393.44 | 496.38 | 626.63 | 789.47 | 932.04 |
| 12.00 | 12.74 | 20.20 | 32.26 | 51.41 | 81.47 | 129.87 | 163.27 | 206.19 | 259.74 | 327.87 | 413.65 | 522.19 | 657.89 | 776.70 |
| 14.00 | 10.92 | 17.32 | 27.65 | 44.07 | 69.83 | 111.32 | 139.94 | 176.73 | 222.63 | 281.03 | 354.56 | 447.59 | 563.91 | 665.74 |
| 16.00 | 9.55 | 15.15 | 24.19 | 38.56 | 61.10 | 97.40 | 122.45 | 154.64 | 194.81 | 245.90 | 310.24 | 391.64 | 493.42 | 582.52 |
| 18.00 | 8.49 | 13.47 | 21.51 | 34.28 | 54.31 | 86.58 | 108.84 | 137.46 | 173.16 | 218.58 | 275.77 | 348.13 | 438.60 | 517.80 |
| 20.00 | 7.64 | 12.12 | 19.35 | 30.85 | 48.88 | 77.92 | 97.96 | 123.71 | 155.84 | 196.72 | 248.19 | 313.32 | 394.74 | 466.02 |
| 25.00 | 6.11 | 9.70 | 15.48 | 24.68 | 39.10 | 62.34 | 78.37 | 98.97 | 124.68 | 157.38 | 198.55 | 250.65 | 315.79 | 372.82 |
| 30.00 | 5.10 | 8.08 | 12.90 | 20.57 | 32.59 | 51.95 | 65.31 | 82.47 | 103.90 | 131.15 | 165.46 | 208.88 | 263.16 | 310.68 |
| 35.00 | 4.37 | 6.93 | 11.06 | 17.63 | 27.93 | 44.53 | 55.98 | 70.69 | 89.05 | 112.41 | 141.82 | 179.04 | 225.56 | 266.30 |
| 40.00 | 3.82 | 6.06 | 9.68 | 15.42 | 24.44 | 38.96 | 48.98 | 61.86 | 77.92 | 98.36 | 124.10 | 156.66 | 197.37 | 233.01 |
| 45.00 | 3.40 | 5.39 | 8.60 | 13.71 | 21.72 | 34.63 | 43.54 | 54.98 | 69.26 | 87.43 | 110.31 | 139.25 | 175.44 | 207.12 |
| 50.00 | 3.06 | 4.85 | 7.74 | 12.34 | 19.55 | 31.17 | 39.18 | 49.48 | 62.34 | 78.69 | 99.28 | 125.33 | 157.89 | 186.41 |
| 55.00 | 2.78 | 4.41 | 7.04 | 11.22 | 17.77 | 28.34 | 35.62 | 44.99 | 56.67 | 71.54 | 90.25 | 113.93 | 143.54 | 169.46 |
| 60.00 | 2.55 | 4.04 | 6.45 | 10.28 | 16.29 | 25.97 | 32.65 | 41.24 | 51.95 | 65.57 | 82.73 | 104.44 | 131.58 | 155.34 |
| 65.00 | 2.35 | 3.73 | 5.96 | 9.49 | 15.04 | 23.98 | 30.14 | 38.07 | 47.95 | 60.53 | 76.37 | 96.40 | 121.46 | 143.39 |
| 70.00 | 2.18 | 3.46 | 5.53 | 8.81 | 13.97 | 22.26 | 27.99 | 35.35 | 44.53 | 56.21 | 70.91 | 89.52 | 112.78 | 133.15 |
| 75.00 | 2.04 | 3.23 | 5.16 | 8.23 | 13.03 | 20.78 | 26.12 | 32.99 | 41.56 | 52.46 | 66.18 | 83.55 | 105.26 | 124.27 |
| 80.00 | 1.91 | 3.03 | 4.84 | 7.71 | 12.22 | 19.48 | 24.49 | 30.93 | 38.96 | 49.18 | 62.05 | 78.33 | 98.68 | 116.50 |
| 85.00 | 1.80 | 2.85 | 4.55 | 7.26 | 11.50 | 18.33 | 23.05 | 29.11 | 36.67 | 46.29 | 58.40 | 73.72 | 92.88 | 109.65 |
| 90.00 | 1.70 | 2.69 | 4.30 | 6.86 | 10.86 | 17.32 | 21.77 | 27.49 | 34.63 | 43.72 | 55.15 | 69.63 | 87.72 | 103.56 |
| 95.00 | 1.61 | 2.55 | 4.07 | 6.49 | 10.29 | 16.40 | 20.62 | 26.04 | 32.81 | 41.42 | 52.25 | 65.96 | 83.10 | 98.11 |
| 100.00 | 1.53 | 2.42 | 3.87 | 6.17 | 9.78 | 15.58 | 19.59 | 24.74 | 31.17 | 39.34 | 49.64 | 62.66 | 78.95 | 93.20 |
| 125.00 | 1.22 | 1.94 | 3.10 | 4.94 | 7.82 | 12.47 | 15.67 | 19.79 | 24.94 | 31.48 | 39.71 | 50.13 | 63.16 | 74.56 |
| 150.00 | 1.02 | 1.62 | 2.58 | 4.11 | 6.52 | 10.39 | 13.06 | 16.49 | 20.78 | 26.23 | 33.09 | 41.78 | 52.63 | 62.14 |
| 175.00 | 0.87 | 1.39 | 2.21 | 3.53 | 5.59 | 8.91 | 11.20 | 14.14 | 17.81 | 22.48 | 28.36 | 35.81 | 45.11 | 53.26 |
| 200.00 | 0.76 | 1.21 | 1.94 | 3.08 | 4.89 | 7.79 | 9.80 | 12.37 | 15.58 | 19.67 | 24.82 | 31.33 | 39.47 | 46.60 |
| 225.00 | 0.68 | 1.08 | 1.72 | 2.74 | 4.34 | 6.93 | 8.71 | 11.00 | 13.85 | 17.49 | 22.06 | 27.85 | 35.09 | 41.42 |
| 250.00 | 0.61 | 0.97 | 1.55 | 2.47 | 3.91 | 6.23 | 7.84 | 9.90 | 12.47 | 15.74 | 19.86 | 25.07 | 31.58 | 37.28 |
| 275.00 | 0.56 | 0.88 | 1.41 | 2.24 | 3.55 | 5.67 | 7.12 | 9.00 | 11.33 | 14.31 | 18.05 | 22.79 | 28.71 | 33.89 |
| 300.00 | 0.51 | 0.81 | 1.29 | 2.06 | 3.26 | 5.19 | 6.53 | 8.25 | 10.39 | 13.11 | 16.55 | 20.89 | 26.32 | 31.07 |
| 400.00 | 0.38 | 0.61 | 0.97 | 1.54 | 2.44 | 3.90 | 4.90 | 6.19 | 7.79 | 9.84 | 12.41 | 15.67 | 19.74 | 23.30 |

