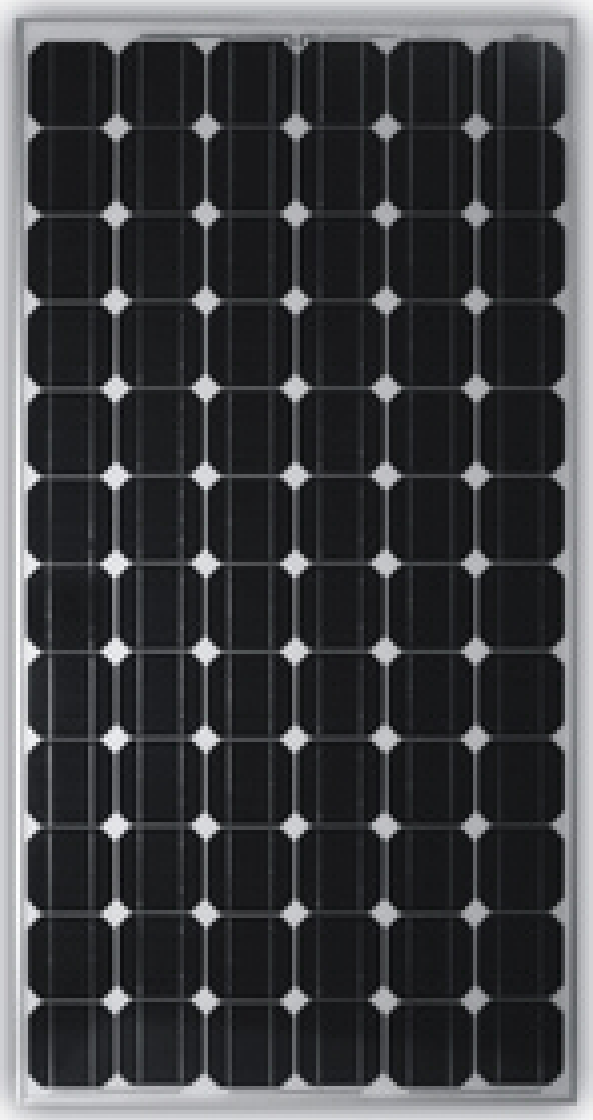
nbsolar

Mono-Crystalline Photovoltaic Module

TDB125×125-72-P 170W / 175W / 180W



Anti-reflective solar glass

NBSolar modules use a textured cell surface and tempered glass for solar use to reduce reflection of sunlight. An anti -reflective coating provides a uniform blue color and increases the absorption of light in all weather conditions.

Long service life

NBSolar modules will last for at least 25 years.5 years warranty on material and workmanship and guarantee their output at 90% after 10 years and 80% after 25 years.

Excellent construction

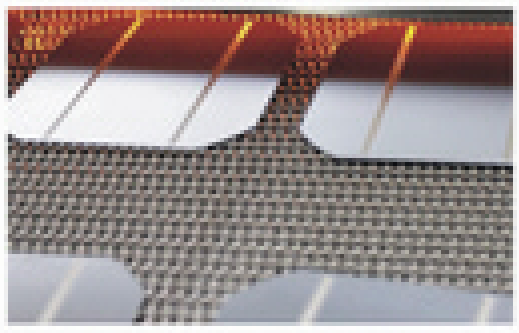
NBSolar modules have been encapsulated with the greatest care: they resist corrosion caused by rain, water and gas. Their anti-shocking performance makes them resist hail and work under atrocious weather conditions where temperature changes quickly.

- Qualified, IEC 61215
- Safety tested, TUV-Spec 931/S 572.9
- Periodic Inspection

35AY
LISTED
PHOTOVOLTAIC MODULE

Real life examples

NBSolar modules have been applied in many areas, such as building roofs, photovoltaic power plants and telecommunication stations. Our modules are exported globally and we continue to maintain an already outstanding reputation.



