

MidNite Solar

E-Panel

The **MidNite Solar E-Panel** can help streamline the installation of most battery-based inverters. They come standard with the basic overcurrent protection and disconnects required to install your renewable energy system in compliance with NEC standards. E-Panels are Listed to applicable UL and CSA standards for U.S. and Canada.

MidNite Solar E-Panels for OutBack Inverters

OutBack inverters are mounted on a unique hinged door to minimize system footprint. They come standard with a left-hand hinge, allowing the charge controller to be mounted on the right. The **STS version** has additional space for the OutBack AC box with a surge arrestor for grid-tie applications, and the **AL-PLUS version** has room to mount an inverter and a charge controller on the door. Right-hand hinged doors are available by special order. Mounting brackets are included to aid in one-person installations. A main breaker, inverter cables, a 500 A/50 mV shunt for battery monitoring systems, a 175 A AC-power distribution block, a 50 A AC-input disconnect for a generator or utility input, and a 50 A AC bypass switch are included and pre-wired. E-panels for OutBack inverters also include a mounting bracket for an OutBack FM-series controller. Cutouts for mounting up to six additional 13mm DIN mount breakers are provided, as are cutouts for GFCI-style AC outlets and 3 panel-mount DC breaker slots. Circuit breakers and DC GFP are sold separately.



MidNite Solar E-Panels for OutBack Inverters		
Model	Description	Item code
MNE125ST-L	Gray steel chassis with 125 A inverter breaker – left hinge	034-05126
MNE175ST-L	Gray steel chassis with 175 A inverter breaker – left hinge	034-05130
MNE250ST-L	Gray steel chassis with 250 A inverter breaker – left hinge	034-05134
MNE125AL-L	White alum chassis with 125 A inverter breaker – left hinge	034-05138
MNE175AL-L	White alum chassis with 175 A inverter breaker – left hinge	034-05142
MNE250AL-L	White alum chassis with 250 A inverter breaker – left hinge	034-05146
MNE175AL-E	White alum chassis with 175 A inverter breaker for 230VAC Export	034-05150
MNE125STS-L	Gray steel stretched chassis with 125 A inverter breaker 15" wide – left hinge	034-05127
MNE175STS-L	Gray steel stretched chassis with 175 A inverter breaker 15" wide – left hinge	034-05131
MNE250STS-L	Gray steel stretched chassis with 250 A inverter breaker 15" wide – left hinge	034-05135
MNE125AL-PLUS	White alum wide chassis with 125 A inverter breaker with charge controller mount	034-05147
MNE175AL-PLUS	White alum wide chassis with 175 A inverter breaker with charge controller mount	034-05148
MNE250AL-PLUS	White alum wide chassis with 250 A inverter breaker with charge controller mount	034-05149

MidNite Solar E-Panels for Magnum Inverters

Magnum inverters are mounted on a unique hinged door to minimize system footprint. Mounting brackets are included to aid in one-person installations. They come with a main breaker, 2/0 inverter cables, a 500 A/50 mV shunt for battery monitoring systems, an AC input and bypass, PV input busbars, DIN rails, 3 panel-mount breaker knockouts, ground bus, remote display mounting brackets, a charge controller bracket, a wall mount bracket, and other hardware. 120/240 VAC models are for Magnum MS-PAE inverters.



MidNite Solar E-Panels for Magnum Inverters		
Model	Description	Item code
MNE175STM-L	Gray steel chassis with 175 A inverter breaker	034-05160
MNE250STM-L	Gray steel chassis with 250 A inverter breaker	034-05164
MNE175ALM-L	White aluminum chassis with 175 A inverter breaker	034-05168
MNE250ALM-L	White aluminum chassis with 250 A inverter breaker	034-05166
MNE175STM-L-240	White steel chassis with 175 A inverter breaker 120/240 VAC	034-05167
MNE250STM-L-240	White steel chassis with 250 A inverter breaker 120/240 VAC	034-05169
MNE125STMM-L	Gray steel chassis with 125 A inverter breaker for MM-series	034-05172



MidNite Solar E-Panel for Schneider Electric Conext XW

The **MNE250XW** or **MNE175XW** is mounted directly below the XW inverter. It includes a 250 A, or 175 A inverter battery breaker, AC inputs for generator and utility inputs, knockouts for up to 7 DIN mount breakers and 12-panel mount breakers, and a 500 A shunt. Tin-plated copper busbars connect to the XW's battery terminals. There are busbars for AC inputs, AC output, neutral, ground, PV + in, PV- in, Bat +, and Bat- covered by a metal dead-front behind the reversible door. Charge controllers mount to either or both sides. The AC bypass can be configured as input and output on/off as well as AC bypass. The XW MPPT controller requires no mounting bracket. **FM60**, **FM80**, and **Classic** controllers require right or left E-Panel charge controller mounting brackets. A right-hand bracket is included. The color-matched enclosure is 16"W x 18"H x 8"D, and weighs 42 lbs.

MidNite Solar E-Panels for Schneider Conext XW Inverters		
Model	Description	Item code
MNE250XW	E-panel to mount under one XW inverter, 250 A main DC breaker	034-05181
MNE175XW	E-panel to mount under one XW inverter, 175 A main DC breaker	034-05184
MNE-XW-L-bracket	Left-side charge controller bracket	034-05183

NEW! MidNite Solar E-Panels for SMA Sunny Island Inverters

The **MNSMA250MA-240 Single** is an e-panel mounted directly below a Sunny Island inverter. It includes a 250 A inverter battery breaker, dual 60 A AC input/output bypass breakers, terminal busbars for all connections, 500 A shunt, spaces for DIN, and panel mount DC breakers. For a single Sunny Island installation, the **MNSMA Autoformer** with 6 kW of capacity can be used to give 120/240 VAC output from a single Sunny Island, also for AC coupling a 240 VAC grid tie inverter.

For a dual Sunny Island installation, use one **MNSMA250MA-240 Dual-L** and one **MNSMA250MA-240 Dual-R** E-Panels with two 250 A inverter battery breakers, dual 60 A AC input/output bypass breakers, terminal busbars for all connections, 500 A shunt, spaces for DIN, and panel mount DC breakers.

For a quad stack Sunny Island installation, use one **MNSMA250MA-240 Quad-L** and three **MNSMA250MA-240 Quad-R** E-Panels with 125A AC output and bypass breakers, four 60 A AC input breakers, terminal busbars for all connections, 500 A shunt, and spaces for DIN and panel mount DC breakers.

The **MNSMA Back Long** back plate is used for a single Sunny Island, MNSMA Autoformer, and MNSMA250MA-240 Single for an AC-coupled system or off-grid system needing 120/240 VAC output. The **MNSMA Back Short** back plate is used for a single Sunny Island, MNSMA250MA-240 Single, and Classic charge controller.

The **MNBATTERY Combiner** combines the cables for up to 4 Sunny Island inverters up to AWG 4/0 cable each rated at 250 A, and it has a 1,000 A shunt.

The MNSMA E-panels are 20.5"H x 18.6"W x 9.6"D, weight 42 lbs, the MNSMA-Autoformer is 18.1"H x 16.4"W x 9.2"D with a weight of 74 lbs, and the MNBATTERY Combiner is 35.5"H x 22"W x 9.8"D with a weight of 49 lbs. The E-Panels and Autoformer are color-matched to the Sunny Island inverter.



MidNite Solar E-Panels for SMA Sunny Island Inverters		
Model	Description	Item code
MNSMAMA-240 Single	E-Panel to mount under a single Sunny Island inverter	034-00001
MNSMAMA-240 Dual-L	E-Panel for dual Sunny Island install on left side	034-00002
MNSMAMA-240 Dual-R	E-Panel for dual Sunny Island install on right side	034-00003
MNSMAMA-240 Quad-L	E-Panel for quad Sunny Island install on left side, one only	034-00004
MNSMAMA-240 Quad-R	E-Panel for quad Sunny Island install on right side, use three	034-00005
MNSMAMA-Autoformer	Autoformer for 120/240 VAC output from single Sunny Island	038-00001
MNBATTERY Combiner	Combiner for up to 4 inverters and battery bank, 250 A ea, w/ 1000 A shunt	034-00006
MNSMA Back Long	Back plate for Sunny Island, Autoformer, and E-Panel	034-00007
MNSMA Back Short	Back plate for Sunny Island, E-Panel, and Classic charge controller	034-00008

MidNite Solar E-Panel Lite for Other Inverters

The E-Panel Lite includes a left-hand door, inverter breaker, pre-wired AC input and bypass, 500 A/50 mV shunt, AC terminal blocks, DIN rails, wall mounting brackets, instructions and hardware.



MidNite Solar E-Panel Lite for Other Inverters		
Model	Description	Item code
MNE125LT	Gray steel chassis with 125 A inverter breaker (Lite)	034-05105
MNE175LT	Gray steel chassis with 175 A inverter breaker (Lite)	034-05109
MNE250LT	Gray steel chassis with 250 A inverter breaker (Lite)	034-05113
MNE125ALT	White alum chassis with 125 A inverter breaker (Lite)	034-05101
MNE175ALT	White alum chassis with 175 A inverter breaker (Lite)	034-05102
MNE250ALT	White alum chassis with 250 A inverter breaker (Lite)	034-05103

Other MidNite e-panels are available by special order; contact your AEE Solar Sales Representative for more information.

MidNite Solar Mini-DC Disconnect Power Center (MNDC)

Use this small DC disconnect, which includes the inverter breaker, to provide overcurrent protection for any single inverter. The **MNDC** comes with a DIN rail for 5 additional DC breakers for DC loads, a charge controller disconnect, a battery status monitor, etc. as well as a ground bus, and a 5/16" bonding battery negative stud. Mounting holes for a 500 A shunt are built in. The white powder-coated aluminum chassis measures 10"H x 5"W x 18"D and weighs 7 lbs. Three main breaker sizes are available. Left side main breaker placement is available by special order.

The **MNDC Plus version** has an additional DIN rail allowing up to 10 DIN mount breakers. Two DIN rail cover plates and two panel mount plates are included. The panel mount plates allow for mounting the ¾" 150 VDC breakers that range from 60 A to 100 A. Additional configurations include: an MNDC-GFP80 with 4 panel-mount breakers, or one MNDC-GFP, one ¾" panel mount breaker and 5 DIN mount breakers with a 125-250 A inverter breaker. Circuit breakers and DC GFP are sold separately. Mounting is provided for a 500 A shunt and an MNTBB-R terminal busbar. Battery negative stud and ground busbar included.