Wire Sizing Tables

Use these tables to determine the appropriate wire size for charging circuits in your PV power system. These tables will show you the maximum one way wire distance the conductor will pass current at the rated voltage drop. Resistance in wiring has been calculated for the round trip based on one way distance. Cross-reference by wire gauge and current (amps) to find length. For example, on the 12V table, 30A with #6 wire will run a maximum distance of 12.2 feet. This is based on 3% voltage drop and maximum temperature of 75°C. R=Resistance in Ohms per 1000 feet of wire.

System Voltage: 12V

Voltage Drop: 3.00%

Temperature (°C): 75

| R | 3.14 | 1.98 | 1.24 | 0.778 | 0.491 | 0.308 | 0.245 | 0.194 | 0.154 | 0.122 | 0.0967 | 0.0766 | 0.0608 | 0.0515 |
|------------|-------|-------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|
| Wire Gauge | | | | | | | | | | | | | | |
| Amps | #14 | #12 | #10 | #8 | #6 | #4 | #3 | #2 | #1 | #1/0 | #2/0 | #3/0 | #4/0 | 250MCM |
| 1.00 | 57.32 | 90.91 | 145.16 | 231.36 | 366.60 | 584.42 | 734.69 | 927.84 | 1168.83 | 1475.41 | 1861.43 | 2349.87 | 2960.53 | 3495.15 |
| 2.00 | 28.66 | 45.45 | 72.58 | 115.68 | 183.30 | 292.21 | 367.35 | 463.92 | 584.42 | 737.70 | 930.71 | 1174.93 | 1480.26 | 1747.57 |
| 4.00 | 14.33 | 22.73 | 36.29 | 57.84 | 91.65 | 146.10 | 183.67 | 231.96 | 292.21 | 368.85 | 465.36 | 587.47 | 740.13 | 873.79 |
| 6.00 | 9.55 | 15.15 | 24.19 | 38.56 | 61.10 | 97.40 | 122.45 | 154.64 | 194.81 | 245.90 | 310.24 | 391.64 | 493.42 | 582.52 |
| 8.00 | 7.17 | 11.36 | 18.15 | 28.92 | 45.82 | 73.05 | 91.84 | 115.98 | 146.10 | 184.43 | 232.68 | 293.73 | 370.07 | 436.89 |
| 10.00 | 5.73 | 9.09 | 14.52 | 23.14 | 36.66 | 58.44 | 73.47 | 92.78 | 116.88 | 147.54 | 186.14 | 234.99 | 296.05 | 349.51 |
| 12.00 | 4.78 | 7.58 | 12.10 | 19.28 | 30.55 | 48.70 | 61.22 | 77.32 | 97.40 | 122.95 | 155.12 | 195.82 | 246.71 | 291.26 |
| 14.00 | 4.09 | 6.49 | 10.37 | 16.53 | 26.19 | 41.74 | 52.48 | 66.27 | 83.49 | 105.39 | 132.96 | 167.85 | 211.47 | 249.65 |
| 16.00 | 3.58 | 5.68 | 9.07 | 14.46 | 22.91 | 36.53 | 45.92 | 57.99 | 73.05 | 92.21 | 116.34 | 146.87 | 185.03 | 218.45 |
| 18.00 | 3.18 | 5.05 | 8.06 | 12.85 | 20.37 | 32.47 | 40.82 | 51.55 | 64.94 | 81.97 | 103.41 | 130.55 | 164.47 | 194.17 |
| 20.00 | 2.87 | 4.55 | 7.26 | 11.57 | 18.33 | 29.22 | 36.73 | 46.39 | 58.44 | 73.77 | 93.07 | 117.49 | 148.03 | 174.76 |
| 25.00 | 2.29 | 3.64 | 5.81 | 9.25 | 14.66 | 23.38 | 29.39 | 37.11 | 46.75 | 59.02 | 74.46 | 93.99 | 118.42 | 139.81 |
| 30.00 | 1.91 | 3.03 | 4.84 | 7.71 | 12.22 | 19.48 | 24.49 | 30.93 | 38.96 | 49.18 | 62.05 | 78.33 | 98.68 | 116.50 |