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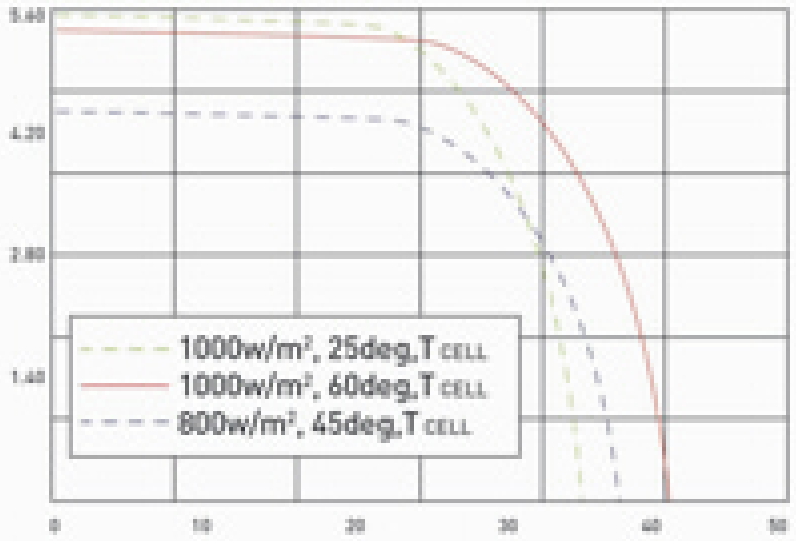
Mono-Crystalline Photovoltaic Module

TDB125×125-72-P 170W / 175W / 180W

Electrical Characteristics

	170Wp	175Wp	180Wp
Maximum Power (Pmax)	170W	175W	180W
Power Tolerance (%)	±3	±3	±3
Maximum Power Voltage (Vmp)	35.8	36.0	36.2
Maximum Power Current (Imp)	4.75	4.87	4.98
Open circuit Voltage (Voc)	44.2	44.4	44.6
Short circuit Current (Isc)	5.14	5.21	5.28
Maximum System Voltage (VDC)	600	600	600

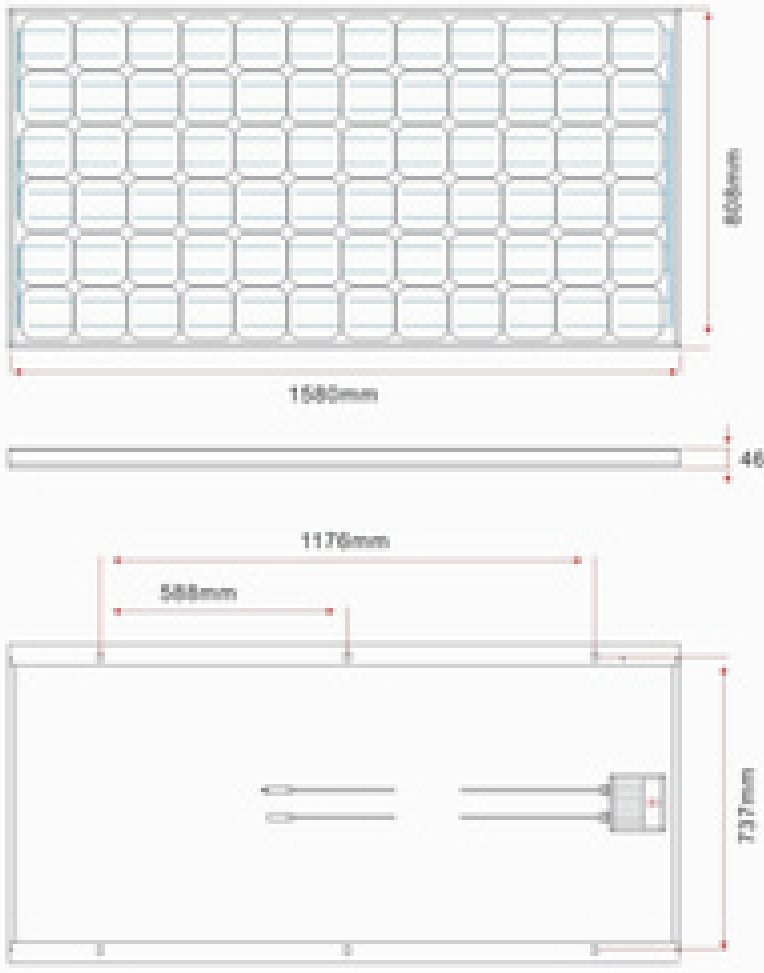
I-v curves



Mechanical Characteristics

Weight(kg)	16 kg
Frame structure (Material, Corners)	Aluminium
Front side	Glass
Front glass thickness	3.2 mm
Encapsulant	EVA
Back side	TPT
Junction Box	Sun-Earth

Dimensions



Cells

Brand Name of Solar Cells	Sun-Earth
Cell Type	Mono Crystalline Cell
Cell Size	125*125 mm
Cell Shape	Quasi Square
Number Cells	72 in series

