

# System Protection

Photovoltaic, wind and hydroelectric systems usually have long runs of exposed wire that can pick up surges from lightning, even if the lightning strike is not nearby. These power surges can damage sensitive electronic components in meters, inverters, and charge controls. Surges can also damage telephone, computers, audio and video equipment connected to the power system. It is a good idea to install surge protection on any incoming wires in the system, including incoming PV, wind or hydroelectric power lines, AC generator lines, telephone and antenna leads.

Lightning arrestor can be installed in existing systems that are not presently protected. Each model we offer come with complete installation instructions. Proper grounding is absolutely necessary for lightning protection to be effective!

## Outback DC Ground Fault Protection System

The Outback Power systems GFP/2 is required for PV Arrays mounted on dwelling roofs. A GFP/2 protects wiring and system components for one or two PV arrays: Dual 80 amp PV circuits 125 VDC max Voc. Requires three small breaker spaces. The GFP/@ has stud terminals. The OBDC-GFP/2 system includes the GFP unit, a ground bus bar, neutral and ground connection, wiring and mounting hardware.

53-100                      **OBDC-GFP System**    **\$169**



## Xantrex PVGFP

The Xantrex PV Ground Fault Breakers disconnect the solar array if a ground fault occurs in the wiring. These breakers can be ordered in one through four pole configurations. The PVGFP works with 12, 24, and 48 VDC systems with or without batteries.

|        |                      |              |
|--------|----------------------|--------------|
|        | <b>Xantrex PVGFP</b> |              |
| 53-201 | <b>One Pole</b>      | <b>\$385</b> |
| 53-202 | <b>Two Pole</b>      | <b>\$429</b> |
| 53-203 | <b>Three Pole</b>    | <b>\$499</b> |
| 53-204 | <b>Four Pole</b>     | <b>\$575</b> |



## Negative Bus Bar

Use as a common negative with a fuse block above to make your own load center. It has 11 holes that will hold #10 gauge wire or smaller and 4 holes that will accept 2 gauge or smaller wire.

53-060                      **Negative Bus Bar**    **\$23**



## Delta Lightning Arrestor

Silicon Oxide Varistor type arrestors with maximum current rating of 60,000 amps and 2,000 joules per line. Their response time is 25 nanoseconds to clamp 50,000 amps. They are waterproof and mount easily in a 1/2" knockout. Install on the input terminals of the PV system charge control, either at the array or on the PV charge control box. Install the DC version for surge protection on wires coming from a PV array, wind generator or DC hydroelectric turbine. The AC version can be mounted in your AC load center to protect 120/240 VAC equipment. They are a good idea if you have AC wiring running outside of the building, such as generators, pumps or outbuildings.

|        |                                |             |
|--------|--------------------------------|-------------|
| 53-903 | <b>DC Delta Surge Arrestor</b> | <b>\$69</b> |
| 53-902 | <b>AC Delta Surge Arrestor</b> | <b>\$69</b> |



# PV Combiner Boxes & Accessories

## MidNite Solar

### MNPV3 & MNPV6 Combiners

The MNPV3 & MNPV6 combiner is rated for outdoor use. Although designed primarily for combing PV strings up to 150 Vdc, the MNPV6 may be used for combining four high voltage strings using ATM fuses up to 15 amps. The use of touch safe DIN rail mount fuse holders and fuses allow operation up to 600 Volts. The MNPV6 combiner comes with two copper bus bars. One for circuit breakers (6) and one for fuses (4). The MNPV3 bus bar is designed for circuit breakers only. Type 3R aluminum chassis with flip up cover. ETL listed for Canada.

#### Applications:

- “ PV combiner up to six strings using DIN breakers rated for 150 Vdc
- “ 120 amps total output PV combining up to four strings using ATM 6, 10 or 15 touch safe fuse holders rated for 600 Vdc
- “ DC load center using 150 Vdc DIN breakers

#### Features include:

- “ All aluminum powder coated housing; light gray
- “ Flip up cover that can stay in the open position during installation
- “ PV Negative bus bar with 14 useable openings (10 #14-6 and 4 #1/0-14)
- “ Chassis ground bus bar with 14 useable openings (10 #14-6 and 4 #1/0-14)
- “ Standard DIN rail to mount up to 6 breakers or 4 fuse holders (MNPV6)
- “ Tin plated copper bus bar to combine breaker outputs (MNPV6 busbar may be split in two)
- “ Dead front cover snaps into place after wiring is complete for safety
- “ Knock outs for PV in and PV out on bottom and sides
- “ Top surface is available to bring conduit in from directly above the enclosure



|        |                                  |         |
|--------|----------------------------------|---------|
| 30-830 | MNPV3 PV Combiner Box, 3 strings | \$ 99   |
| 30-831 | MNPV6 PV Combiner Box, 6 strings | \$127   |
| 53-931 | Breakers, 6-30 Amp               | \$25/ea |

## OutBack

### FLEXware PV Combiners

The OutBack Power Systems FLEXware PV combiner series is ideal for both small or large power systems. The FLEXware PV8 and FLEXware PV12 accommodates the over current protection requirements of PV source circuits. From 150 Vdc breakers for low voltage PV systems, to 600 Vdc fuse holders for high voltage PV systems, the FLEXware PV Combiner series handles it all.

