

## Why Use Larger Cable?

Low-voltage power systems with inverters can have very high current flows in the cables that connect the inverter to the batteries. Large AC loads like microwave ovens, toasters, irons and washers can cause an inverter operating on a 12-volt battery to draw over 100 amps. Large motors may draw 300 to 500 amps at startup. Using cables that are too small between batteries, and from batteries to the inverter, will limit the current available to the inverter and may prevent a large load from operating properly.

## Plated Copper Lugs

These UL- listed lugs are made from tin-plated copper tubing with 3/8" holes. Solder or crimp to stranded cable.



Description	Item code
Copper lug 3/8" ring #6	051-03240
Copper lug 3/8" ring #4	051-03237
Copper lug 3/8" ring #2	051-03234
Copper lug 3/8" ring #2/0	051-03231
Copper lug 3/8" ring #4/0	051-03228

## Heat Shrink Tubing

Use this tubing to insulate copper lugs and compression terminals. Tubing shrinks and glue inside melts when heated with a heat gun or torch, sealing wires against corrosion and moisture. Maximum shrinkage is listed below. Sold in 6" lengths.



Description	Shrinks to	Item code
Heat shrink tubing 1/2" x 6" black	3/16"	051-01132-B
Heat shrink tubing 1/2" x 6" red	3/16"	051-01132-R
Heat shrink tubing 3/4" x 6" black	1/4"	051-01135-B
Heat shrink tubing 3/4" x 6" red	1/4"	051-01135-R
Heat shrink tubing 1" x 6" black	3/8"	051-01137-B
Heat shrink tubing 1" x 6" red	3/8"	051-01137-R

## UL Listed Battery Cable

This fine-stranded, very flexible cable is UL Listed for use as battery cable. It is rated MTW or THW or AWM, 600-volt, sunlight resistant, direct burial, 105 degrees C. Available with red or black insulation.



Description	Item code
X-Flex battery cable 4/0 black	050-01470
X-Flex battery cable 4/0 red	050-01472
X-Flex battery cable 2/0 black	050-01476
X-Flex battery cable 2/0 red	050-01478
X-Flex battery cable 2 AWG black	050-01487
X-Flex battery cable 2 AWG red	050-01488

## Battery Cables

Use these cables between a battery bank and an inverter, fuse or power center. They have flexible stranded UL Listed copper wire and 3/8" diameter lugs. Lug barrels are covered with glue-filled heat-shrink tubing. Cables are marked in red heat-shrink tubing for positive and white heat-shrink on black wire for negative.



Cable AWG	Length (ft.)	Cable color	End color	Item code
<b>Cables with 2 Lugs</b>				
4/0	5	Red	Red	052-04005-R
	5	Black	Black	052-04005-B
	5	Black	White	052-04005-W
	10	Red	Red	052-04010-R
	10	Black	Black	052-04010-B
	10	Black	White	052-04010-W
2/0	5	Red	Red	052-02005-R
	5	Black	Black	052-02005-B
	5	Black	White	052-02005-W
	10	Red	Red	052-02010-R
	10	Black	Black	052-02010-B
	10	Black	White	052-02010-W
2	3	Red	Red	052-01003-R
	3	Black	Black	052-01003-B
	3	Black	White	052-01003-W
	5	Red	Red	052-01005-R
	5	Black	Black	052-01005-B
	5	Black	White	052-01005-W

## Battery Interconnects



Use these cables between individual battery cells or between battery banks. Circuits protected by 250-amp breakers or 400-amp fuses should use 4/0 cables. Use 2/0 cables for 175-amp breakers and 200-amp fuses. Use #2 cables for 110-amp or smaller fuses or breakers. Cables with red ends are for positive battery parallel jumpers. Cables with white ends are for negative battery parallel jumpers. Cables with black both ends, or red and black ends, are used for series battery interconnects.

When ordering, replace "-C" with "-R" for red, "-B" for black, "-W" for white or "-BR" for one end red and one end black.

Wire size (AWG)	Length of cable	Item code
2/0	9"	052-05122-C
2/0	12"	052-05121-C
2/0	20"	052-05124-C
4/0	12"	052-05142-C
4/0	20"	052-05145-C

### PV Wire Sunlight Resistant Cable

This single conductor wire is double insulated with heat and moisture resistant, cross-linked polyethylene insulation, and thermoplastic jacket (Type PV wire, USE-2, RHH, RHW, RHW-2). Rated for direct burial or in conduit and is sunlight resistant flame retardant, and rated for temperatures from -40 to 90C. It meets the 2008 NEC code for use with transformerless inverters. Listed as Type PV Wire, USE-2 600V per UL 854.