| 35.00 | 1.64 | 2.60 | 4.15 | 6.61 | 10.47 | 16.70 | 20.99 | 26.51 | 33.40 | 42.15 | 53.18 | 67.14 | 84.59 | 99.86 |
| 40.00 | 1.43 | 2.27 | 3.63 | 5.78 | 9.16 | 14.61 | 18.37 | 23.20 | 29.22 | 36.89 | 46.54 | 58.75 | 74.01 | 87.38 |
| 45.00 | 1.27 | 2.02 | 3.23 | 5.14 | 8.15 | 12.99 | 16.33 | 20.62 | 25.97 | 32.79 | 41.37 | 52.22 | 65.79 | 77.67 |
| 50.00 | 1.15 | 1.82 | 2.90 | 4.63 | 7.33 | 11.69 | 14.69 | 18.56 | 23.38 | 29.51 | 37.23 | 47.00 | 59.21 | 69.90 |
| 55.00 | 1.04 | 1.65 | 2.64 | 4.21 | 6.67 | 10.63 | 13.36 | 16.87 | 21.25 | 26.83 | 33.84 | 42.72 | 53.83 | 63.55 |
| 60.00 | 0.96 | 1.52 | 2.42 | 3.86 | 6.11 | 9.74 | 12.24 | 15.46 | 19.48 | 24.59 | 31.02 | 39.16 | 49.34 | 58.25 |
| 65.00 | 0.88 | 1.40 | 2.23 | 3.56 | 5.64 | 8.99 | 11.30 | 14.27 | 17.98 | 22.70 | 28.64 | 36.15 | 45.55 | 53.77 |
| 70.00 | 0.82 | 1.30 | 2.07 | 3.31 | 5.24 | 8.35 | 10.50 | 13.25 | 16.70 | 21.08 | 26.59 | 33.57 | 42.29 | 49.93 |
| 75.00 | 0.76 | 1.21 | 1.94 | 3.08 | 4.89 | 7.79 | 9.80 | 12.37 | 15.58 | 19.67 | 24.82 | 31.33 | 39.47 | 46.60 |
| 80.00 | 0.72 | 1.14 | 1.81 | 2.89 | 4.58 | 7.31 | 9.18 | 11.60 | 14.61 | 18.44 | 23.27 | 29.37 | 37.01 | 43.69 |
| 85.00 | 0.67 | 1.07 | 1.71 | 2.72 | 4.31 | 6.88 | 8.64 | 10.92 | 13.75 | 17.36 | 21.90 | 27.65 | 34.83 | 41.12 |
| 90.00 | 0.64 | 1.01 | 1.61 | 2.57 | 4.07 | 6.49 | 8.16 | 10.31 | 12.99 | 16.39 | 20.68 | 26.11 | 32.89 | 38.83 |
| 95.00 | 0.60 | 0.96 | 1.53 | 2.44 | 3.86 | 6.15 | 7.73 | 9.77 | 12.30 | 15.53 | 19.59 | 24.74 | 31.16 | 36.79 |
| 100.00 | 0.57 | 0.91 | 1.45 | 2.31 | 3.67 | 5.84 | 7.35 | 9.28 | 11.69 | 14.75 | 18.61 | 23.50 | 29.61 | 34.95 |
| 125.00 | 0.46 | 0.73 | 1.16 | 1.85 | 2.93 | 4.68 | 5.88 | 7.42 | 9.35 | 11.80 | 14.89 | 18.80 | 23.68 | 27.96 |
| 150.00 | 0.38 | 0.61 | 0.97 | 1.54 | 2.44 | 3.90 | 4.90 | 6.19 | 7.79 | 9.84 | 12.41 | 15.67 | 19.74 | 23.30 |
| 175.00 | 0.33 | 0.52 | 0.83 | 1.32 | 2.09 | 3.34 | 4.20 | 5.30 | 6.68 | 8.43 | 10.64 | 13.43 | 16.92 | 19.97 |
| 200.00 | 0.29 | 0.45 | 0.73 | 1.16 | 1.83 | 2.92 | 3.67 | 4.64 | 5.84 | 7.38 | 9.31 | 11.75 | 14.80 | 17.48 |
| 225.00 | 0.25 | 0.40 | 0.65 | 1.03 | 1.63 | 2.60 | 3.27 | 4.12 | 5.19 | 6.56 | 8.27 | 10.44 | 13.16 | 15.53 |
| 250.00 | 0.23 | 0.36 | 0.58 | 0.93 | 1.47 | 2.34 | 2.94 | 3.71 | 4.68 | 5.90 | 7.45 | 9.40 | 11.84 | 13.98 |
| 275.00 | 0.21 | 0.33 | 0.53 | 0.84 | 1.33 | 2.13 | 2.67 | 3.37 | 4.25 | 5.37 | 6.77 | 8.54 | 10.77 | 12.71 |
| 300.00 | 0.19 | 0.30 | 0.48 | 0.77 | 1.22 | 1.95 | 2.45 | 3.09 | 3.90 | 4.92 | 6.20 | 7.83 | 9.87 | 11.65 |
| 400.00 | 0.14 | 0.23 | 0.36 | 0.58 | 0.92 | 1.46 | 1.84 | 2.32 | 2.92 | 3.69 | 4.65 | 5.87 | 7.40 | 8.74 |