Mini-DC Disconnect Power Center (MNDC)		
Model	Description	Item code
MNDC125	125 A mini-DC disconnect	053-00091
MNDC175	175 A mini-DC disconnect	053-00092
MNDC250	250 A mini-DC disconnect	053-00093
MNDC125 Plus	125 A mini-DC disconnect	053-00096
MNDC175 Plus	175 A mini-DC disconnect	053-00097
MNDC250 Plus	250 A mini-DC disconnect	053-00098



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MidNite Solar Breaker Boxes and Wiring Accessories

The **Big Baby** is a small general purpose breaker box that will hold up to 4 DIN mount breakers from 1 to 63 A. It also includes a ground box lug and mounting provisions for a short insulated busbar. The Big Baby Box's dimensions are 9"H x 5"W x 4"D, and it weighs 3 lbs. The **MNEDC Quad** is the same size as the Big Baby but holds up to 4 MNEDC-type panel-mount AC/DC breakers or panel mount GFP breakers. The **MNDC15** is a general use enclosure that will hold up to 15 MNEDC type panel mount breakers, and one larger 175 or 250 A breaker on the end. Breakers are sold separately. The MNDC15 dimensions are: 23"H x 12"W x 3.5"D, and it weighs 25 lbs. These breaker boxes are listed to applicable UL standards.

Busbars

These UL Listed busbars can be used in the Mini-DC Disconnect above. Each MNT bar has colored insulation, 4 #1/0 and 11 #6 AWG usable wire slots with 10-32 screws, and is 4.63" long. The **MNS** is a shorter version, useful for PV+ input on the narrow OB E-Panel, Big Baby Box, Quad box and for a separate PV busbar for charge controllers. The MNS has 4 #6 and 2 #1/0 AWG wire slots. The **MNG** ground busbar is 3.45" long with green screws and has 2 #1/0 and 7 #6 AWG wire slots with mounting screws. The **Big Busbar** is a pair for positive and negative with 5 battery connections and 6 small wires. The **Shunt Busbar** has 4 studs besides the shunt connection. The **Big Breaker Bus** has 8 studs besides the large breaker connection.



Big Baby Box



Quad Box



MidNite Solar Baby Box Enclosures and Busbars		
Model	Description	Item code
Big Baby Box	Big Baby box breaker center holds 4 DIN DC breakers	053-00088
MNEDC QUAD	Quad breaker center holds 4 MNEDC ¾" DC breakers	053-00087
MNDC-15	Circuit breaker box for 15 panel-mount and one large panel-mount breaker	053-00086
MNTBB-R	Long Red terminal busbar	053-00105
MNTBB-B	Long Black terminal busbar	053-00106
MNTBB-W	Long White terminal busbar	053-00107
MNGBB	Long Ground busbar - 3.45" long	053-00100
MNSBB-R	Short Red terminal busbar	053-00108
MNSBB-B	Short Black terminal busbar	053-00109
MNSBB-W	Short White terminal busbar	053-00110
Big Busbar	Big busbar with 5 studs, insulator mounts, aux terminal bar, 280 A	053-00115
Shunt Busbar	Shunt busbar with 4 studs and short aux terminal bar	053-00117
Big Breaker Plus	Big breaker bus with 8 studs	053-00116



MNDC-15



Long Terminal Busbar



Short Terminal Busbar



Big Busbar



Shunt Busbar



Big Breaker Plus

Circuit Breakers

DC Ground Fault Protection Circuit Breakers

These breakers use a trip mechanism to connect battery negative and earth ground to open the larger breaker in case of a ground fault. The 2008 NEC requires DC ground fault protection on all solar installations. The DIN rail mount GFPs will mount in the Magnum MMP and MidNite E-panels. The panel mount GFPs will mount in the OutBack FLEXware enclosures and one or two poles in MidNite E-panels. The 100 A unit can be used normally as a 2 pole GFP, or with ungrounded arrays breaking positive and negative, or shunt tripped by a signal from a MidNite Classic charge controller.



DC Ground Fault Protection Circuit Breakers						
Amps	Poles	Mount type	Voltage rating	Width	Model	Item code
80 A	1	Panel with 1/4" studs	150 DC	1.5"	PNL-GFDI-80	053-03144
80 A	2	Panel with 1/4" studs	150 DC	2.25"	PNL-GFDI-80D	053-03145
80 A	4	Panel with 1/4" studs	150 DC	3.75"	PNL-GFDI-80Q	053-03146
63 A	1	DIN rail with screw lugs	150 DC	1"	MNDC-GFP63	053-03147
80 A	1	Panel with 1/4" studs	150 DC	1.5"	MNDC-GFP80	053-03148
50 A	1	DIN rail with screw lugs	300 DC	2"	MNDC-GFP50-300	053-03149
100 A	2	Panel with 1/4" studs	150 DC	3"	MNDC-GFP100-D	053-03150

DIN Mount AC Circuit Breakers

These are DIN mount AC breakers with set-screw compression terminals for #14 to #2 AWG wire. Use these for AC in OutBack FLEXware, MidNite E-panels, and Magnum panels.



DIN Mount AC Circuit Breakers						
Amps	Poles	Voltage rating	Width	OutBack Model	MidNite Model	Item code
10 A	1	120 AC	0.5"	DIN-10-AC-277	MNEAC10	053-03060
15 A	1	120 AC	0.5"	DIN-15-AC	MNEAC15	053-03061
15 A	2	120/240 AC	1"	DIN-15D-AC	MNEAC15-2P	053-03062
20 A	1	120 AC	0.5"	DIN-20-AC	MNEAC20	053-03063
20 A	2	120/240 AC	1"	DIN-20D-AC	MNEAC20-2P	053-03064
25 A	2	120/240 AC	1"	DIN-25D-AC	--	053-03065
15 A	1	277 AC	0.5"	DIN-15-AC-277	MNEAC15QZD	053-03066
30 A	1	277 AC	0.5"	DIN-30-AC-277	MNEAC30QZD	053-03067
30 A	2	277 AC	1"	DIN-30D-AC-480	MNEAC30QZD2P	053-03068
30 A	3	277/480 AC	1.5"	DIN-30T-AC-480	MNEAC30QZD3P	053-03069
50 A	1	277 AC	0.5"	DIN-50-AC-277	MNEAC50QZD	053-03070
50 A	2	277 AC	1"	DIN-50D-AC-480	MNEAC50QZD2P	053-03071
50 A	3	277/480 AC	1.5"	DIN-50T-AC-480	MNEAC50QZD3P	053-03072
60 A	1	277 AC	0.5"	DIN-60-AC-277	--	053-03073
60 A	2	277 AC	1"	DIN-60D-AC-480	MNEAC60QZD2P	053-03036



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DIN Mount DC Circuit Breakers

DIN rail mount breakers fit MidNite and Magnum enclosures, and MNPV and OutBack PV array combiners. The positive line should be connected to the + pole of the breaker. The maximum PV array voltage must not exceed the voltage rating of the breakers used.

DIN Mount 150 VDC Circuit Breakers					
Amps	Voltage rating	Width	OutBack Model	MidNite Model	Item code
1 A	150 DC	0.5"	DIN-1-DC	MNEPV1	053-03033
2 A	150 DC	0.5"	DIN-2-DC	MNEPV2	053-03034
3 A	150 DC	0.5"	DIN-3-DC	MNEPV3	053-03024
4 A	150 DC	0.5"	DIN-4-DC	MNEPV4	053-03020
5 A	150 DC	0.5"	DIN-5-DC	MNEPV5	053-03025
6 A	150 DC	0.5"	DIN-6-DC	MNEPV6	053-03021
8 A	150 DC	0.5"	DIN-8-DC	MNEPV8	053-03022
9 A	150 DC	0.5"	DIN-9-DC	MNEPV9	053-03023
10 A	150 DC	0.5"	DIN-10-DC	MNEPV10	053-03026
12 A	150 DC	0.5"	--	MNEPV12	053-03027
15 A	150 DC	0.5"	DIN-15-DC	MNEPV15	053-03029
20 A	150 DC	0.5"	--	MNEPV20	053-03030
30 A	150 DC	0.5"	--	MNEPV30	053-03032
40 A	150 DC	0.5"	--	MNEPV40	053-03039
50 A	150 DC	0.5"	--	MNEPV50	053-03035
60 A	150 DC	0.5"	--	MNEPV60	053-03037
63 A	150 DC	0.5"	--	MNEPV63	053-03038
80 A	150 DC	1.0"	--	MNEPV80	053-03133
100 A	150 DC	1.0"	--	MNEPV100	053-03134

DIN Mount 300 VDC Circuit Breakers					
Amps	Mount type	Voltage rating	Width	MidNite Model	Item code
7 A	DIN rail with screw lugs	300 DC	1"	MNEPV7-300	053-03107
10 A	DIN rail with screw lugs	300 DC	1"	MNEPV10-300	053-03110
12 A	DIN rail with screw lugs	300 DC	1"	MNEPV12-300	053-03112
15 A	DIN rail with screw lugs	300 DC	1"	MNEPV15-300	053-03115
20 A	DIN rail with screw lugs	300 DC	1"	MNEPV20-300	053-03120
30 A	DIN rail with screw lugs	300 DC	1"	MNEPV30-300	053-03125
50 A	DIN rail with screw lugs	300 DC	1"	MNEPV50-300	053-03130

DIN Mount 600 VDC Circuit Breakers					
Amps	Mount type	Voltage rating	Width	MidNite Model	Item code
16 A	DIN rail with screw lugs	600 DC	2"	MNEPV16-600	053-03116
20 A	DIN rail with screw lugs	600 DC	2"	MNEPV20-600	053-03121



Panel Mount AC/DC Circuit Breakers

These are single pole ¾" wide breakers with ¼" stud connections and require ring terminals on wires connected to them. These breakers can be used for DC protection in OutBack FLEXware enclosures, and MidNite E-panels (three spaces), or as AC breakers in the OutBack FLEXware 250. The 300 VDC and two pole AC breakers are double width and take two spaces. The AC breakers are for use with the Radian inverter GSLC panels.