USE by the foot	Item code
#10 AWG, PV wire, USE-2, 600V, double insulated, black - 500ft roll	050-01147

### Tray Cable (TC)

This 2-conductor flexible wire is excellent for outdoor applications like PV array lead-in and subarray wiring. It may be buried directly in the ground or exposed to direct sunlight. 10- and 12-gauge are good for array interconnects. UL Listed, stranded type THHN/THWN conductors. Conductor insulation is red and black.



Description	Item code
8 AWG 2-conductor TC cable - 100ft	050-01157
10 AWG 2-conductor TC cable - 100ft	050-01163
12 AWG 2-conductor TC cable - 100ft	050-01175
16 AWG 2-conductor TC cable - 100ft	050-01178
18 AWG 2-conductor TC cable - 100ft	050-01181

### Pump Cable

10/2 without ground pump cable is for the SHURflo 9300 submersible pump. 2-conductor with ground pump cable is required for Grundfos SQFlex and SQ AC pumps.

### Sensor Wire

This 3-conductor, 22-gauge direct-burial wire can be used between water level sensors and pump controls in pumping applications where you must sense the water level in a remote tank or in a well.



Description	Item code
10/2 without ground	050-01637
12/2 with ground	050-01635
10/2 with ground	050-01638
8/2 with ground	050-01643
Sensor wire 22/3	050-01273
Splice kit	075-00130

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## Array Cables and Connectors

Module manufacturers supply their grid-tie modules with pre-assembled cables, listed to UL with the module and ready for connection. This saves considerable time during an installation and greatly increases reliability over wiring with the old style junction boxes. These cable connectors are fully waterproof when connected, touch-protected and designed for up to 600 volts and 30 amps. They are not approved for disconnection under load.

For the past few years, modules have mostly come with Multi-Contact MC3 or MC4 connectors. Recently PV manufacturers began using different makes of locking connectors on their modules to meet supply demands. We sell cable assemblies with the most commonly used connectors. All of our array output cables are now made with PV Wire rated wire which meets the 2008 NEC code requirements for use with transformerless

inverters. This single conductor wire is double insulated with heat and moisture resistant, cross-linked polyethylene insulation, and thermoplastic jacket (Type PV wire, USE-2, RHH, RHW, RHW-2). Rated for direct burial or in conduit and is sunlight resistant flame retardant, and rated for temperatures from -40 to 90C. Listed as Type PV Wire, USE-2 600V per UL 854.

We also carry a variety of cable adapters from one type of connector to another for those times when a device uses a different connector than the module.

For those who want to assemble their own cables, we stock many styles of connectors for use with #10 AWG PV Wire USE-2 stranded wire. Proper crimping to the wire and insulator assembly requires special tools. We stock the tools required for shop or on-site assembly of cables (see page 188).

### MC4 (Solarline 2) PV-Wire Array Cables

These cables have the newer, snap-together Multi-Contact hard plastic connectors on each end. Use these output cables with many modules brands between module wires and junction boxes or grid-tie inverters. They have a male connector on one end and a female connector on the other end so they can be used to extend the cables on the modules or be cut in half and used to connect to a roof-top j-box or combiner. For example, if you need a 30' male and a 20' female, order a 50' cable. Made with double insulated black #10 AWG, PV WIRE, USE-2 sunlight-resistant cable. Use the locking sleeve where a tool is required to disconnect.



Cable length (ft)	Item code
6	052-09451
15	052-09453
30	052-09455
50	052-09457
100	052-09458
Locking sleeve 25 pck	097-01419

### Radox PV Wire Array Cables



These cables have the Huber+Suhner Radox twist-lock connectors on each end. Use these output cables with REC modules between module wires and junction boxes or grid-tie inverters. They have a male connector on one end and a female connector on the other end so they can be used to extend the cables on the modules or be cut in half and used to connect to a roof-top j-box or combiner. Made with double insulated black #10 AWG, PV WIRE, USE-2 sunlight-resistant cable. Use the locking sleeve where a tool is required to disconnect.