APPENDIX C

UniRac Universal Mounts Sizing Guide



SolarMount Rail Sets with Clamp Sets or Clip Sets

Select your PV module and complete a layout of your roof or other installation area before selecting the SolarMount components required for your installation. There are just 4 easy steps to selecting a complete SolarMount system – 3 of which are optional.

- 1 Select the required SolarMount Rail Sets (below) and Top Mounting Clamp Sets or Bottom Mounting Clip Sets ([page 24](#)).
- 2 Select SolarMount Tilt Leg Kits, if required. (See [page 25](#))
- 3 Select SolarMount Standoffs, if required. (See [page 30](#))
- 4 Select SolarMount Splice Kits, if required. (See [page 28](#))

| Module Make and Model | | Number of Modules | | | | | | |
|--|----------|-------------------|--------|--------|--------|--------|--------|--------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| SolarMount Rail Sets for use with Top Mounting Clips | | | | | | | | |
| KC 40T, 50T, 65T, 85T, 130TM, 130GT | Rail Set | 300202 | 300204 | 300207 | 300209 | 300211 | 300213 | 300215 |
| KC 175GT, 200GT | Rail Set | 300204 | 300208 | 300211 | 300214 | 300226 | 300229 | 300232 |
| SolarMount Rail Sets for use with Bottom Mounting Clips | | | | | | | | |
| KC 40T, 50T, 65T, 85T, 130TM, 130GT | Rail Set | 300202 | 300204 | 300206 | 300208 | 300210 | 300212 | 300215 |
| KC 175GT, 200GT | Rail Set | 300204 | 300207 | 300210 | 300214 | 300225 | 300228 | 300231 |