Panel Mount AC/DC Circuit Breakers								
Amps	Poles	Voltage rating	Voltage rating	Width	OutBack Model	MidNite Model	Generic Model	Item code
1 A	1	120 AC	150 DC	0.75"	PNL-1-AC/DC	--	LELK1-1	053-03135
5 A	1	120 AC	150 DC	0.75"	PNL-5-AC/DC	MNEDC-5	LELK1-5	053-03136
10 A	1	120 AC	150 DC	0.75"	PNL-10-AC/DC	MNEDC-10	LELK1-10	053-03137
15 A	1	120 AC	150 DC	0.75"	PNL-15-AC/DC	MNEDC-15	LELK1-15	053-03138
20 A	1	120 AC	150 DC	0.75"	PNL-20-AC/DC	MNEDC-20	LELK1-20	053-03139
30 A	1	120 AC	150 DC	0.75"	PNL-30-AC/DC	MNEDC-30	LELK1-30	053-03140
40 A	1	120 AC	150 DC	0.75"	PNL-40-AC/DC	MNEDC-40	LELK1-40	053-03141
50 A	1	120 AC	150 DC	0.75"	PNL-50-AC/DC	MNEDC-50	LELK1-50	053-03142
60 A	1	120 AC	150 DC	0.75"	PNL-60-AC/DC	MNEDC-60	LELK1-60	053-03143
70 A	1	--	150 DC	0.75"	--	MNEDC-70	--	053-03151
80 A	1	--	150 DC	0.75"	PNL-80-DC	MNEDC-80	--	053-03152
100 A	1	--	150 DC	0.75"	--	MNEDC-100	--	053-03153
60 A	1	--	300 DC	1.5"	--	MNEDC60-300	--	053-03132
80 A	1	--	300 DC	1.5"	--	MNEDC80-300	--	053-03131
30 A	1	250 AC	--	0.75"	PNL-30-AC	--	--	053-16998
50 A	1	250 AC	--	0.75"	PNL-50D-AC-250	--	--	053-16999
50 A	2	240 AC	--	1.5"	PNL-50D-AC-120/240	--	--	053-17004



CD and GJ Panel Mount DC Circuit Breakers

These are single-pole panel mount breakers with stud terminals that require ring terminals on the wires connected to them (except the two items with lugs). Breakers up through 80 A can be used in the Conext XW Distribution Panel, and in the side knockouts of the old Xantrex/Trace DC Disconnect. The 100 A and larger DC breakers fit in the OutBack FLEXware enclosures and MidNite e-panels. Rated for 125 VDC only (except the 60 A lug breaker, which is rated at 160 VDC).

Panel Mount DC Circuit Breakers CD and GJ								
Amps	Poles	Stud size	Voltage rating	Width	OutBack Model	MidNite Model	Generic Model	Item code
10 A	1	1/4"	125 DC	1"	--	--	CD10	053-01010
15 A	1	1/4"	125 DC	1"	--	--	CD15	053-01015
20 A	1	1/4"	125 DC	1"	--	--	CD20	053-01020
30 A	1	1/4"	125 DC	1"	--	--	CD30	053-01025
50 A	1	1/4"	125 DC	1"	--	--	CD50	053-01030
60 A	1	1/4"	125 DC	1"	--	--	CD60	053-01035
60 A	1	#1/0 LUG	160 DC	1"	--	--	865-1075	053-01038
75 A	1	1/4"	125 DC	1"	--	--	CD75	053-01040
80 A	1	1/4"	125 DC	1"	--	--	CD80	053-01045
80 A	1	#1/0 LUG	125 DC	1"	--	--	865-1070	053-01039
100 A	1	5/16"	125 DC	1"	PNL-100-DC	--	CD100	053-01050
125 A	1	5/16"	125 DC	1"	PNL-125-DC	MNEDC125	CD125	053-01052
175 A	1	3/8"	125 DC	1.5"	PNL-175-DC	MNEDC175	GJ1-175-x	053-01053
250 A	1	3/8"	125 DC	1.5"	PNL-250-DC	MNEDC250	GJ1-250-x	053-01054



CF and GJ Surface (Back) Mount DC Circuit Breakers

These are surface mount breakers with screw lug terminals and a 10,000 A interrupting current for direct connection to a battery. Mounting feet on 10-100 A allow them to be bolted to the back panel in an enclosure. These breakers up through 100 A can be used in the Magnum MP panels and the Conext XW Distribution Panel and for custom DC control panels. All are rated for 125 VDC. The 175 A and 250 A require one rear mount kit each.

CF and GJ Surface (Back) Mount DC Circuit Breakers					
Amps	Max lug wire size	Voltage rating	Width	Generic Model	Item code
10 A	AWG # 1	125 DC	1"	CF-10	053-01011
15 A	AWG # 1	125 DC	1"	CF-15	053-01016
20 A	AWG # 1	125 DC	1"	CF-20	053-01021
30 A	AWG # 1	125 DC	1"	CF-30	053-01026
50 A	AWG # 1	125 DC	1"	CF-50	053-01031
60 A	AWG # 1	125 DC	1"	CF-60	053-01036
75 A	AWG # 1	125 DC	1"	CF-75	053-01041
100 A	AWG # 1	125 DC	1"	CF-100	053-01051
175 A	AWG # 4/0	125 DC	1.5"	GJ1-175-H3	053-01056
250 A	AWG # 4/0	125 DC	1.5"	GJ1-250-H3	053-01061
Rear mount kit for GJ1 breakers above					053-01066

Square-D QO Plug on Circuit Breakers

QO circuit breakers snap into QO load centers and are UL Listed for DC branch circuits up to 48 VDC (not for use in 48 VDC systems). They can be used for 120 VAC (1-pole), 120/240 VAC (2-pole) circuits, and 120/208 VAC three-phase (3 pole). Circuit breakers in 10 A to 30 A sizes can handle one or two #14 to #10 or one #8 AWG wire. Circuit breakers 40 A to 70 A will handle #8 to #2 AWG wire.

Square D QO plug on (for SqD load centers) circuit breakers						
Poles	Amps	Voltage rating	Width	Panel spaces	Model	Item code
1	10 A	120 AC	0.75"	1	QO110	053-02063
	15 A	120 AC	0.75"	1	QO115	053-02065
	20 A	120 AC	0.75"	1	QO120	053-02071
	30 A	120 AC	0.75"	1	QO130	053-02075
	40 A	120 AC	0.75"	1	QO140	053-02080
	50 A	120 AC	0.75"	1	QO150	053-02083
	60 A	120 AC	0.75"	1	QO160	053-02086
2	70 A	120 AC	0.75"	1	QO170	053-02090
	15 A	120/240 AC	1.5"	2	QO215	053-02067
	20 A	120/240 AC	1.5"	2	QO220	053-02073
	25 A	120/240 AC	1.5"	2	QO225	053-02076
	30 A	120/240 AC	1.5"	2	QO230	053-02077
	40 A	120/240 AC	1.5"	2	QO240	053-02081
	50 A	120/240 AC	1.5"	2	QO250	053-02084
3	60 A	120/240 AC	1.5"	2	QO260	053-02088
	15 A	120/208 AC	2.25"	3	QO315	053-16451
	20 A	120/208 AC	2.25"	3	QO320	053-16453
	25 A	120/208 AC	2.25"	3	QO325	053-16454
	30 A	120/208 AC	2.25"	3	QO330	053-16450
	40 A	120/208 AC	2.25"	3	QO340	053-16455
	50 A	120/208 AC	2.25"	3	QO350	053-16452
60 A	120/208 AC	2.25"	3	QO360	053-00209	





Square D QOU Pass through Circuit Breakers

QOU circuit breakers are designed for surface or DIN mounting. They are UL Listed for DC branch circuits up to 48 VDC (not for use in 48 V systems) and can be used for 120 VAC (1-pole) and 120/240 VAC (2-pole). Circuit breakers in 10 A to 30 A sizes can handle one or two #14 to #10 or one #8 AWG wire. Circuit breakers in 40 A to 70 A sizes will handle #8 to #2 AWG wire.

Square D QOU (DIN or surface mount) pass through circuit breakers						
Poles	Amps	Voltage rating	Voltage rating ¹	Width	Model	Item code
1	10 A	120 AC	48 DC	0.75"	QOU110	053-02006
	15 A	120 AC	48 DC	0.75"	QOU115	053-02009
	20 A	120 AC	48 DC	0.75"	QOU120	053-02015
	30 A	120 AC	48 DC	0.75"	QOU130	053-02024
	40 A	120 AC	48 DC	0.75"	QOU140	053-02030
	50 A	120 AC	48 DC	0.75"	QOU150	053-02036
	60 A	120 AC	48 DC	0.75"	QOU160	053-02042
	70 A	120 AC	48 DC	0.75"	QOU170	053-02048
2	15 A	120/240 AC	48 DC	1.5"	QOU215	053-02012
	20 A	120/240 AC	48 DC	1.5"	QOU220	053-02018
	30 A	120/240 AC	48 DC	1.5"	QOU230	053-02027
	40 A	120/240 AC	48 DC	1.5"	QOU240	053-02033
	50 A	120/240 AC	48 DC	1.5"	QOU250	053-02039
	60 A	120/240 AC	48 DC	1.5"	QOU260	053-02045

¹Not rated for use in 48 VDC systems



Fuses

600 VDC Midget Fuses and DIN Rail Mount Fuse Holders

The fuse holder and fuses below fit MidNite MNPV and OutBack FLEXPV and other 600 VDC array combiners, but do NOT fit SolaDeck combiners. These fuses are also used in the integrated combiners in many commercial grid tie inverters. Fuses are KLKD for 600 VDC.

Midget Fuses 600 VDC		
Amps	Description	Item code
--	CHM1 Fuse Holder - 600 V 30A Max - DIN mount	053-03040
--	USM11-DC1000 Fuse Holder Indicating - 1,000 VDC - DIN mount	053-03104
1 A	1-amp 600 VDC KLKD fuse	053-03155
2 A	2-amp 600 VDC KLKD fuse	053-03052
4 A	4-amp 600 VDC KLKD fuse	053-03051
6 A	6-amp 600 VDC KLKD fuse	053-03050
8 A	8-amp 600 VDC KLKD fuse	053-03048
10 A	10-amp 600 VDC KLKD fuse	053-03046
12 A	12-amp 600 VDC KLKD fuse	053-03044
15 A	15-amp 600 VDC KLKD fuse	053-03043
20 A	20-amp 600 VDC KLKD fuse	053-03042
30 A	30-amp 600 VDC KLKD fuse	053-03041

Midget Fuses 1,000 VDC		
Amps	Description	Item code
10 A	10-amp 1,000 VDC fuse - HP10M10	053-03097
12 A	12-amp 1,000 VDC fuse - HP10M12	053-03098
15 A	15-amp 1,000 VDC fuse - HP10M15	053-03099



Class R Fuses

The 250 VAC/125 VDC Class R fuses can be used in AC circuits up to 250 VAC or DC circuits up to 125 VDC. The 600 V fuses can be used for AC or DC circuits. They have the high amp interrupting capacity (AIC) required for fusing circuits powered by batteries. They can be used to protect wiring to small inverters (100-700 watts) and wiring from charging sources. These UL Listed fuses can be used in fused safety disconnect switches and most large system sub-array combiners.

Class R Fuse Blocks

Use these fuse blocks with the Class R 250 VAC fuses. Bare wire ends fit into the screw terminals on each end of the fuse block. The small fuse block holds 10-30 A fuses and accepts up to #2 AWG wire. The medium size block holds 40-60 A fuses and also accepts up to #2 AWG wire. The large size block holds a 100 A fuse and accepts up to #1/0 AWG wire. Small and medium size blocks are available in one-pole and two-pole versions. These do NOT fit the 600 V fuses.