Designed to survive in outdoor environments, the rainproof, UL type 3R powder coated aluminum chassis can be mounted on a wall, pole or sloped on 3/12 roof pitch. The angled negative terminal bus bar design makes wiring fast and easy. Dual output combining bus bars with lug terminals are included for up to 2/0 AWG conductors. The tinted flame retardant polycarbonate dead front panel creates a clean appearance while preventing accidental contact with the live terminals. All include GND bus bar. Order circuit breakers or fuse and fuse holders separately. ETL listed in Canada.

FWPV-8 enclosure (size: 15" x 9" x 4") has two 1" and ten 1/2" knockouts

FWPV-12 enclosure (size: 15" x 13" x 4") has two 1" knockouts and fourteen 1/2" knockouts

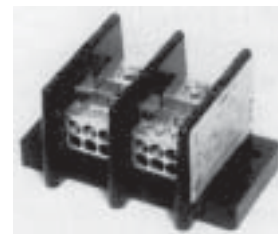


|        |                              |         |
|--------|------------------------------|---------|
| 30-833 | Outback FWPV-8 Combiner Box  | \$198   |
| 30-834 | Outback FWPV-12 Combiner Box | \$275   |
| 53-931 | Breakers, 6-30 Amp           | \$25/ea |

## Power Distribution Blocks

Use these blocks to split primary power into secondary circuits, or join cables from solar array to a power lead-in cable. Install cables and tighten set screws. These are CSA certified for up to 600 volts. The terminal blocks are made of zinc plated aluminum, for use with aluminum or copper wire. Two poles. Primary side accepts one large cable, secondary side accepts six smaller cables.

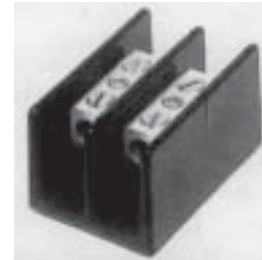
| Catalog# | Primary Wire Size | Secondary Wire Size & Quantity | Amp Rating | Price |
|----------|-------------------|--------------------------------|------------|-------|
| 53-810   | #8 to 2/0         | #6 to #14 (6)                  | 175        | \$69  |
| 53-812   | #6 to 6/0         | #4 to #14 (6)                  | 310        | \$85  |



## Feed Through/Splicer Blocks

Use these blocks to splice two wires of up to #1/0 gauge. They are UL Recognized and CSA certified for up to 600 volts. Terminal blocks are made of zinc-plated aluminum, for use with aluminum or copper conductors. Two poles and 3- pole blocks. One connection on each side.

|        |                      |      |
|--------|----------------------|------|
| 53-814 | 2-Pole Splicer Block | \$29 |
|--------|----------------------|------|



# Special Controls

## Xantrex Alternator Regulator

With the Xantrex Alternator Regulator, you can turn your high output engine alternator into a powerful three-stage battery charger.

|        |                                   |       |
|--------|-----------------------------------|-------|
| 20-432 | Xantrex Alternator Regulator, 12V | \$325 |
| 20-433 | Xantrex Alternator Regulator, 24V | \$450 |



## Panelsource Generator Auto Start Control

The Panelsource provides reliable automatic start/stop and protection control for all types of engine-driven equipment. The operating voltage is 3.5 to 30 VDC continuous and operates in -40C. The Panelsource comes set up for 12 volt generator starting batteries but the 12 volt relay maybe replaced by a 24 volt relay. If using the Panelsource to start the generator on low battery voltage, connect a Voltage Controlled Switch or the Aux relay on Trace SW series inverters to the Panelsource input. 3 year warranty. Features: Replaceable relays, rated at 5 amps • Auto reset fusing • Reversed polarity protection • Failure input light • Multifunction timer output (glow plug, SmartChoke and Slow timer) • Zero speed re-crank • Oil pressure verification

|        |                       |       |
|--------|-----------------------|-------|
| 20-430 | Panelsource Generator | \$499 |
| 20-431 | Annunciation Terminal | \$ 45 |



## Automatic Transfer Switch

Safely connect an inverter and an AC generator to the same house wiring. For use with inverters that do not have built-in transfer switch capability. If the generator is not running, the inverter is connected to the house wiring. When the generator is started, the house wiring is automatically disconnected from the inverter and connected to the generator. A time delay feature allows the generator to warm-up before the transfer takes place. The 52-120 is for 120 volt generators and inverters and its use is code approved with installation to Xantrex DR or SW series inverters in an RV or boat where the neutral and line terminals must both be switched.

| Catalog # | AC Amps | Generator KW | Dimensions   | Price |
|-----------|---------|--------------|--------------|-------|
| 52-120    | 30      | 3.6          | 6" x 6" x 4" | \$119 |



## Pathmaker

Pathmaker is a battery combiner that automatically connects 2 or 3 banks for simultaneous charging and isolates them during discharge.

|        |                   |       |
|--------|-------------------|-------|
| 20-434 | Pathmaker 100 Amp | \$269 |
| 20-435 | Pathmaker 250 Amp | \$649 |



# DC Power Meters

## Hoyt Induction Amp Meters

These meters read DC current through a wire that is placed in a slot on the back-frame of the meter case. No electrical connections are needed. The 30 Amp meter will work with wires up to #6 gauge. The dual Range meter has a 75 amp scale and a 600 amp scale, with separate slots on the back-frame case for each scale. The large slot will accept up to #2/0 gauge wire.