Pole Top Mounts

| Module make and model | Number of modules | | | | | | | |
|--|-------------------|--------|--------|---------------|---------------|--------|--------|--------|
| | 1 | 2 | 3 | 4 | 6 | 8 | 10 | 12 |
| KC 40T, 50T, 65T, 85T (May need to trim cross tubes on smaller modules) | 500025 | 500031 | 500107 | 500113 | 500325 | 500330 | 500429 | 500430 |
| KC 130GT, 130TM | 500043 | 500128 | 500131 | 500227 | 500342/500456 | 500461 | 500466 | 500470 |
| KC 175GT, 190GT | 500039 | 500121 | 500232 | 500335/500432 | 500440 | 500447 | - | - |

Side of Pole Mounts - Adjustable Tilt

| Module make and model | Number of modules | | | |
|-----------------------|-------------------|--------|--------|--------|
| | 1 | 2 | 3 | 4 |
| KC 40T, 50T, 65T, 85T | 400107 | 400213 | 400223 | 400229 |
| KC 130GT, 130TM | 400236 | 400214 | 400224 | 400232 |
| KC 175GT, 190GT | 400209 | 400224 | - | - |

■ SunFrame Components for KC 130GT / 130TM

| 16 ft. Length of Rail and Cap Strips per Installation | | | | | | | | | |
|---|-------------------------------|----|----|----|----|----|----|----|----|
| | Number of Modules per Row | | | | | | | | |
| Number of Rows | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 |
| 2 | 1 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | 5 |
| 3 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 |
| Cap Strip Screws per Installation | | | | | | | | | |
| | Number of Modules per Row | | | | | | | | |
| Number of Rows | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 16 | 16 | 32 | 32 | 32 | 32 | 48 | 48 | 48 |
| 2 | 16 | 32 | 32 | 48 | 48 | 48 | 64 | 64 | 80 |
| 3 | 32 | 32 | 48 | 48 | 64 | 64 | 80 | 80 | 96 |
| L-feet per Installation - 4 ft. Spacing | | | | | | | | | |
| | Number of Modules per Row | | | | | | | | |
| Number of Rows | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 |
| 2 | 6 | 6 | 9 | 9 | 12 | 12 | 15 | 15 | 18 |
| 3 | 8 | 8 | 12 | 12 | 16 | 16 | 20 | 20 | 24 |
| Splices per Installation | | | | | | | | | |
| | Number of Modules per Row | | | | | | | | |
| Number of Rows | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| 2 | 0 | 0 | 1 | 1 | 2 | 0 | 3 | 3 | 4 |
| 3 | 0 | 0 | 1 | 1 | 3 | 0 | 4 | 4 | 5 |
| End Caps per Installation | | | | | | | | | |
| Number of Rows | Any Number of Modules per Row | | | | | | | | |
| 1 | 4 | | | | | | | | |
| 2 | 6 | | | | | | | | |
| 3 | 8 | | | | | | | | |

■ Side of Pole Mounts - Fixed Tilt

| Module make and model | UniRac Model |
|-----------------------------|--------------|
| KS 5 - 20 45 degree | 401102 |
| KC 40T - 85T 45 degree | 401210 |
| KC 40T - 85T 60 degree | 401212 |
| KC 85T - 130GT/TM 45 degree | 401214 |
| KC 85T - 130GT/TM 60 degree | 401216 |
| KC 175T - 200GT 60 degree | 401229 |