Class T Fuse Blocks with JLN Fuses

Use these single-pole fuse blocks to fuse inverters or other large loads. A 5/16" stud mount at each end of the fuse allows connection of a cable with a ring lug terminal end. To connect an inverter, order two cables with lugs on both ends: one to go from the battery to the fuse and one to go from the fuse to the inverter. Class T fuses exceed the 10,000 A interrupting capacity (AIC) required to protect Square-D brand circuit breakers in DC load centers. They are UL Listed for up to 160 VDC and NEC approved for inverter use. A fuse comes installed in the block. Order spare fuses separately.

Class T Fuses - JLN Series

These Class T fuses are rated for 160 VDC and 300 VAC as protection for circuit breakers, load centers, and inverters where high available short circuit currents are possible. These fuses fit the fuse blocks described above.

Class R Fuses		
Amps	Item code	
	250 VAC / 125 VDC	600 VAC / VDC
10 A	053-02441	053-02442
15 A	053-02444	053-02447
20 A	053-02450	053-02453
30 A	053-02456	053-02459
40 A	053-02462	053-02463
50 A	053-02465	053-02466
60 A	053-02468	053-02471
70 A	053-02469	053-02470
80 A	053-02475	053-02472
90 A	053-02476	053-02473
100 A	053-02474	053-02477
125 A	053-02478	053-02481
150 A	053-02479	053-02482
200 A	053-02480	053-02483

Class R Fuse Holders 250 VAC/125VDC	
Description	Item code
Class R fuse block 0.1-30 A 1-pole	053-02423
Class R fuse block 0.1-30 A 2-pole	053-02426
Class R fuse block 31-60 A 1-pole	053-02429
Class R fuse block 31-60 A 2-pole	053-02432
Class R fuse block 61-100 A 1-pole	053-02435

Class T Fuse Holders and Fuses		
Model	Description	Item code
FB1-200	200 A fuse and holder with studs	053-02526
FB2-300	300 A fuse and holder with studs	053-02544
FB2-400	400 A fuse and holder with studs	053-02559

Class T Fuses		
Model	Description	Item code
JJN110	110 A replacement fuse	053-02509
JJN200	200 A replacement fuse	053-02520
JJN300	300 A replacement fuse	053-02538
JJN400	400 A replacement fuse	053-02556

Why Have Surge 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 only nearby. These power surges can damage sensitive electronic components in meters, charge controllers, and inverters. Surges can also damage telephone, audio, and video equipment connected to the power system. It is a good idea to install surge protection on all incoming wires in the system, including incoming photovoltaic, wind, or hydroelectric power lines; AC generator lines; and telephone and antenna leads. Proper grounding is absolutely necessary for lightning protection to be effective. In the event of a direct strike, damage may occur, even with surge protectors installed. Type 1 heavy duty surge protectors are recommended when a direct lightning strike is possible on the installation.

MidNite Solar

MidNite Surge Protector Device (MNSPD)



The **MidNite Solar Surge Protector Device (MNSPD)** is a Type 2 device designed for both AC and DC systems and provides protection to service panels, load centers, or where the SPD is directly connected to the electronic device requiring protection. Maximum protection will only be achieved if the SPD is properly installed.

The MidNite Solar SPD is offered in three voltages to maximize the required protection level. Protection is achieved by reducing the clamping voltage to a safe voltage that your system can sustain without damaging the electronics. The MidNite Solar SPD voltage rating should be chosen according to the nominal voltage of the system. Response time is $8/20\mu\text{s}$ to clamp 128,000 A. There are two LEDs in each unit that will indicate when the unit is functioning correctly and there is voltage to it.

Install the **150 VDC** version for surge protection on the wires coming from a 12, 24, or 48 VDC PV array, DC wind generator or DC hydroelectric turbine. The **300 VDC** unit works well for larger systems with sources up to 300 VDC. The **600 VDC** unit is designed for high-voltage grid-tie PV arrays. Lightning protection can be installed in a combiner box, DC load center or grid-tie inverter. These devices can be used on your AC load center to protect your equipment from surges from the utility lines and on AC wiring running outside of the building, to generators, to pumps, or to outbuildings. These surge arrestors mount in a $\frac{1}{2}$ " knockout and are covered by a 5-year material and workmanship warranty.

MidNite Solar Surge Protector Devices

Model	Description	Nominal DC voltage	Nominal AC voltage	Item code
MNSPD115	Surge Protector Device	0-150 DC	--	053-04141
MNSPD300	Surge Protector Device	0-300 DC	120 / 240 AC	053-04143
MNSPD600	Surge Protector Device	0-600 DC	480 AC	053-04146
MNSPD FMB	Flush mount box for SPD			053-04140

Delta

Lightning Arrestors



Delta lightning arrestors have a maximum current rating of 60,000 A and 2,000 joules per line. Response time is 25 ns to clamp 50,000 A. These waterproof lightning arrestors mount in a $\frac{1}{2}$ " knockout.

Delta Lightning Arrestors

Model	Description	Item code
LA302DC	Arrestor for up to 300 VDC	053-04115
LA602DC	Arrestor for up to 600 VDC	053-04109
LA302R	Arrestor for up to 300 VAC	053-04112
LA303R	Arrestor for up to 300 VAC - 3-phase	053-04118
LA603R	Arrestor for up to 600 VAC - 3-phase	053-04120



Citel

Citel DS210DC Off-Grid Surge Arrestor

The Citel DS210DC series is designed to protect the charge controller and other system electronics in 12 VDC, 24 VDC, 48 VDC and 150 VDC off-grid PV systems. The maximum voltage should not be exceeded in any conditions; use the next higher rated unit if necessary. DS210DC series protectors automatically reset after each lightning surge or electrical transient. These DIN mount surge arrestors clamp at much lower voltage than Delta surge arrestors, so they offer much better protection for charge controllers and inverters in low-voltage DC systems.

Citel DS50PV and DS60VGPV Grid-Tie Surge Arrestor

The **DS50PV-600** is designed to protect the solar array at the solar PV array combiner box for a utility-interactive PV system. The DIN-mount DS50PV is designed for moderate lightning areas and has replaceable modules. Use the DS50PV-600 for systems with inverters that have an upper limit of up to 600 VDC. The **DS60VGPV-1000** is a DIN-mount heavy duty surge protector, recommended for high lightning areas or extra protection. Use the DS60VGPV-1000 for systems with inverters that have an upper limit of up to 600 VDC or 1000 VDC. The use of a surge protector is recommended at both ends of the DC power supply line (solar array side and inverter/converter side).

Citel DS7xRS-120 and SP120 AC Surge Arrestor

The **DS7xRS-120** series are DIN-mount Type 4 heavy duty surge protectors recommended for the AC side of PV inverters and branch AC panels. The **DS73RS-120** is a three pole design to be used with 120/240 VAC split phase and the **DS74RS-120** is a four pole design to be used with 120/208 VAC Y connections. The **DS25xVG-120** is a DIN-mount heavy duty surge protector, recommended for high lightning areas or wherever extra protection is desired. The **DS253VG-120** is a three pole design to be used with 120/240 VAC split phase and the **DS254VG-120** is a four pole design to be used with 120/208 VAC Y connections. Additional Citel surge arrestors for specialized applications are available by special order.

DC Citel Surge Arrestors

Model	Maximum volts	Max surge rating	Width	Item code
DS210-12DC	15 VDC	2kA 8/20µs	0.7" (18 mm)	053-04201
DS210-24DC	30 VDC	2kA 8/20µs	0.7" (18 mm)	053-04203
DS210-48DC	56 VDC	2kA 8/20µs	0.7" (18 mm)	053-04205
DS210-75DC	85 VDC	6kA 8/20µs	0.7" (18 mm)	053-04206
DS210-95DC	100 VDC	6kA 8/20µs	0.7" (18 mm)	053-04207
DS210-130DC	150 VDC	6kA 8/20µs	0.7" (18 mm)	053-04209
DS50PV-600	680 VDC	40kA 8/20µs	1.4" (36 mm)	053-04219
DS60VGPV-1000	1200 VDC	12.5kA 10/350µs	2.8" (72 mm)	053-04231

AC Citel Surge Arrestors

Model	Maximum volts	Max surge rating	Width	Item code
DS73RS-120	240 VAC	70kA 8/20µs	2.1" (54 mm)	053-04228
DS74RS-120	208 VAC 3Ph	70kA 8/20µs	2.8" (72 mm)	053-04229
DS253VG-120	240 VAC	25kA 10/350µs	4.25" (108 mm)	053-04232
DS254VG-120	208 VAC 3Ph	25kA 10/350µs	5.67" (144 mm)	053-04233

Grounding

Lay-in Lugs for Module Grounding

These UL Listed tin-plated copper lugs have stainless steel set screws and come with either stainless steel thread forming screws and lock washers, or a longer thread cutting stainless steel screw with stainless steel star-washer captive on the nut. Consult the module manufacturer's installation guide to see which type(s) meet NEC requirements for connecting a continuous ground wire to that module. Sold in packages of 10.



Lay-in Lugs	
Description	Item code
Bag of 10 lay-in lugs with screws	051-03414
Bag of 10 lay-in lugs with long screws and nuts	051-03418

Tyco Grounding Connector

This all-stainless steel grounding lug is like a split bolt with a mounting stud and can be used on most modules and mounting rails. The mounting stud is #8 and comes with a star washer captive on the nut. It takes #6 or #8 solid copper ground wire. Use this grounding lug where corrosion is a consideration. Listed to UL 467.



Tyco Grounding Connector	
Description	Item code
Tyco solar grounding connector	051-03420
Tyco solar grounding connector - 100 pack	051-03419

Burndy

Wiley WEEB Grounding Products

Washer, electrical equipment bonding (WEEB) products are used to bond solar modules to aluminum solar mounting rails. This replaces the lay-in lug and ground wire to each module since the mounting rails can be wired to an equipment grounding terminal in the inverter or disconnect, grounding the entire assembly. Listed to ANSI-UL 467 standards.

WEEB-9.5

The WEEB-9.5 is used for bonding modules to mounting structures when the modules are directly bolted to the rails using ¼" bolts through the mounting holes on the rear of the module frames. This type of mounting is typical on DPW systems (see Mounting Systems) and on Wattsun and Zomeworks trackers. The WEEB-9.5NL is used for bonding strong-back structures and legs to the rail where 3/8" bolts are used. Sold in packs of 10.



WEEB-PMC

WEEB-PMC grounding clips are used between modules and SnapNrack or ProSolar rails when front mount clamps are used to hold the module to the rails. One clip grounds the frame of two adjoining modules to one of the mounting rails. Two clips are required for each pair of modules so that the modules will be bonded to both rails. Sold in packs of 10.



WEEB-UMC

WEEB-UMC grounding clips are used between modules and Unirac SolarMount Standard Rails when front mount clamps are used to hold the module to the rails. One clip grounds the frame of 2 adjoining modules to one of the mounting rails. Two clips are required for each pair of modules so that the modules will be bonded to both rails. Sold in packs of 10.