- 28-763 Hoyt 30 Amp Induction Amp Meter \$ 36
- 28-900 Hoyt Dual Range Induction Amp Meter \$ 39



## DC Digital Multimeter w/Alarm

Displays 7-60 DC Volts and up to 500 Amps. Settable high and low audio and visual alarms. Includes 500 amp shunt, splashproof front and less than 1 watt power consumption.

- 28-630 Dilgital Multimeter \$ 225

## Digital AC/DC Clamp Multimeter CM-01

Compact, slides easy into tight places. For testing input and output voltages and amperage of battery, generator, inverter, solar system, charger, etc.  
Voltage range: 0-400V AC/DC  
Amperage range: 0-200A AC/DC



- 28-700 CM-01 Clamp Meter \$ 139

# AC Power Meters



## Kill A Watt Electricity Usage Monitor

For the individual who is energy conscientious, you can reduce energy costs and identify power hog appliances. Simply plug your appliances into Kill A Watt and it will assess how efficient they really are. Kill A Watt will track consumption and you can figure out your electrical expenses by the day, week, month, or year. Know where your power is going, acquire money saving information from the Kill A Watt.

- 28-802 Kill A Watt \$34

## AC Kilowatt-Hour Meter

Use this meter to measure inverter power delivered to a load, or determine the power an intermittent AC load is using. If you are selling power back to the grid, you can keep track of how much they owe you. These meters have been removed from service and reconditioned. Order a raintight meter base to mount and connect wires to the meter. For use on 120 or 120/240 VAC systems. Maximum current 100 amps. Must be mounted vertically. ideal for use with utility intertie systems.

- 28-920 Kilowatt Hour Meter \$50
- 28-921 Base for KWH Meter \$39



# Inverter Accessories

## Inverter Supply Cable Sizing

Low voltage DC power systems with inverters can have very high current flows in the cables that connect the inverter to the battery bank. Large AC loads like microwave ovens, well pumps, toasters, irons and washers can cause an inverter to draw well over 100 amps in normal operation. Large motors may draw 300 to 500 amps at start up. Using the proper size supply cables to the inverter and for connections between battery cells, will effect the operation of appliances. Cables that are too small will limit the current available to the inverter and may prevent a large load from operating or cause the inverter to shut-down.

All cables used to connect battery cells together in series to increase voltage, and batteries parallel connected together to increase total capacity in inverter power supply systems larger than 1000 watts should not be sized smaller than #2/0 or the inverter may not function properly.

Power systems with 12 volt inverters with outputs of less than 1000 watts can use #2 or larger supply cables; 12 Volt inverters from 1000 to 2000 watts should use #2/0 cables; 12 volt 2500 watt inverters should use #2/0 to #4/0 cables; 24 volt inverters from 2600 to 4000 watts should use #2/0 cables; 48 volt inverters from 3000 to 5500 watts should use #2/0 cables. We recommend using #4/0 cables with all dual inverter systems above 2500 watts, regardless of input voltage.

### Recommended Cable, Fuse and Breaker Sizes for Inverters

| Size & Model Inverter | Maximum Continuous Amps | Recommended Breaker Size | Recommended Cl. T Fuse Size | Minimum Cable Size |
|-----------------------|-------------------------|--------------------------|-----------------------------|--------------------|
| 1512                  | 160                     | 175                      | 200                         | 2/0                |
| 1524                  | 80                      | 175                      | 200                         | 1/0                |
| 2424                  | 128                     | 175                      | 200                         | 2/0                |
| 2812                  | 275                     | 250*                     | 400                         | 4/0                |
| 4024                  | 214                     | 250                      | 400                         | 4/0                |
| 4548                  | 107                     | 175                      | 200                         | 2/0                |

\* May not allow maximum continuous operation at full power  
Use Larger cables for long wire runs

## Inverter Power Supply Cables

We make these inverter power cable, in-house, from the finest quality materials available .All cable sizes have fine-stranded very low resistant soft copper wires enclosed in a CSA approved insulated neoprene cover. The cable terminal ends are low-resistance, heavy tinned copper, double crimped onto the cable and covered with color coded self-sealing heat shrink tubing to prevent oxidation and corrosion. Order the cable gauge specified for your inverter size, and a length which will allow installing the inverter as near your battery bank as possible. We provide these cables in Color Coded sets—Red is positive and Black is negative. The split cable option allows inserting a Class `T` or other type of safety fuse into the positive inverter cable.

### Inverter Cable Sets Specifications & Pricing

| Catalog # | Description       | Gauge | Length | Price |
|-----------|-------------------|-------|--------|-------|
| 50-970    | Cable Set         | 1/0   | 5`     | \$70  |
| 50-971    | Cable Set         | 1/0   | 8`     | \$85  |
| 50-976    | Cable Set         | 2/0   | 5`     | \$100 |
| 50-977    | Cable Set         | 2/0   | 8`     | \$120 |
| 50-978    | Cable Set         | 2/0   | 10`    | \$150 |
| 50-982    | Cable Set         | 4/0   | 5`     | \$120 |
| 50-983    | Cable Set         | 4/0   | 8`     | \$175 |
| 50-984    | Cable Set         | 4/0   | 10`    | \$200 |
| 50-985    | Split For Fuse1/0 |       |        | \$10  |
| 50-986    | Split For Fuse2/0 |       |        | \$15  |
| 50-987    | Split for Fuse4/0 |       |        | \$20  |



## Inverter Bypass Switch

This item is wired between your inverter, generator and load center, it allows you to bypass the inverter in case of an inverter failure. After the bypass switch is thrown, the inverter can be removed for repair and the generator is connected directly to the load center, without the power passing through the inverter. This is designed for inverters with built-in transfer switches. Maximum current rating for the switch is 60 amps. All components are cUL listed. It can also be used to shut down a wind generator by shorting to output leads from the generator.