SunFrame Components for KC 175GT / 200GT

| 16 ft. Length of Rail and Cap Strips per Installation | | | | | | | | | |
|---|-------------------------------|----|----|----|----|----|-----|-----|-----|
| | Number of Modules per Row | | | | | | | | |
| Number of Rows | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 1 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | 5 |
| 2 | 2 | 2 | 3 | 4 | 4 | 5 | 5 | 6 | 7 |
| 3 | 2 | 3 | 4 | 5 | 5 | 6 | 7 | 8 | 9 |
| Cap Strip Screws per Installation | | | | | | | | | |
| | Number of Modules per Row | | | | | | | | |
| Number of Rows | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 16 | 32 | 32 | 48 | 48 | 48 | 64 | 64 | 80 |
| 2 | 32 | 32 | 48 | 64 | 64 | 80 | 80 | 96 | 112 |
| 3 | 32 | 48 | 64 | 80 | 80 | 96 | 112 | 128 | 144 |
| L-feet per Installation - 4 ft. Spacing | | | | | | | | | |
| | Number of Modules per Row | | | | | | | | |
| Number of Rows | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 4 | 6 | 8 | 10 | 10 | 12 | 14 | 16 | 18 |
| 2 | 6 | 9 | 12 | 15 | 15 | 18 | 21 | 24 | 27 |
| 3 | 8 | 12 | 16 | 20 | 20 | 24 | 28 | 32 | 36 |
| Splices per Installation | | | | | | | | | |
| | Number of Modules per Row | | | | | | | | |
| Number of Rows | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 4 |
| 2 | 0 | 1 | 0 | 3 | 3 | 3 | 4 | 4 | 7 |
| 3 | 0 | 1 | 0 | 4 | 4 | 4 | 6 | 6 | 10 |
| End Caps per Installation | | | | | | | | | |
| Number of Rows | Any Number of Modules per Row | | | | | | | | |
| 1 | 4 | | | | | | | | |
| 2 | 6 | | | | | | | | |
| 3 | 8 | | | | | | | | |

APPENDIX D

Inverter Overcurrent Protection and Cable Sizing

| Brand | Model | Max. Continuous Power (Watts) | Voltage | Max. Input Amps* DC | Min. Overcurrent Protection (Breaker/Fuse) | Min. Cable Size** (In conduit) | Min. Cable Size** (In free air) |
|---------------------|-----------------------|-------------------------------|---------|---------------------|--|--------------------------------|---------------------------------|
| XANTREX | PORTAWATTZ 600 | 600 | 12 | 80 | 80 | #4 | #8 |
| | PORTAWATTZ 1000 | 800 | 12 | 107 | 110 | #2 | #4 |
| | PORTAWATTZ 1750 | 1500 | 12 | 201 | 200 | #3/0 | #1 |
| | PORTAWATTZ 3000 | 2500 | 12 | 334 | 350 | 350 MCM | #3/0 |
| | PROSINE 1000-12 | 1000 | 12 | 134 | 150 | #1 | #3 |
| | PROSINE 1800-12 | 1800 | 12 | 241 | 250 | #4/0 | #1/0 |
| | PROSINE 2000-12 | 2000 | 12 | 267 | 350 | 250 MCM | #2/0 |
| | PROSINE 2500-12 | 2500 | 12 | 334 | 350 | 350 MCM | #3/0 |
| | PROSINE 2500-24 | 2500 | 24 | 167 | 175 | #2/0 | #2 |
| | PROSINE 3000-12 | 3000 | 12 | 400 | 400 | 500 MCM | #4/0 |
| | PROSINE 3000-24 | 3000 | 24 | 200 | 200 | #3/0 | #1 |
| | UX612 ² | 600 | 12 | 80 | 80 | #2 | #2 |
| | UX1112 ² | 1100 | 12 | 147 | 150 | #2/0 | #2/0 |
| | UX1412 ² | 1400 | 12 | 187 | 200 | #4/0 | #4/0 |
| | DR1512 ² | 1500 | 12 | 201 | 200 | #4/0 | #4/0 |
| | DR2412 ² | 2400 | 12 | 321 | 350 | #4/0 | #4/0 ¹ |
| | DR1524 ² | 1500 | 24 | 100 | 100 | #2/0 | #2/0 |
| | DR2424 ² | 2400 | 24 | 160 | 175 | #2/0 | #2/0 |
| | DR3624 ² | 3600 | 24 | 241 | 250 | #4/0 | #4/0 ¹ |
| | SW2524 ² | 2500 | 24 | 167 | 175 | #2/0 | #2/0 |
| SW2548 ² | 2500 | 48 | 84 | 100 | #2/0 | #2/0 | |
| SW4024 ² | 4000 | 24 | 267 | 250 | #4/0 | #4/0 ¹ | |
| SW4048 ² | 4000 | 48 | 134 | 150 | #2/0 | #2/0 | |
| SW5548 ² | 5500 | 48 | 184 | 200 | #4/0 | #4/0 | |
| OutBack | FX 2012 ² | 2000 | 12 | 202 | 250/300 | #4/0 | #4/0 |
| | FX 2524 ² | 2500 | 24 | 101 | 175/200 | #2/0 | #2/0 |
| | FX 3048 ² | 2500 | 48 | 63 | 100/110 | #2 | #2 |
| | VFX 2812 ² | 2800 | 12 | 282 | 250/300 | #4/0 | #4/0 |
| | VFX 3524 ² | 3500 | 24 | 176 | 250/300 | #4/0 | #4/0 |
| | VFX 3648 ² | 3600 | 48 | 91 | 175/200 | #2/0 | #2/0 |
| | GTFX 2524 | 2500 | 24 | 126 | 175/200 | #4/0 | #4/0 |
| | GTFX 3048 | 3000 | 48 | 76 | 100/110 | #2/0 | #2/0 |
| | GVFX 3524 | 3500 | 24 | 176 | 250/300 | #4/0 | #4/0 |
| GVFX 3648 | 3600 | 48 | 91 | 175/200 | #2/0 | #2/0 | |