WEEBLug-6.7

The WEEBLug-6.7 provides a connection to the mounting system and has lay-in provision for an equipment ground conductor. The WEEBLug-6.7 kit includes the lay-in lug, matching WEEB washer, bolt, nut, flat washer, and lock washer. Two WEEB lugs and a short piece of bare wire or a WEEB bonding jumper can be used to connect across a rail splice.





WEEB-BJ-6.7

The WEEB Bonding Jumper is used to electrically bond mounting rails together at a splice. Use one at each splice.

Wiley Electronics WEEB Grounding		
Model	Description	Item code
WEEB-9.5	WEEB for 1/4" bolted connections - order in multiples of 10	051-04007
WEEB-9.5NL	WEEB for 3/8" bolted connections - order in multiples of 10	051-04008
WEEB-PMC	WEEB for use with SnapRack and ProSolar rails - order in multiples of 10	051-04001
WEEB-UMC	WEEB for use with Unirac SolarMount Rail - order in multiples of 10	051-04003
WEEB-DMC	WEEB for use with DPW Power Rail - order in multiples of 10	051-04004
WEEBLug6.7	Lay-in lug with mounting hardware and WEEB	051-04015
WEEB-BJ-6.7	Splice jumper with two WEEB	051-04019

MidNite Solar

MNPV Combiners

These powder-coated, aluminum, rainproof array combiners will accept DIN-mount 150 V circuit breakers, MidNite 300 VDC breakers, Midnite 600 VDC breakers, or 600 VDC fuse holders for grid-tie arrays. A plastic cover provides a dead front for safety and can be knocked out for either breakers or fuse holders. Both a negative busbar and ground bar are included. The aluminum NEMA 3R enclosures are approved to be mounted at angles from 90° to 14° (vertical to 3/12 slope). Listed to UL 1741 for the U.S. and Canada. Breakers and fuse holders are not included.

MidNite Solar MNPV Combiners with Disconnect Switch

The MidNite Disco line of PV combiners with disconnects incorporates NEC 2011 requirements. The disconnect handle is bright red for visibility and can be locked in the off position. Several models can be configured for bi-polar or ungrounded inverters where both the positive and negative legs of the array need circuit protection (maximum output current is split also). Models are available for 150 VDC, 300 VDC, or 600 VDC arrays. All of the combiners are made from powder coated aluminum for corrosion and sunlight resistance for long life in harsh conditions. A clear see-through dead front is supplied with all disco combiners. Models are available with either NEMA 3R or NEMA 4X ratings. Many of these come with a shunt trip disconnect that enables the MNDiscoPSB to trip the disconnect remotely. An MNSPD-600 is included standard with many of these combiners. See the table below for options that are available or included.

The firefighter-approved "**Birdhouse**" remote actuator should be installed in a visible, easily accessible location so that the array combiners can safely be disconnected from the ground when necessary. The hard wired connection to the disconnect combiners provides positive feedback that the disconnect on the roof has actually been thrown. One Birdhouse can be used to disconnect multiple combiners. The Birdhouse has a speaker and will announce when it is safe to climb onto the roof, and during the day it will inform that there is still voltage present up to the combiner. At night, it will announce that there is no PV voltage present. The Birdhouse is powered by multiple redundant sources. The combiner can be powered using the array using the MNDiscoPSB power supply that will also power the Birdhouse. The Birdhouse also comes with an indoor 120 VAC power supply that can be used as a DC supply, and has an internal backup battery. The power draw of the Birdhouse is only 1 W. Use the special Midnite 600 V CAT5 USE-2 compliant wire to connect the Birdhouse and combiners.



MidNite PV Combiners without Disconnect											
Model	PV source circuit options				Output circuits		Max output wire size	MNPV combiner dimensions (L"x W"x H")	Weight	Birdhouse trip option / MNSPD	Item code
	Max # 150 VDC breakers	Max # 300 VDC breakers	Max # 600 VDC breakers	Max # 600 VDC fuses	Max # output circuits	Max current output					
MNPV3	3	--	--	2	1	60 A	# 1/0	10.5 x 4.9 x 3.4	2 lbs	--	053-03017
MNPV6	6	--	1	4	2	120 - 80 ¹ A	# 1/0	13.5 x 8 x 3.5	4 lbs	--	053-03018
MNPV6-250	--	3	--	--	1	120 A	# 1/0	13.5 x 8 x 3.5	4 lbs	--	053-03081
MNPV12	12	--	2	10	2	200 A	# 2/0	14.7 x 12.2 x 3.5	6 lbs	--	053-03015
MNPV12-250	--	6	--	--	2	168 A	# 2/0	14.7 x 12.2 x 3.5	6 lbs	--	053-03082
MNPV16	--	--	--	16	1	240 A	250mcm	20.7 x 16.2 x 3.5	12 lbs	--	053-03016
MNPV16-24	24	--	--	--	1	240 A	250mcm	20.7 x 16.2 x 3.5	12 lbs	--	053-03087
MNPV16-250	--	12	--	--	1	240 A	# 2/0	20.7 x 16.2 x 3.5	12 lbs	--	053-03083

¹120 A for 150 V breakers and 80 A with 600 V fuses

MidNite PV Disconnect Combiners											
MNPV6 Disco	6	--	1	--	2	120 A	# 1/0	12.7 x 7.9 x 7.5	6 lbs	No	053-03000
MNPV6-250 Disco	--	3	--	--	1	120 A	# 1/0	12.7 x 7.9 x 7.5	6 lbs	No	053-03001
MNPV6 Disco AC Micro	--	3 AC	--	--	1	120 A	# 1/0	12.7 x 7.9 x 7.5	6 lbs	No	053-02984
MNPV4HV Disco 3R Basic	--	--	--	4	1	80 A	# 1/0	15.4 x 18.4 x 5	8 lbs	No	053-02990
MNPV4HV Disco 3R Dlx	--	--	--	4	1	80 A	# 1/0	15.4 x 18.4 x 5	10 lbs	Opt/Yes	053-02991
MNPV6HV Disco 4X	--	--	--	6	1	125 A	# 2/0	20.8 x 17.3 x 5.8	14 lbs	Opt/Yes	053-02992
MNPV8HV Disco 3R	--	--	--	8	2	160 A	# 2/0	23.4 x 19.3 x 5.4	16 lbs	Opt/Yes	053-02993
MNPV8HV Disco 4X	--	--	--	8	2	160 A	# 2/0	23.4 x 19.3 x 5.4	18 lbs	Opt/Yes	053-02994
MNPV16HV Disco 4X	--	--	--	16	2	230 A	350 mcm	23.5 x 26 x 5.8	27 lbs	Opt/Yes	053-02995

MidNite PV Disconnect Combiner Accessories											
MNBirdhouse	Emergency remote disconnect switch							12.1 x 8.3 x 4.6	--	--	053-02985
MNDiscoPCB	Optional PV power supply							9.5 x 4 x 3.5	--	--	053-02987
MNSP-38	Optional AC power supply, indoor (comes with Birdhouse)							7.4 x 4 x 3.5	--	--	053-02988
MNCAT5-600	Communication cable 600 V CAT5 USE-2 outdoor wire, per foot							--	--	--	053-02983

OutBack

FLEXware PV Combiners

The **FLEXware PV8** and **PV12** accommodate overcurrent protection requirements for off-grid and grid-connected applications. The DIN rail can be fitted with 150 VDC circuit breakers for low-voltage PV arrays or 600 VDC fuse holders for grid-tie arrays. Rated NEMA 3R rainproof, the powder-coated aluminum chassis can be mounted on a wall, a sloped roof, or a pole. Dual output lugs allow connection for up to #2/0 AWG wire. An easily removable flame-retardant polycarbonate deadfront panel prevents accidental contact with live terminals. FLEXware PV8 has 1 output circuit and FLEXware PV12 can be configured to have 1 or 2 output circuits. Negative and ground terminal busbars are included. The 2 output circuits can be used for fuses in both the negative and positive legs for up to 4 strings into transformerless inverters. Limited to 15 A breakers or fuses. Listed to UL 1741.



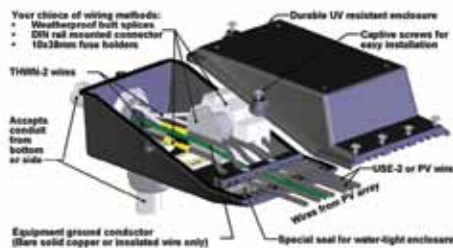
OutBack FLEXware PV Combiners

Model	# of breakers	# of fuse holders	Dimensions (L"x W"x H")	Weight	Item code
FWPV8	8	6	15.2 x 9.2 x 3.9	4.4 lbs	053-03012
FWPV12	12	8	15.2 x 12.7 x 3.9	5.9 lbs	053-03014

Burndy

Wiley Acme Conduit Entry

This PV cable to conduit transition box is made from corrosion resistant UV resistant plastic. It accepts conduit from the bottom or side and has a seal for entry of USE-2 or PV wire. The included aluminum mounting bracket makes it easy to mount on any module mounting structure. **ACE PT** is for pass-through and has no terminals or DIN rail. **ACE-xP** has two terminal blocks for each string. The **ACE-2C** combines two strings into one + and - out without fuses. The **Ace-3C** and **-4C** have 3 and 4 fuse holders respectively. 600 VDC midget fuses not included.



Wiley Electronics Acme Conduit Entry

Model	Description	Item code
ACE-PT	Pass through - MC cables to conduit	053-00305
ACE-1P	Pass through - MC cables to conduit - 1 string	053-00308
ACE-2P	Pass through - MC cables to conduit - 2 string	053-00309
ACE-3P	Pass through - MC cables to conduit - 3 string	053-00310
ACE-4P	Pass through - MC cables to conduit - 4 string	053-00311
ACE-2C	Combiner - MC cables to conduit - 2 string	053-00312
ACE-3C	Combiner - MC cables to conduit - 3 string	053-00313
ACE-4C	Combiner - MC cables to conduit - 4 string	053-00314
ACE-4C-1	Combiner - MC cables to conduit - 4 string with out ground	053-00316

SolaDeck

PV Roof-Mount Enclosure/Combiner



These are NEMA 3R enclosures that provide a flashed roof penetration for the array cables. They are all made from 18 gauge galvanized steel with a powder coated finish providing a professional look. All have a dual ground lug, a 6" (150 mm) universal DIN rail to mount fuse holders or terminal blocks. There are three roof deck knockouts ($\frac{1}{2}$ ", $\frac{3}{4}$ ", and 1") and dimples to center a punch or drill for entry conduit or fittings, as well as a built-in roof flashing.