53-650 Inverter Bypass

\$219

# DC Disconnects

You can use DC Disconnect/Breakers to assemble your own custom power safety and control system. There are knockouts on the sides for up to four smaller disconnect/breakers to protect DC load circuits and act as solar array disconnects. The bond block allows easy connection of all negative cables and wires in the system at the same point without having to install crimp-on terminals. There are predrilled positions inside the enclosure if you want to add a shunt for a remote amp-hour meter. There are knockouts on the top to match one MPPT solar charge controllers, or two C Series or Tri-Star charge controls.

There are variable sized knockouts, for up to 2" openings, on the sides and bottom of the enclosure to mate with conduit boxes from one or two TR series or other inverters and for entry of inverter supply cables from the battery bank allowing clean and simple connections. Add disconnects from 15 amp up to 75 amp for DC load and PV array breaker/disconnects.

## Xantrex DC Disconnect/Breaker Switches

These Xantrex DC Disconnects allow you to assemble a complete power system to go with your inverter(s). It comes with a main disconnect circuit breaker and is pre-drilled to accept the options listed below. There is room for a second main disconnect breaker if your system has two inverters. Use a 2" offset nipple to attach the disconnect to any TR series conduit box. Weighs 7 kg.



|        |                     |       |
|--------|---------------------|-------|
| 30-102 | 250 Amp Disconnect  | \$399 |
| 30-101 | 175 Amp Disconnect  | \$399 |
| 30-103 | DC Bond Block       | \$ 90 |
| 53-400 | 250 Amp 2nd Breaker | \$239 |
| 53-401 | 175 Amp 2nd Breaker | \$239 |
| 53-406 | 15 Amp Breaker      | \$ 39 |
| 53-404 | 20 Amp Breaker      | \$ 39 |
| 53-407 | 30 Amp Breaker      | \$ 45 |
| 53-409 | 60 Amp Breaker      | \$ 49 |
| 53-410 | 75 Amp Breaker      | \$ 55 |
| 53-490 | Offset Switch       | \$ 15 |

## MidNite Solar

### Mini-DC Disconnect Power Center

Use this small DC disconnect, which includes the inverter breaker, to provide overcurrent protection for any single inverter. It has a DIN rail for additional rail mounted breakers for DC inputs or loads and it is pre-drilled for a shunt and optional bus bars listed below. The white powder-coated aluminum chassis measures 10" X 5" X 18" and weighs 7 pounds. Three main breakers sizes are available.

|        |                         |       |
|--------|-------------------------|-------|
| 30-130 | MNDC-175 Amp Disconnect | \$299 |
| 30-131 | MNDC-250 Amp Disconnect | \$299 |



## OutBack Power Systems

### FLEXware FW250

For single inverter applications the FW250 enclosure accommodates all of the essential protective devices in the smallest possible space. Utilizing an extremely compact design, one FW250 enclosure can be mounted on each end of a single FX Series Inverter/Charger. The FW250 enclosure is Type-1 indoor (IP30) constructed of silver powder-coated aluminum, includes a generous collection of wiring knockouts and has been ETL listed to UL specifications for USA and Canada. It provides eight breaker spaces (3/4 W PNL mount) for battery, PV array or PV GFP breakers and mounting locations for AC GFCI outlet, AC breakers and an Input-Output-Bypass Assembly. Also space for one 175A or 250 Amp panel mount breaker and a GFCI-AC outlet (not included). Unit size - inches (H x W x D) = 7.5 x 6.5 x 8.6. Includes: Ground bus bar, DC breaker handle guard, breaker mounting hardware and enclosure mounting hardware.



|        |                          |        |
|--------|--------------------------|--------|
| 30-140 | FLEXWare FW250 enclosure | \$ 139 |
|--------|--------------------------|--------|

# Circuit Breakers & Panels

## Blue Sea DC Circuit Breaker/Disconnects

These circuit breakers are vapour proof, weatherproof, and combine switching and circuit breaker function into one unit. They are designed to trip when subjected to a fault current, even if the reset lever is held in the ON position. Maximum: 48 volt DC and 5000 Amps @ 24 volts

53-301                      **Circuit Breaker**    **\$ 49**  
                                  **DC Amperages available 50, 60, 70, 80, 100, 120, 150**



## Blue Sea Circuit Breaker Panel

Five 15 Amp A-Series circuit breakers installed, 3 blank positions, 30 Common DC labels. Flush mount.

53-313                      **Blue Sea DC 8 Circuit Breaker**    **\$ 209**



Three 15 Amp A-Series Circuit breakers installed. Flush mount.

53-312                      **Blue Sea DC 3 Circuit Breaker**    **\$ 149**



## DC Series Circuit Breakers

Single Pole 15 Ampere main protection fits panels above.