* The maximum input current is calculated by multiplying the inverter's maximum continuous power output by 1.25 and then dividing by 0.85 and the lowest voltage that the inverter will operate at (11V for a 12V unit, 22V for a 24V unit and 44V for a 48V unit). For example, a SW4024 is a 24V unit with a 4000W continuous output so you would multiply 4000W by 1.25 to get 5000W. You would then divide 5000W by the lowest inverter efficiency of 0.85 to get 5882.4W and then divide that by the lowest inverter voltage of 22 volts to get 267 amps. We downsize the overcurrent protection to 250 amps for the SW4024 so that we can still use #4/0 AWG cables.

* With OutBack inverters, the full power efficiency should be calculated with a lowest expected full power efficiency factor of 0.90 instead of 0.85 as used with the other brands of inverters.

²The cable size is the same for free air as in conduit. This preserves the performance of the inverter (motor starting surge) and maximizes the conversion efficiency of the system.

** Minimum cable sizes are for 90° C rated cable from NEC Tables 310-16 & 310-17. Also refer to NEC articles 240-3b and 240-6a for proper sizing of overcurrent protection devices. Cable sizes are good up to 10' of one way distance. If you use "free air" size cable in conduit, the NEC requires that you use double conductors (two positive and two negative cables). Multiply the rated cable ampacity by 0.8 for parallel conductors.

Smaller cable sizes than those listed here may be used as long as the overcurrent protection is reduced as well. We typically sell #2, #2/0 and #4/0 AWG inverter cables that should be matched with 110A, 175A and 250A overcurrent protection devices respectively. Using larger cables is perfectly acceptable, but you might run into problems fitting them into various disconnects and fuse blocks.

MCM stands for "thousands of circular mils" and it represents the cross sectional area of cables larger than #4/0 AWG. See NEC Table 8 "Conductor Properties" for details.

¹Cable is sized for 10 feet total length. From 10 feet to 20 feet total length, double the recommended wire size.

²Cable sizes are recommended by the manufacturer for inverter performance, i.e. surging, ripple and voltage drop. For that reason, cable size given is the same for conduit and free air.

APPENDIX E

Battery Installation and Wiring

Batteries may be wired in either series or parallel configuration. When a battery is wired in series the positive terminal is wired to the next battery's negative terminal. This increases the voltage while maintaining amperage of the two batteries. With parallel wiring the positive terminal is wired to the next battery's positive terminal, and the negative to the next negative. This arrangement increases amperage while maintaining voltage. One common mistake is to believe that both amperage and voltage will increase when wiring batteries together. It will not; only one value will increase with respect to the arrangement. A battery bank may combine both series and parallel wiring configurations. Series strings of batteries are used to achieve the correct voltage, then a number of these series strings are attached in parallel to increase the amp-hours of the total battery bank.

| | 12 Volt Systems | 24 Volt Systems | 48 Volt Systems |
|-------------------|-----------------|-----------------|-----------------|
| 12 Volt Batteries | | | |
| 6 Volt Batteries | | | |
| 4 Volt Batteries | | | |
| 2 Volt Batteries | | | |