The **SD-0786-41** is listed as a DC combiner and can be used with terminals or fuse holders for array DC wiring. For combining circuits, use up to 4 DIN mount fuse holders, each 18 mm wide, a positive and negative busbar, and a 2-string pass thru kit to combine up to 4 module strings. Or use the 2-position positive and negative busbars for combining 2 strings, with or without fuses. Fuses are not included, so order the appropriate fuses. These are Listed to UL 1741 for Photovoltaic Combiner Enclosures.

The **SD-0786-3R** is listed as a j-box and can be used for pass through wiring of both DC and AC circuits without combining. Both SD-0786 are only 2.5" deep and can fit under the array.

The **SD-0760-41 AD** is listed as a combiner for both AC and DC circuits and has a bump in the lid to accommodate DIN mount DC or AC breakers. The **SD-0766-41 AD** is 6" deep for use on tile roofs. It comes with a 30" square soft aluminum flashing and can be used as both AC and DC combiner or pass through. These are Listed to UL 1741 for Photovoltaic Combiner Enclosures.

To make pass-through connections inside a SolaDeck, use one or more **2-String Pass-Thru Kits**. This kit has 4 DIN mount terminals that can be used with #6 to #16 AWG wire and hardware to hold them in place. Each terminal is 10 mm wide.

For combining 2 AC micro-inverter circuits, use the dual busbar 2 branch AC kit and two of the 2 pole breakers. For combining 3 AC micro-inverter circuits, use the dual busbar 3 branch AC kit and three of the 2 pole breakers.

SolaDeck PV Roof-Mount Enclosures and Accessories		
Model	Description	Item code
SD-0786-41	SolaDeck enclosure combiner DC only	053-00226
SD-0786-3R	SolaDeck enclosure pass-through AC/DC (no combining)	053-00225
SD-0760-41 AD	SolaDeck enclosure combiner AC/DC bump lid fits breakers	053-00223
SD-0766-41 AD	SolaDeck enclosure combiner AC/DC deep tile roof, large soft flashing	053-00224
PASS-THRU	2-string pass-thru terminal kit	053-00231
0784 BB	Positive busbar for 4 fuse holders	053-00227
0785 BB	Negative busbar for 4 terminals	053-00228
0784 FBB-2	Positive busbar for 2 fuse holders	053-00229
0785 TBB-2	Negative busbar for 2 terminals	053-00230
1452	Fuse holder for DIN mount 600 VAC/DC	053-00240
0784 AC 2K	Dual busbar kit for 2 AC branch circuits 240 V	053-00232
0784 AC 3K	Dual busbar kit for 3 AC branch circuits 240 V	053-00233
S202U Z20A	AC breaker 2 pole 240 VAC 20 A	053-00210
S202U Z15A	AC breaker 2 pole 240 VAC 15 A	053-00211
S280UC K16	DC breaker 1 pole 250 VDC 16 A	053-00212

AMtec

Prominence Series Combiners



The AMtec Prominence 1,000 VDC combiners are Listed to UL 1741, CSA & CE for up to 1,000 VDC PV systems. AMtec uses high quality components to ensure long-term field reliability. They are available with 6, 12, 24, 36, or 52 string inputs, and NEMA 4X fiberglass, NEMA 4 painted steel, or NEMA 4X stainless steel enclosures. The enclosures have gaskets for protection from the elements and enough room for easy wiring. The fuse holders are finger safe and all live parts are covered to give a completely dead front unit. 600 VDC midget/KLKD fuses not included. All combiners listed on the next page have single outputs.



AMtec Prominence Series Disconnect Combiners

These 600 VDC combiners are Listed to UL 1741, CSA & CE for PV systems, and include a load-break 600 VDC disconnect. Available with 200 or 400 A disconnects with 8, 12, 16, or 24 string inputs. Also available with NEMA 4X fiberglass, NEMA 4 painted steel, or NEMA 4X stainless steel enclosures. The fuse holders are finger safe and all live parts are covered to give a completely dead front unit. 600 VDC midget/KLKD fuses not included.

AMtec Prominence Series Combiners with Monitoring



The Prominence combiners, both with and without disconnect, are available with string monitoring for 600 VDC arrays. They are available in the 8, 16, 24 and 32 string input sizes without disconnect and 8, 16, and 24 string inputs with disconnects. Monitoring uses Mod-Bus communication with Obvius components for compatibility with most monitoring providers.

See next page for available models.

AMtec Prominence Combiners 1000 VDC				
Model	Input circuits	Dimensions (L"x W"x H")	Weight	Item code
NEMA 4X Fiberglass				
PR-6-FG	6	16 x 14 x 6.5	14 lbs	053-00034
PR-12-FG	12	18 x 16 x 8.8	20 lbs	053-01285
PR-24-FG	24	22 x 18 x 8.8	31 lbs	053-01313
PR-36-FG	36	26 x 22 x 8	45 lbs	053-01284
PR-52-FG	52	36 x 30 x 8	62 lbs	053-01400
NEMA 4 Steel				
PR-6-S	6	14 x 12 x 6	16 lbs	053-01344
PR-12-S	12	16 x 14 x 8	22 lbs	053-01290
PR-24-S	24	20 x 16 x 8	37 lbs	053-01294
PR-36-S	36	24 x 20 x 8	52 lbs	053-01346
PR-52-S	52	36 x 30 x 8	75 lbs	053-01348
NEMA 4X Stainless Steel				
PR-6-SS	6	14 x 12 x 6	17 lbs	053-01345
PR-12-SS	12	16 x 14 x 8	24 lbs	053-01286
PR-24-SS	24	20 x 16 x 8	42 lbs	053-01295
PR-36-SS	36	24 x 20 x 8	59 lbs	053-01347
PR-52-SS	52	36 x 30 x 8	82 lbs	053-01349

AMtec Prominence Combiners with Disconnects 600 VDC					
Model	Input circuits	Disconnect amps	Dimensions ¹ (L"x W"x H")	Weight	Item code
NEMA 4X Fiberglass					
PR-8-100-FG	8	200 A	22 x 18 x 9	45 lbs	053-01360
PR-12-200-FG	12	200 A	26 x 22 x 11	45 lbs	053-01362
PR-16-200-FG	16	200 A	26 x 22 x 11	50 lbs	053-01363
PR-24-200-FG	24	200 A	26 x 26 x 11	55 lbs	053-01364
PR-24-400-FG	24	400 A	31 x 31 x 10	100 lbs	053-01401
NEMA 4 Steel					
PR-8-100-S	8	200 A	22 x 18 x 9	50 lbs	053-01318
PR-12-200-S	12	200 A	24 x 20 x 8	50 lbs	053-01320
PR-16-200-S	16	200 A	24 x 20 x 8	56 lbs	053-01321
PR-24-200-S	24	200 A	26 x 26 x 11	62 lbs	053-01322
PR-24-400-S	24	400 A	30 x 30 x 10	110 lbs	053-01402
NEMA 4X Stainless Steel					
PR-8-100-SS	8	200 A	22 x 18 x 9	50 lbs	053-01361
PR-12-200-SS	12	200 A	24 x 20 x 8	50 lbs	053-01309
PR-16-200-SS	16	200 A	24 x 20 x 8	56 lbs	053-01311
PR-24-200-SS	24	200 A	26 x 26 x 11	62 lbs	053-01365
PR-24-400-SS	24	400 A	30 x 30 x 10	110 lbs	053-01403

AMtec Prominence Combiners with Monitoring 600 VDC					
Model	Input circuits	Disconnect amps	Dimensions ¹ (L"x W"x H")	Weight	Item code
NEMA 4X Fiberglass					
PR-8M-FG	8	--	22 x 18 x 9	25 lbs	053-01404
PR-16M-FG	16	--	26 x 26 x 8	44 lbs	053-01405
PR-24M-FG	24	--	36 x 30 x 8	80 lbs	053-01354
PR-32M-FG	32	--	36 x 30 x 8	81 lbs	053-01357
PR-8M-100-FG	8	200 A	22 x 18 x 9	40 lbs	053-01366
PR-16M-200-FG	16	200 A	26 x 26 x 11	62 lbs	053-01369
PR-24M-400-FG	24	400 A	36 x 30 x 8	110 lbs	053-01406
NEMA 4 Steel					
PR-8M-S	8	--	20 x 16 x 8	38 lbs	053-01350
PR-16M-S	16	--	24 x 24 x 8	58 lbs	053-01352
PR-24M-S	24	--	36 x 30 x 8	87 lbs	053-01355
PR-32M-S	32	--	36 x 30 x 8	88 lbs	053-01358
PR-8M-100-S	8	200 A	22 x 18 x 9	44 lbs	053-01367
PR-16M-200-S	16	200 A	26 x 26 x 11	70 lbs	053-01374
PR-24M-400-S	24	400 A	36 x 30 x 8	120 lbs	053-01407
NEMA 4X Stainless Steel					
PR-8M-SS	8	--	20 x 16 x 8	41 lbs	053-01351
PR-16M-SS	16	--	24 x 24 x 8	61 lbs	053-01353
PR-24M-SS	24	--	36 x 30 x 8	85 lbs	053-01356
PR-32M-SS	32	--	36 x 30 x 8	86 lbs	053-01359
PR-8M-100-SS	8	200 A	22 x 18 x 9	43 lbs	053-01368
PR-16M-200-SS	16	200 A	26 x 26 x 11	68 lbs	053-01375
PR-24M-400-SS	24	400 A	36 x 30 x 8	120 lbs	053-01408

¹Without monitoring.



Square-D

240 V and 600 V NEMA 3R Safety Switch Disconnects

For inverters that do not include a DC disconnect, or when an additional DC disconnect is required, one of these 600VDC disconnects can be used. The Square-D 600 VDC 30, 60, and 100 A 3-pole safety switches are rated by the factory to handle one 600 VDC circuit per pole for PV. The 30 A switch is rated for 15 A I_{sc} for non-fused and 12.8 A I_{sc} for fused. The 60 A switch is rated for 48 A I_{sc} for non-fused and 38 A I_{sc} for fused. The 100 A switch is rated for 80 A I_{sc} for non-fused and 64 A I_{sc} for fused. All of the Square-D 600 VDC disconnects are rated for disconnecting one circuit at full rated power using 2 poles in series.

Many utilities require an AC disconnect between a grid-tie inverter and the AC load center, close to the AC service entrance, and with a visible and lockable handle. Use Class R fuses of the proper voltage and amperage for fused disconnects. 600 V fuses will not fit into 240 V disconnects, and 250 VAC/125 VDC fuses will not fit into 600 V disconnects.