53-314                      **Blue Sea DC Series Circuit Breaker**    **\$ 19**



## OutBack Circuit Breakers/Disconnects

Single Pole panel mount breakers for FLEXware power centers and MidNite solar E-panels 1 - 250 Amp

53-935                      **OBB-X-150VDC/120VAC-PNL Breaker 1/10/15/20/30/60/80Amp**                      **\$ 35**  
 53-936                      **OBB-X-150VDC-PNL Circuit Breaker 40/50/70Amp**    **\$ 41**  
 53-937                      **OBB-X-150VDC-PNL Circuit Breaker 100or 125Amp**    **\$ 89**  
 53-938                      **OBB-X-150VDC-PNL Circuit Breaker 175 or 250Amp**    **\$ 149**



DIN mount AC breakers with set-screw compression terminals for FLEXware and E-panels

53-941                      **OBB-X-120VAC-DIN 10/15/20/30/50/60Amp single pole**    **\$ 29**  
 53-942                      **OBB-X-120/240VAC-DIN 15/20/25/30/50/60Amp double pole**    **\$ 55**

DIN mount DC breakers with set-screw compression terminals for OutBack PSPV and MidNite MNPV or for DC circuits in FLEXware and E-panels

53-931                      **OBB-X-150VDC-DIN 1/2/3/4/5/6/8/9/10/12/15/20/30/50/60/63Amp**    **\$ 25**



# Fuses & Fuse Blocks



## Blue Seas ATC 12 Circuit Fuse Block

This blade fuse block accepts lugs on a 3/16 stud for positive and negative feeds, and has 5/32 screws for connection to the positive and negative bus bars. The tin plated buses and fuse clips have a 30 amp rating per circuit. The clear cover insulates all conductive parts and comes with recesses for circuit labelling.

- maximum voltage: 32 VDC
- maximum amperage per block: 100 Amp

53-341                      ATC 12 Circuit Fuse Block                      \$ 49



## Blue Seas ATC 6 Circuit Fuse Block

This blade fuse block accepts lugs on a 3/16 stud for positive and negative feeds, and has 5/32 screws for connection to the positive and negative bus bars. The tin plated buses and fuse clips have a 30 amp rating per circuit. The clear cover insulates all conductive parts and comes with recesses for circuit labelling.

- maximum voltage: 32 VDC
- maximum amperage per block: 100 Amp

53-342                      ATC 6 Circuit Fuse Block                      \$ 35



## ATC Fuses

These Blade type fuses were designed for the automobile industry. They provide better contact and less current resistance than glass tube AGC fuses. These fuses fit in the ATC Fuse Box, ATC Fuse Blocks and in the Inline ATC Fuse Holder. They come in packages of 10 in 5, 10, 15, 20, 25 and 30 amp sizes, but any number below 10 can be ordered at \$0.65 each. Specify fuse amp size when ordering.

53-180                      Package of 10 fuses, any size.                      \$ 6.25



## ATC Inline Fuse Holder

This inline ATC Fuse Holder has a snap-on water resistant cover and makes this an excellent choice to fuse a single DC circuit indoors or out. Just cut the #10 gauge wire loop and splice into the line. Price includes one ATC fuse, above, size of your choice.

53-160                      Inline ATC Fuse Holder                      \$ 5



## PowerPost Plus Cable Connector

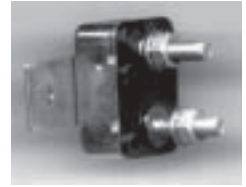
This 150 ampere bus allows small wire connections at high amperage, heavy gauge cable connections.

53-815                      PowerPost Plus Cable Connector                      \$ 15

# DC Safety Fusing & Grounding

## Self Resetting 30 & 50 Amp DC Breakers

Wire terminals bolt to breaker on #10 studs. Breaker has mounting bracket. Thermal/short circuit breaker opens when current is exceeded and closes automatically when overload condition is repaired. For 12 volt DC only.



|        |                           |       |
|--------|---------------------------|-------|
| 53-138 | 30 Amp Auto-Reset Breaker | \$ 12 |
| 53-262 | 50 Amp Auto-Reset Breaker | \$ 15 |

## ANL Fuses

Use these to fuse main battery cables or large inverters. The ANN 300 amp fuse works well on 12 volt 2500 watt inverters and the ANN 250 works well on 24 volt 2600 watt inverters. Use a 100 amp fuse for inverters from 400 to 800 watts. ANN fuses are not CSA or UL listed, if you want to adhere to the Electrical Codes for interrupting capacity, use the Class T fuses. The fuse holder and cover below holds all ANN fuse sizes. Weight .1 Kg.

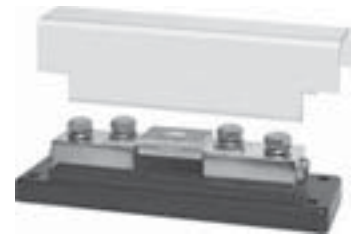
| Catalog # | Fuse Type | Amperage | Price |
|-----------|-----------|----------|-------|
| 53-235    | ANL100    | 100      | \$ 20 |
| 53-240    | ANL150    | 150      | \$ 20 |
| 53-245    | ANL200    | 200      | \$ 20 |
| 53-250    | ANL250    | 250      | \$ 22 |
| 53-255    | ANL300    | 300      | \$ 22 |
| 53-265    | ANL400    | 400      | \$ 22 |
| 53-270    | ANL500    | 500      | \$ 22 |



## Fuse Block & Cover for ANN Fuses

Use this fuse block with the fuses listed above. It has two 3/8" bolts to attach fuse and cable lugs. Attach large cables to fuse block with ring terminals with 3/8" lug holes. We supply custom made #2, #1/0, 2/0, 4/0 and 6/0 color coded battery and inverter cables. The insulating clear plastic fuse cover is included with the fuse block.