Cable length (ft)	Item code
6	052-09807
15	052-09807
30	052-09815
50	052-09816
70	052-09817
100	052-09818
Locking sleeve	099-01254

### Tyco SolarLok PV Wire Array Cables

These cables have Tyco SolarLok connectors to match the connectors on some SCHOTT, Day4Energy, GE and CSI Solar modules. These cables have a neutral male at one end and a negative female at the other so they can be used to extend the cables on the modules or be cut in half and used to connect to a roof-top j-box or combiner. This polarity works for most connections but is not guaranteed for all modules. Made with double insulated black #10 AWG, PV WIRE, USE-2 sunlight-resistant cable. Use the locking sleeve where a tool is required to disconnect.

Length (ft)	Item code
6	052-09607
15	052-09611
30	052-09615
50	052-09616
70	052-09617
100	052-09618
Locking sleeve	052-09435



### Amphenol Helios 4 PV-Wire Array Cables

These cables have the Amphenol Helios 4 connectors on each end. These connectors are rated as compatible with MC4 connections. They have a male connector on one end and a female connector on the other end so they can be used to extend the cables on the modules or be cut in half and used to connect to a roof-top j-box or combiner. Made with double insulated black #10 AWG, PV WIRE, USE-2 sunlight-resistant cable. The male connector has a built-in locking sleeve. The unlocking tool is needed to disconnect these.



Cable length (ft)	Item code
6	052-09720
15	052-09722
30	052-09724
50	052-09725
100	052-09727
Unlocking tool	094-00010

## H+S Radox to Helios 4 (or MC4) Adaptors

Use these adaptors to connect modules with Radox twist lock connectors to MC4 devices like Enphase inverters, or anywhere a transition is needed between Radox and MC4 or H4 cables. This polarity works for most connections.



Description	Item code
Radox male to H4 or MC4 male adaptor	052-09838
Radox female to H4 or MC4 female adaptor	052-09839

## MC4 to Tyco SolarLok Adaptors

Use these adaptors to connect solar modules with Tyco connectors to MC4 cables.



Description	Item code
Tyco female negative to MC4 female adaptor	052-09471
Tyco male neutral to MC4 male adaptor	052-09473

## MC4-Solarline 2 Branch Connectors

These waterproof Y-connectors make it possible to parallel wire PV modules with Multi-Contact output cables. Maximum current rating allowed through connectors is 30 amps.



Description	Item code
Solarline 2 branch cable coupler female - 2 male	052-09403
Solarline 2 branch cable coupler male - 2 female	052-09404

## Cable Clip

Use these stainless steel clips to keep module interconnect cables neatly secured to module frames so they do not drop below the array. Order in batches of 10.



Description	Item code
Clips for 10-12 AWG wires - stainless	052-09100
Clips for larger wires - stainless	052-09102

## Connectors

### MC4-Solarline 2 Connectors

The connector can be assembled quickly on site by a contractor allowing assembly of custom cables at the job site. A special crimping tool and wrench set are required to assemble the connector. We have connectors for 10 AWG USE-2 wire and for larger diameter 10AWG PV wire. Sold in Packs of 25 connectors.



Connector description	Item code
Male MC4 locking connector for USE-2 wire	097-01407
Female MC4 locking connector for USE-2 wire	097-01409
Male MC4 locking connector for PV wire	097-01411
Female MC4 locking connector for PV wire	097-01413
MC safety locking sleeve PV-SSH4 – pack of 25	097-01419

### H+S Radox Connectors

These connectors can be assembled quickly on site by a contractor allowing assembly of custom cables at the job site. A special crimping tool is required to assemble the connector. For use with 10AWG "PV Wire" rated double insulated wire. Sold in packs of 25.



Connector description	Item code
Radox male connector 10 AWG PV Wire - 25 pack	097-01528
Radox female connector 10 AWG PV wire - 25 pack	097-01529
Radox male connector 12 AWG PV Wire - 25 pack	097-01525
Radox female connector 12 AWG PV wire- 25 pack	097-01526
Locking sleeve, ea	099-01254

### Tyco SolarLok Connectors

These connectors can be assembled quickly on site by a contractor allowing assembly of custom cables at the job site. A special crimping tool and wrench set are required to assemble the connector. For use with 10AWG "PV Wire" rated double insulated wire. Sold in packs of 25.



Connector description	Item code
SolarLok male neutral connector - 25 pack	097-01361
SolarLok female negative connector - 25 pack	097-01366