Square-D Disconnects									
Amps	AC/DC	Fused	Poles	Neutral kit	Ground kit	Dimensions (H" x W" x D")	Weight	Model	Item code
600 VAC or DC 3-Pole NEMA 3R heavy-duty switches									
30 A	Yes	No	3	SN03	GTK03	14.88 x 6.63 x 4.88	9.3 lbs	HU361RB	053-02312
30 A	Yes	Yes	3	SN03	GTK03	14.88 x 6.63 x 4.88	9.8 lbs	H361RB	053-02313
60 A	Yes	No	3	SN0610	GTK0610	17.50 x 9 x 6.38	16 lbs	HU362RB	053-02339
60 A	Yes	Yes	3	SN0610	GTK0610	17.50 x 9 x 6.38	16 lbs	H362RB	053-02341
100 A	Yes	No	3	SN0610	GTK0610	21.25 x 8.50 x 6.38	24 lbs	HU363RB	053-02357
100 A	Yes	Yes	3	SN0610	GTK0610	21.25 x 8.50 x 6.38	24 lbs	H363RB	053-02355
200 A	Yes	No	3 ¹	SN20A	PKOGTA2	29.25 x 17.25 x 8.50	44 lbs	HU364RB	053-02364
200 A	Yes	Yes	3 ¹	SN20A	PKOGTA2	29.25 x 17.25 x 8.50	--	H364NRB	053-02366
400 A	Yes	Yes	3 ¹	Included	PKOGTA2	50.31 x 27.88 x 10.13	--	H365NR	053-02407
800 A	Yes	Yes	3 ¹	Included	PKOGTA7	69.13 x 36.62 x 17.75	--	H367NR	053-02373
1,200 A	Yes	Yes	3 ¹	Included	PKOGTA8	69.13 x 36.62 x 17.75	--	H368NR	053-02409

¹Uses 2 poles (and 2 fuses) in series for 600 VDC, no PV rating per pole.

240 VAC / 125 VDC ¹ NEMA 3R Heavy-Duty Switches									
Amps	AC/DC	Fused	Poles	Neutral kit	Ground kit	Dimensions (H" x W" x D")	Weight	Model	Item code
30 A	Yes	Yes	3	included	GTK03	14.88 x 6.63 x 4.88	9.8 lbs	H321NRB	053-02315
60 A	Yes	Yes	3	included	GTK03	14.88 x 6.63 x 4.88	10 lbs	H322NRB	053-02336
100 A	Yes	Yes	3	included	GTK0610	21.25 x 8.50 x 6.38	19 lbs	H323NRB	053-02351
200 A	Yes	Yes	3	included	PKOGTA2	29.25 x 17.25 x 8.50	43 lbs	H324NRB	053-02363

¹Switches are rated for 250 VDC, but available fuses are only rated for 125 VDC.

240 VAC Only NEMA 3R General Duty Switches									
Amps	AC/DC	Fused	Poles	Neutral kit	Ground kit	Dimensions (H" x W" x D")	Weight	Model	Item code
30 A	AC only	No	2	SN20A	PK3GTA1	9.63 x 7.25 x 3.75	4.4 lbs	DU221RB	053-02318
30 A	AC only	Yes	2	included	PK3GTA1	9.63 x 7.25 x 3.75	4.5 lbs	D221NRB	053-02326
30 A	AC only	No	3	SN20A	PK3GTA1	9.63 x 7.25 x 3.75	4.7 lbs	DU321RB	053-02319
30 A	AC only	Yes	3	included	PK3GTA1	9.63 x 7.25 x 3.75	5.1 lbs	D321NRB	053-02329
60 A	AC only	Yes	2	included	GTK03	14.88 x 6.63 x 4.88	9.7 lbs	D222NRB	053-02334
60 A	AC only	No	3	SN20A	PK3GTA1	9.63 x 7.25 x 3.75	5 lbs	DU322RB	053-02342
60 A	AC only	Yes	3	included	GTK03	14.88 x 6.63 x 4.88	9.8 lbs	D322NRB	053-02343
100 A	AC only	Yes	2	included	GTK0610	17.50 x 8.50 x 6.50	16 lbs	D223NRB	053-02358
100 A	AC only	No	3	SN0610	GTK0610	17.50 x 8.50 x 6.50	15 lbs	DU323RB	053-02359
100 A	AC only	Yes	3	included	GTK0610	17.50 x 8.50 x 6.50	16 lbs	D323NRB	053-02361
200 A	AC only	Yes	2	included	PKOGTA2	29.25 x 17.25 x 8.25	29 lbs	D224NRB	053-02371
200 A	AC only	Yes	3	included	PKOGTA2	29.25 x 17.25 x 8.25	30 lbs	D324NRB	053-02372

Square-D Disconnect Accessories

These conduit **Top Mount Hubs** connect conduit or a kWh meter socket to the top of the disconnect. The neutral and ground **busbars** are used to land these conductors in the disconnect switch box. Appropriate busbars for each disconnect are identified in the tables above.

Square-D Disconnect Accessories	
Description	Item code
SN03 Neutral busbar	053-02389
SN0610 Neutral busbar	053-02381
SN20A Neutral busbar	053-02383
GTK03 Ground busbar	053-02387
PK3GTA1 Ground busbar	053-02395
GTK0610 Ground busbar	053-02386
PKOGTA2 Ground busbar	053-02388
PKOGTA7 Ground busbar	053-02385
PKOGTA8 Ground busbar	053-02384
Top Mount hub 3/4"	053-02305
Top Mount hub 1"	053-02306
Top Mount hub 1-1/4"	053-02307
Top Mount hub 1-1/2"	053-02308
Top Mount hub 2"	053-02309



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Square-D QO Load Centers

Square-D brand load centers are multi-purpose for wiring that meets the National Electric Code (NEC). These can be used as AC load centers or subpanels. Panels using QO plug in breakers are rated up to 48 VDC for use as 12 VDC or 24 VDC load centers. They can also be used to combine the AC output from multiple inverters feeding the grid. When used as DC load centers, they should be protected by a high interrupt capacity fuse or circuit breaker between the load center and the battery. The Class T and R fuses, as well as the DC breakers used in the OutBack and Xantrex DC power centers, work in these load centers.

When used to combine the AC output of multiple grid-tie inverters, in order to meet the requirements of NEC 690.64(B)(2), the bus amp rating for the load center must be larger than the sum of all of the overcurrent devices feeding it, from both the utility and all inverters. Load centers are not supplied with breakers—order breakers and conduit hubs for outdoor load centers separately.

Square-D QO Load Centers ¹									
Spaces (single)	Bus rating	Outdoor	Cover	Max wire main lug	Ground kit	Dimensions (L"x W"x H")	Weight	Model	Item code
120/240 V AC Single-Phase Main Lug Load Centers									
2	70 A	yes	incl	# 4	PK4GTA	9.38 x 4.88 x 4	5 lbs	QO24L70RB	053-02141
2	70 A	no	incl	# 4	PK4GTA	9.30 x 4.81 x 3.19	3.8 lbs	QO24L70S	053-02144
6	100 A	yes	incl	# 1	PK7GTA	12.62 x 8.88 x 4.27	9.7 lbs	QO612L100RB	053-02147
6	100 A	no	incl	# 1	PK7GTA	12.57 x 8.88 x 3.8	8.3 lbs	QO612L100DS	053-02153
12	125 A	yes	incl	# 2/0	incl.	19 x 14.25 x 4.5	23 lbs	QO112L125GRB	053-02163
12	125 A	no	add	# 2/0	incl.	18 x 14.25 x 3.75	15 lbs	QO112L125G	053-02162
12	200 A	yes	incl	250 kcmil	incl.	26.25 x 14.25 x 4.5	27 lbs	QO112L200GRB	053-02165
12	200 A	no	add	250 kcmil	PK15GTA	29.86 X 14.25 X 3.75	18 lbs	QO112L200G	053-02164
120/208 V AC Three-Phase Main Lug Load Centers									
12	125 A	yes	incl.	# 2/0	incl.	19 x 14.25 x 4.52	22 lbs	QO312L125GRB	053-02181
12	125 A	no	add	# 2/0	incl.	19 x 14.25 x 3.75	11 lbs	QO312L125G	053-02183
18	200 A	yes	incl.	250 kcmil	incl.	30 x 14.25 x 4.52	31 lbs	QO318L200GRB	053-02185
18	200 A	no	add	250 kcmil	incl.	30 x 14.25 x 3.75	17 lbs	QO318L200G	053-02187

¹Uses QO plug-in breakers

Square D Load Center Covers and Ground Busbars for QO Load Centers			
Description	Weight	Model	Item code
Surface cover for 12-space 125 A Load Centers 053-02162 & 053-02183	6 lbs	GOC16US	053-02159
Flush cover for 12-space 125 A Load Centers 053-02162 & 053-02183	7 lbs	GOC16UF	053-02156
Surface cover for all 200 A Load Centers 053-02164 & 053-02187	9.2 lbs	GOC30US	053-02169
Flush cover for all 200 A Load Centers 053-02164 & 053-02187	11 lbs	GOC30UF	053-02170
Ground Busbar for 2-Space Load Centers		PK4GTA	053-02390
Ground Busbar for 6-Space Load Centers		PK7GTA	053-02391
Ground Busbar for 12-Space Load Centers		PK9GTA	053-02392
Ground Busbar for 12-Space 200 A Load Centers		PK15GTA	053-02393
Ground Busbar for 30-Space Load Centers		PK18GTA	053-02394



Insulated Cable Connector Blocks

This insulated connector is molded for a precise fit and supplied with removable access plugs over the hex screws. Available with 2- to 4-wire entry ports on one side for 4 to 14 AWG wire. This can be used to transition from Multi-Contact cables to conduit wiring on roof to PV arrays or for any parallel wiring connection. UL Listed for 600 Volts.

Insulated Cable Connector Blocks		
Number of poles	Wire range AWG	Item code
2	4-14	054-01142
3	4-14	054-01143
4	4-14	054-01144

Wire Connectors, Outdoor Wire Nuts, J-Boxes

These **Piercing Tap Connectors** are for making wire connections where termination is not possible or desirable.

These Twist on **Wire Nuts** are filled with silicone sealant for use in damp/wet locations.

These general purpose **Rigid Non-Metallic Conduit Junction Boxes** are rated NEMA 6P and are UL listed.