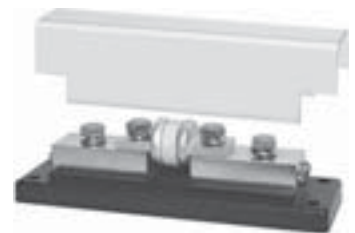
|        |                                      |       |
|--------|--------------------------------------|-------|
| 53-275 | Fuse Block for ANL Fuse (100-300Amp) | \$ 59 |
| 53-276 | Fuse Block for ANL Fuse (350-500Amp) | \$ 85 |



## Class `T` Fuse Blocks w/ Fuses

Use this single pole fuse block to fuse inverters or other large DC loads. It is easy to install. Just cut the positive battery cable, remove 1" of insulation on each side of the cut, insert the bare cable ends in the lugs on each end of the fuse block and tighten the set screws. A fuse comes installed in the block. It is simple to replace if it ever fails, due to a short circuit condition or excessive current overload. The 110 and 200 amp units will accept up to #2/0 cable. The 300 and 400 amp models will accept up to #4/0 cables. The fuse cover is tough polycarbonate see-through. Order replacement fuses below.

|        |                              |        |
|--------|------------------------------|--------|
| 53-450 | Class T 110 Amp Fuse & Block | \$ 89  |
| 53-452 | Class T 200 Amp Fuse & Block | \$ 89  |
| 53-453 | Class T 300 Amp Fuse & Block | \$ 110 |
| 53-454 | Class T 400 Amp Fuse & Block | \$ 110 |



## Class T Fuses

These fuses exceed the 20,000 amp interrupting capacity required to protect Square-D brand circuit breakers in DC load centers.

|        |                      |       |
|--------|----------------------|-------|
| 53-430 | Class T 110 Amp Fuse | \$ 29 |
| 53-435 | Class T 200 Amp Fuse | \$ 29 |
| 53-441 | Class T 300 Amp Fuse | \$ 50 |
| 53-440 | Class T 400 Amp Fuse | \$ 50 |



# Cable, Wire & Grounding

## Battery & Inverter Cable

Single conductor fine stranded copper cable for high amperage low-resistance applications. Use this for battery to battery interconnects, inverter input and main feeds between batteries and load centers or high amperage disconnects. 100% stranded copper wire. The insulation is resistant to gas, oil, water and grease.

All sizes listed below are available with **Black** insulation and supplied by our Canadian cable suppliers. Cables sizes listed with **Red** insulation are special order. **Specify x = R for Red, or B for Black insulation.**



| Catalog# | Gauge | Black Price/Ft. | Red Price/Ft. |
|----------|-------|-----------------|---------------|
| 58-074-x | 6     | \$ 0.89         | \$ 1.19       |
| 58-069-x | 4     | \$ 1.10         | \$ 1.45       |
| 58-064-x | 2     | \$ 2.45         | \$ 2.85       |
| 58-070-x | 1/0   | \$ 2.85         | \$ 3.75       |
| 58-079-x | 2/0   | \$ 4.35         | \$ 4.69       |
| 58-084-x | 4/0   | \$ 4.99         | \$ 7.44       |

## Type RW-90 Wire

This wire is stranded copper alloy and is DirectBurial/Sunlight Proof. Use this for lead-in from PV arrays, wind and hydroelectric generators, and from charge controller to battery circuits. This wire is an excellent choice for the two main DC bus wires feeding power to secondary DC load circuits. It may be used for AC or DC wiring up to 600 volts. Insulation is cross linked polyethylene. #8 & #6 gauge come with black or white insulation. #4 gauge is available with black insulation only.



| Catalog# | Gauge | Special Order Call For Quote |
|----------|-------|------------------------------|
| 58-134   | 8     | Special Order Call For Quote |
| 58-129   | 6     |                              |
| 58-124   | 4     |                              |
| 58-119   | 1     |                              |
| 58-117   | 1/0   |                              |
| 58-116   | 2/0   |                              |

## Type TC Cable Direct Burial Sunlight Proof

This flexible 2 conductor wire is excellent for outdoor applications like PV array lead-in where the current is not over 20 amps and the runs are short (less than 30 feet), and for sub array wiring. It may be buried directly in the ground or exposed to direct sunlight. It is UL approved. 6 gauge wire special order.



| Catalog# | Gauge | Price/Ft. |
|----------|-------|-----------|
| 58-099   | 10/2  | \$ 1.85   |
| 58-094   | 8/2   | \$ 3.10   |
| 58-096   | 6/2   | \$ 5.35   |
| 58-097   | 4/2   | \$ 6.95   |

## Duplex Primary Wire Two Conductor Stranded Wire

This cable is 100% copper low resistance wire with two color coded conductors of primary enclosed in grey PVC insulation. It is commonly used for PV module interconnects, low voltage house wiring and DC pump wires. Since it is stranded, it can also be used in boats and RVs where vibration is encountered.



| Catalog#  | Gauge | Price/Ft. |
|-----------|-------|-----------|
| 58-024    | 12    | \$ 0.60   |
| 58-019-10 | 10    | \$ 0.95   |
| 58-019-8  | 8     | \$        |

## Twisted-Pair Meter Wire

Use these twisted-pair wires for the TriMetric or E-Meter, which requires twisted pairs. Only 6 conductors are needed for the standard E-Meter. The TriMetric requires only 4 twisted pair wire for installing.



| Catalog# | Gauge & Description | Price/Ft. |
|----------|---------------------|-----------|
| 58-017   | 22/4 Wires          | \$ 0.60   |
| 58-018   | 18/4 Wires          | \$ 0.60   |
| 58-015   | 22/8 Wires          | \$ 0.55   |
| 58-028   | 18/2 Sensor W.      | \$ 0.49   |

## Submersible Pump Wire

Two conductor low-resistance stranded copper pump wire for the Shurflo 9300 pumps. Three conductor pump wire is required for ETA & Grundfos deep well solar pumps.

| Catalog# | Gauge & Description | Price/Ft. |
|----------|---------------------|-----------|
| 58-144   | #8/2 sub pump wire  | \$ 1.95   |
| 58-145   | #10/2 sub pump wire | \$ 1.50   |
| 58-146   | #8/3 sub pump wire  | \$ 3.25   |

# Cable Lugs & Wire Terminal s

## Barrel Connectors

These CSA approved connectors are tin plated high strength aluminum alloy. They can be used with copper or aluminum wire. Set screw holds wire into terminal. Single or double barrel connectors .1 Kg.

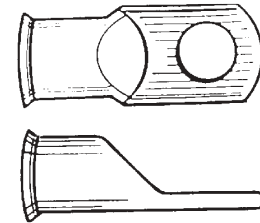
| Catalog#                        | Wire Range | Stud Size | Price    |
|---------------------------------|------------|-----------|----------|
| <b>Single Barrel Connectors</b> |            |           |          |
| 53-831                          | #2 - #14   | 1/4"      | \$ 2.25  |
| 53-832                          | #2/0 - #14 | 1/4"      | \$ 5.00  |
| 53-833                          | #4/0 - #6  | 3/8"      | \$ 10.75 |
| <b>Double Barrel Connectors</b> |            |           |          |
| 53-834                          | #2/0 - #14 | 1/4"      | \$ 9.95  |
| 53-836                          | #4/0 - #6  | 3/8"      | \$ 26.00 |



## CSA Approved Copper Tube Lugs

These lugs are made from tin plated copper tube with 3/8" stud holes. They are lighter than the lugs below, but heavier than standard industrial lugs. They can be soldered or crimped to stranded cable.

| Catalog# | Wire Size | Price   |
|----------|-----------|---------|
| 59-706   | 6         | \$ 1.45 |
| 59-704   | 4         | \$ 1.50 |
| 59-702   | 2         | \$ 1.75 |
| 59-701   | 1         | \$ 2    |
| 59-710   | 1/0       | \$ 2.50 |
| 59-720   | 2/0       | \$ 2.75 |
| 59-740   | 4/0       | \$ 3.50 |



## Heavy Duty Copper Crimp Lugs

These are super heavy duty tin plated copper lugs with 3/8" stud holes. These can be crimped onto any size cable listed by using a 6" or larger jawed shop vice. These are the highest quality large cable lugs we can find. We recommend covering these with heat shrink tubing after the crimps are made.

| Catalog# | Wire Size | Price   |
|----------|-----------|---------|
| 59-802   | 2         | \$ 5.00 |
| 59-810   | 1/0       | \$ 5.50 |
| 59-820   | 2/0       | \$ 6.00 |
| 59-840   | 4/0       | \$ 7.00 |



## Split Bolt Connectors

Use these to splice large wires for maximum joining integrity. Cast copper alloy for copper wire only.

| Catalog# | Max Wire Size | Price    |
|----------|---------------|----------|
| 59-010   | #6 AWG        | \$ 6.50  |
| 59-004   | 2 AWG         | \$ 11.80 |
| 59-006   | 2/0 AWG       | \$ 20    |



## Heavy Tinned-Copper Long & Short Barrel Crimp-on Terminals

These tin plated copper wire terminals are designed for a maximum of wire contact length in the crimp-on barrel section for a minimum resistance integrity. Can be easily crimped with a regular hand held tool or crimp in a shop-vice for maximum compression. Use for long lead-in circuits in high amp output PV arrays, wind generators and hydroelectric systems. All terminals have an opening on the lug end of the barrel for soldering the crimped section and wire insert. All terminal sizes come with a choice of barrel lengths: Short-1/2" to 5/8" and Long 5/8" to 7/8". **These terminals are sold in pairs of two.**



| Catalog# | Wire Size | Stud Size | Price Per Pair |
|----------|-----------|-----------|----------------|
| 59-114   | 8         | 1/4"      | \$ 5           |
| 59-124   | 8         | 5/16"     | \$ 5           |
| 59-138   | 8         | 3/8"      | \$ 5           |
| 59-134   | 6         | 1/4"      | \$ 5.50        |
| 59-146   | 6         | 5/16"     | \$ 5.50        |
| 59-150   | 6         | 3/8"      | \$ 5.50        |
| 59-144   | 4         | 1/4"      | \$ 6.50        |
| 59-148   | 4         | 5/16"     | \$ 6.50        |
| 59-088   | 4         | 3/8"      | \$ 6.50        |

# Plugs & Receptacles



## 12 Volt DC Wall Plate Receptacle

This receptacle comes with a chrome plated cover that fits a standard single gang outlet box. This heavy duty outlet is made of brass and steel so it can handle up to 20 amps. The positive connection is a 10-32 threaded stud with nuts. The negative connection of the outlet is connected to the steel cover, so it is a good idea to use a steel junction box with the negative wire connected to the box as well as the negative lead on the outlet.