Insulated Cable Connector Blocks		
Description	Wire range AWG	Item code
Insulation piercing tap connector, silicone filled, 600V, IPC-4/0-6	Main #4-4/0 Tap #14-6 stranded	157-04550
Insulation piercing tap connector, silicone filled, 600V, IPC-4/0-2/0	Main #4-4/0 Tap #6-2/0 stranded	157-04551
Wire nut with silicone fill, Blue/Red, IDEAL #62 (100pk)	Up to Qty 3 #10	157-04011
Wire nut with silicone fill, Blue/Purple, IDEAL #63 (100pk)	Up to Qty 2 #8 + 1 #10	157-04016
Rigid non-metallic NEMA 6P J-box 4" x 4" x 4"		048-06590
Rigid non-metallic NEMA 6P J-box 6" x 6" x 4"		048-06595
Rigid non-metallic NEMA 6P J-box 6" x 6" x 6"		048-06600
Rigid non-metallic NEMA 6P J-box 8" x 8" x 4"		048-06610
Rigid non-metallic NEMA 6P J-box 12" x 12" x 6"		048-06620

Waterproof Strain Reliefs

Use the ½" NPT threaded connectors to provide a waterproof entrance or exit for wiring on PV module junction boxes and outdoor combiner boxes. Use the ¾" NPT connector for cables up to 5/8" diameter. Made of Nylon with Buna-N seals. Resistant to salt water, and most mild chemicals and oils, these strain reliefs are noncorrosive and suitable for direct burial installations. The oval-hole ½" strain relief works for 2-conductor TC cable used for module interconnects, PV outputs, or UF cable. The 2-hole ½" connector is designed for use with two #10 or #12 type USE conductors. UL Listed for use in NEMA 4, 6 and 12 applications.



Waterproof Strain Reliefs		
Description	Fits cable size	Item code
½" thread with 1 round hole	USE #12 & #10	054-03243
½" thread with 2 round holes	USE #12 & #10	054-03252
½" thread with 1 round hole	0.25" to 0.5" diameter Wire	054-03241
½" thread with 1 oval hole	14/2, 12/2, 10/2 TC	054-03257
¾" thread with 1 round hole	0.4" to 0.7" diameter Cable	054-03246
Steel lock nut ½"		054-03238
Steel lock nut ¾"		054-03244



Barrel Connectors

These UL Listed connectors are tin-plated high strength aluminum alloy and can be used with copper or aluminum wire. Single- and double barrel connectors utilize set screws to secure wires in place. These are not approved for use with fine stranded wire.

Barrel Connectors			
Type	Wire size (AWG)	Hole size	Item code
Single	14 to 2	1/4"	051-03319
Single	14 to 2/0	1/4"	051-03327
Double	14 to 2/0	1/4"	051-03324
Single	6 to 4/0	3/8"	051-03334
Double	6 to 4/0	3/8"	051-03330



Power Distribution Blocks

Use these blocks to split primary power into secondary circuits, or join cables from a solar array to a power lead-in cable. Just install cables and tighten the set screws. Terminal blocks are made of zinc-plated aluminum for use with aluminum or copper conductors. 2 poles. Primary side accepts one large cable; secondary side accepts 6 smaller cables. UL Recognized for up to 600 VDC.

Power Distribution Blocks					
Primary wire size	Taps	Secondary wire size	Taps	Rating	Item code
2/0 – 8	1	#14 to #6	6	175 A	054-01024
6/0 – 6	1	#14 to #4	6	350 A	054-01027
500mcm – 4	1	2/0 – 14	4	380 A	054-01025
350mcm - 8	1	4 – 14	12	310 A	054-01023



Splicer Blocks

Use these blocks to splice wires of up to #2/0 AWG. They are UL and CSA Listed for up to 600 VDC. The terminal blocks are made of zinc plated aluminum, for use with aluminum or copper conductors. 2-pole and 3-pole blocks have one connection on each side.

Splicer Blocks			
Wire size (AWG)	Poles	Rating	Item code
#8 to 2/0	2	175 A	054-01030
#8 to 2/0	3	175 A	054-01033



Inverter Bypass Switch

Wired between any 120 VAC inverter/ charger, generator, and load center, this unit allows you to bypass a failed inverter. When the bypass switch is thrown, the generator is connected directly to the load center. The inverter can then be removed for repair. This is designed for inverters with built-in transfer switches. Maximum current is 60 A and dimensions are 13.5"H x 6.25"W x 3.5"D.

Inverter Bypass Switch		
Description	Weight	Item code
Inverter bypass switch	7 lbs	053-07819



MidNite Solar Manual Transfer Switch

These 120/240 VAC manual transfer switches have a neutral busbar and ground box lug terminal. These 120/240 VAC manual transfer switches have a neutral busbar and ground box lug terminal. Dimensions are 9"H x 5"W x 4"D. It can be used with up to #6 AWG wire to connect utility power and a generator to inverters with one AC input.

Manual Transfer Switch		
Description	Weight	Item code
Dual 30 amp 240 VAC transfer switch	4 lbs	053-07851
Dual 60 amp 240 VAC transfer switch	4 lbs	053-07853

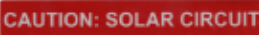
HellermannTyton

NEW! Safety Labels

The NEC and International Fire Code (IFC) require specific components of a PV system to be labeled for the safety of operators, maintenance, and emergency responder personnel. The Code also requires these labels to be appropriately weather resistant (IFC 605.11.1.1) and durable (NEC 110.21). These labels are UV and weather resistant and should meet Code requirements in most jurisdictions. Note that some jurisdictions still require engraved placards. The labels are designed to permanently adhere to metallic, baked enamel, and powder-coated surfaces in most outdoor environments.

Preprinted Safety Labels

The language and letter height on these **Standard Labels** is designed to meet NEC 110, NEC 690 and IFC 605 requirements. **Reflective Labels** are available for disconnect and conduit markers as required by the Code. The **Fill-In-The-Blank Labels** have white blanks that can be filled in with system parameters ahead of time using a 4" or larger thermal transfer printer, such as the TT230SMC (See Tools). They can also be filled out in the field using a permanent marker so long as the transparent laminate is then placed over them. The labels will remain adhered in temperatures down to -40° and as high as 175°F [79°C] but must be applied when temperatures are above 50°F [10°C]. UL 969 Recognized.



Standard Labels				
Placement ¹	Label text	Dimensions	Pkg Qty	Item code
Combiners, Enclosures, AC Disconnect	"WARNING ELECTRICAL SHOCK HAZARD DO NOT TOUCH TERMINALS. TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION"	3.75" x 2"	50	188-09000
DC Disconnect	Includes label above and appends "DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT"	3.75" x 2.5"	50	188-09001
Meter, Breaker panel, Inverter	"WARNING ELECTRICAL SHOCK HAZARD IF A GROUND FAULT IS INDICATED, NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED"	4.12" x 2"	50	188-09002
Combiners, Enclosures, Breaker panel	"WARNING ELECTRIC SHOCK HAZARD THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED"	4.12" x 2"	50	188-09003
Combiners, Breaker panels, Service Disconnect	"WARNING TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL"	4.12" x 2"	50	188-09004
Breaker panel	"WARNING DUAL POWER SOURCE SECOND SOURCE IS PV SYSTEM"	4.12" x .75"	50	188-09005
Breaker panel	"CAUTION PV SYSTEM CIRCUIT BREAKER IS BACKFED"	4.12" x .75"	50	188-09006

Reflective Labels				
Placement ¹	Label text	Dimensions	Pkg Qty	Item code
Breaker panel	"DO NOT DISCONNECT UNDER LOAD"	6.5" x 1"	50	188-09007
Service disconnect	"CAUTION SOLAR ELECTRIC SYSTEM CONNECTED"	6.5" x 1"	50	188-09008
Combiners, Enclosures, Conduit	"CAUTION: SOLAR CIRCUIT"	6.5" x 1"	50	188-09009
Service disconnect	"SOLAR DISCONNECT"	6.5" x 1"	50	188-09010
	"MAIN PV SYSTEM DISCONNECT"	5.5" x 1.75"	50	188-09011
	"MAIN PV SYSTEM AC DISCONNECT"	5.5" x 1.75"	50	188-09012
Combiners, Enclosures, Conduit	"PHOTOVOLTAIC POWER SOURCE"	6.5" x 1"	50	188-09013

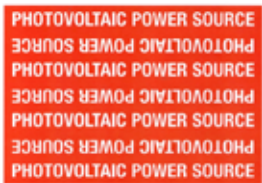


Fill-In-The-Blank Labels				
Placement ¹	Label text	Dimensions	Pkg Qty	Item code
PV Modules	"RATED MAX POWER POINT CURRENT ____ RATED MAX POWER POINT VOLTAGE ____ MAXIMUM SYSTEM VOLTAGE ____ SHORT CIRCUIT CURRENT ____ MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER IF INSTALLED ____"	4" x 2"	50	188-09014
Disconnects	"RATED AC OPERATING CURRENT ____ MAX RATED AC OPERATING CURRENT ____ RATED AC OPERATING VOLTAGE ____ MAX RATED AC OPERATING VOLTAGE ____ RATED SHORT CIRCUIT CURRENT ____ MAXIMUM SYSTEM VOLTAGE"	4" x 2"	50	188-09015
Disconnects	PV SYSTEM DC DISCONNECT OPERATING CURRENT: ____ OPERATING VOLTAGE: ____ MAXIMUM SYSTEM VOLTAGE: ____ SHORT CIRCUIT CURRENT: ____	3.75" x 2"	50	188-09016
Disconnects	PHOTOVOLTAIC AC DISCONNECT MAXIMUM AC OPERATING CURRENT: ____ MAXIMUM AC OPERATING VOLTAGE: ____	3.75" x 1"	50	188-09017
AC Disconnect	PHOTOVOLTAIC ____ AC DISCONNECT	3.75" x 1"	50	188-09018
DC Disconnect	PHOTOVOLTAIC ____ DC DISCONNECT	3.75" x 1"	50	188-09019
Over rating labels	CLEAR ADHESIVE LAMINATE	4.2" x 2.25"	50	188-09020
AC modules	NOMINAL OPERATING VOLTAGE ____ NOMINAL OPERATING AC FREQUENCY ____ MAXIMUM AC POWER ____ MAXIMUM AC CURRENT ____ MAX OVERCURRENT DEVICE RATING FOR AC MODULE PROTECTION ____	4" x 2"	50	188-09021

¹Placement suggestions are the most common applications for the given label; it is by no means an exhaustive list of where the label may be required.

Solar Circuit Markers

The language and letter height on these **Standard Labels** is designed to meet NEC 110, NEC 690 and These markers are pre-printed, non-adhesive coiled labels that can be opened and recoiled around cables up to 0.25" diameter and conduit up to 1" diameter. The markers are made from UV stable vinyl and come in packages of 25.



Non-Adhesive Circuit Markers				
Placement	Label text (repeated in alternating directions)	Dimensions	Pkg Qty	Item code
PV cables	CAUTION: SOLAR CIRCUIT	4" x 2"	25	188-09022
Conduit	CAUTION: SOLAR CIRCUIT	7.2" x 5"	25	188-09023
PV cables	PHOTOVOLTAIC POWER SOURCE	4" x 2"	25	188-09024
Conduit	PHOTOVOLTAIC POWER SOURCE	7.2" x 5"	25	188-09025

Custom Printed Labels

AEE Solar can provide custom adhesive labels that are 5-year outdoor rated at temperatures from -40 to 180°F [150°C]. Widths of up to 4" are available with white text on red or black vinyl or black text on white vinyl. Contact your Sales Representative or visit www.aeesolar.com for more information.