59-194 Wall Plate Receptacle \$ 8



## 12 Volt In-Line Receptacle

This cigarette lighter receptacle can handle up to 20 amp of load at 12 volts DC. Wires are 16 gauge 12 inches long.

56-003 In-Line Receptacle Black \$ 9



## 12 Volt Plug

This heavy-duty plug is made from high heat thermo-set plastic to prevent distortion at high temperatures. It comes with an easy to replace 3 amp glass fuse, but any AGC type fuse up to 15 amps may be used. Wire connections should be soldered. Screw together assembly requires no tools.

56-001 Cigarette Lighter Plug \$ 6



## Wall Outlet for 12VDC

This 240 volt, 15 amp receptacle is useful as a unique DC load receptacle which will not be inadvertently confused for 110VAC circuits in the off-grid home. If you have a large power tool it will usually have a 240 volt 20 amp plug on it. The receptacles are duplex (two outlets) and they fit standard wiring boxes and standard duplex receptacle covers. Plugs are available.

52-981 DC/240VDC, 15 amp, Ivory \$ 7.50  
52-982 Plug - Black rubber \$ 5.00

## Switched Wall Receptacle

Some appliances such as a TV, VCR, Microwave oven, stereo and most appliances with built-in clocks are not actually off when not in use. These are `phantom` loads and if powered by an inverter will be parasitically drain your battery bank. We offer these to replace conventional wall switches and unsightly strip-plugs. When the plug is in the off position, no electrical current will flow from the plug in. These are rated at 15 amps AC, or 5 amps DC and fit into a standard wiring box. Available only with an Ivory switch handle.

52-980 Switched Wall Receptacle \$ 7.50

## DC Rated "Wall" Switches

These switches have extra heavy contacts allowing them to carry more current more efficiently than standard light switches. These are made for AC or DC wiring and they fit standard wiring boxes to simplify house wiring. The switch is available with a ivory switch handle. On-Off rating is 10 amps maximum. Maximum voltage is 125 VDC.

By using a pair of 3-way switches, you can turn on a light, electric motor or other DC loads in one place and turn it off in another.

52-962 On-Off DC Wall Switch \$ 5.50  
52-964 Three-Way DC Wall Switch \$ 7.50

# DC Timer & Switches

## 24 Hour 12 Volt DC Time Switch

This 12 volt time control is made by a leading manufacturer of timers. It has a very accurate quartz clock movement with 200 hour internal power reserve, so it keeps time even if it is disconnected from the battery or the battery gets low. It uses only 10 mA to operate and it can control up to 20 amps. Single pole double throw contacts can turn one thing on while turning another off. The timer can have up to three on-off operations per day. Minimum on or off time is 15 minutes. It works great for controlling lights, pumps, fans and appliances and it is small enough to fit inside many load centers and electrical enclosures. Dimensions are 2.8" x 4" x 2.5". It can be used to start and stop generators with proper generator control circuitry. Weight 1 Kg.

52-112

12V Time Switch

\$ 129



## Relays

### 12 Volt 40 Amp SPDT Relay

These single pole, double throw 40 amp relays are widely used in the automotive industry. Wires may be attached with 1/4" quick connect terminals or order the relay socket below. The socket has 14" wire leads attached. Nominal operating current is 140 mA. Dimensions are 1" x 1" x 1-1/2".

52-205

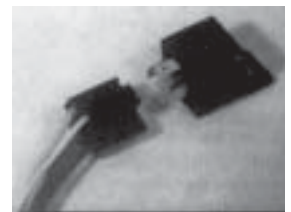
40A SPDT Relay

\$ 15.00

52-485

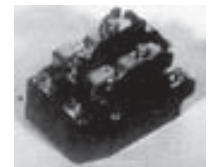
Relay Socket w/ 14" Lead Wires

\$ 7.50



### DPDT 30 Amp Relay

These double-pole double-throw relays can be used for up to 30 amps at 12 or 24 volts DC or 250 volts AC. All contact surfaces are silver alloy with gold flashing. Contact terminals are #8-32 screws and coil terminals are #6-32 screws. Relays with 120 VAC or 240 VAC coils can be used to build simple transfer switches. Relays with DC coils can be used for remote operation of pumps and fans.



| Coil Specifications |         | Catalog # | Price |
|---------------------|---------|-----------|-------|
| Voltage             | Current |           |       |
| 12 VDC              | 170 mA  | 52-748    | \$ 69 |
| 24 VDC              | 53 mA   | 52-749    | \$ 65 |
| 120 VAC             | 83 mA   | 52-847    | \$ 49 |
| 240 VAC             | 42 mA   | 52-848    | \$ 59 |