Absolute Maximum Ratings

Operating Temperature	40°C~+90°C
Storage Temperature	-40°C~+90°C
Maximum Load Capacity	200 Kg/m2
Maximum Hail diameter @ 80Km/h	25mm

Standard Test Conditions

AM	1.5
Irradiation	1000 W/m2
Tc	25°C

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AURORA®
Photovoltaic Inverter

General Specifications
Outdoor models

PVI-5000-OUTD-US
PVI-6000-OUTD-US

High-Efficiency, 5kW to 6kW Inverters
Aurora® grid-tie transformerless inverters offer a unique combination of ultra-high efficiencies, installer-friendly designs, long service life, and competitive initial acquisition costs; significantly increasing return on investment in solar-power installations.

Industry-Leading Features and Performance
- High efficiencies deliver more energy – up to 97% (96,5 CEC).
- Two inputs with independent MPPTs, optimize power from multiple arrays oriented in different directions.
- Compact size and high power density: 6000W max of output power in a box just 38 5/8" x 12 13/16 x 7 11/16"

Unmatched Applications Flexibility
- Full-rated power available up to 50°C ambient temperature.
- Dual input sections with parallel option, with independent high-speed MPPTs, optimize energy harvesting from multiple arrays oriented in different directions.
- Wide MPPT operating range: 90 to 580VDC

Field-Proven Reliability
- IP65 (NEMA 4) rated enclosure withstands the harshest environmental conditions.
- Front-mounted heat sink resists contamination, enhancing cooling and increasing reliability and long-term efficiency.
- Grid-connected operation according to international standards, UL1741/IEEE1547 & CSA-C22.2 N.107.1-01
- Five-year warranty, optionally extendable to ten years.

Installer Friendly
- Reverse-polarity protection minimizes potential damage caused by miswiring during installation.
- Front-panel mounted LCD display provides real-time updates for all critical operating parameters.
- RS-485 and USB communications interfaces.
- Integrated DC switch available in compliance with NEC Standard, Article 690 "Solar Photovoltaic System" (USA)
- Anti-islanding protection

Models	*AC Power*
PVI-5000-OUTD	5kW
PVI-6000-OUTD	6kW
Options	
Aurora Communicator software simplifies monitoring via PC. Aurora Easy Control datalogger is available for remote control via Internet, modem or GSM	

Renewable Energy Division

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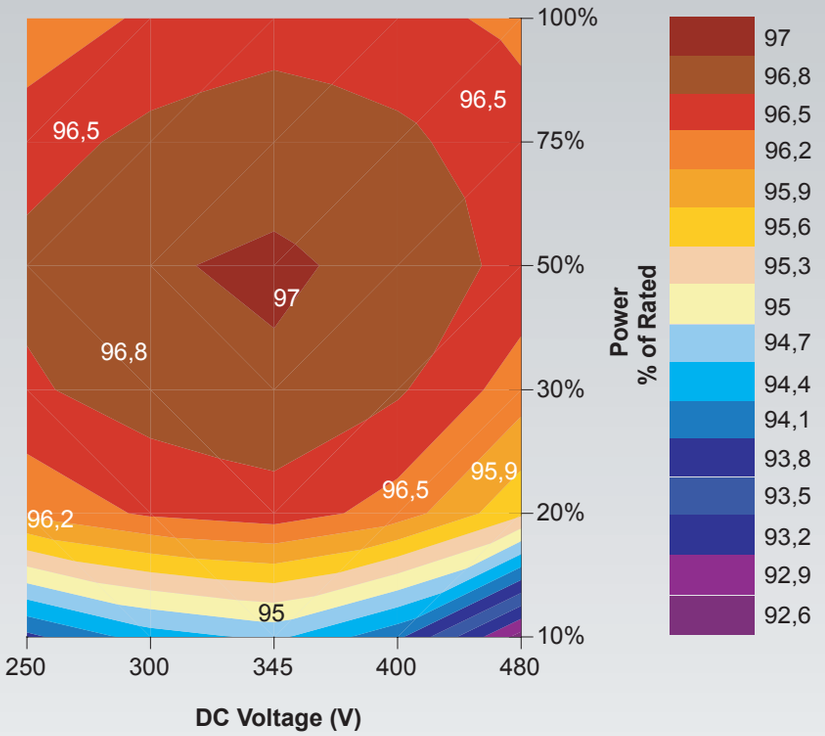
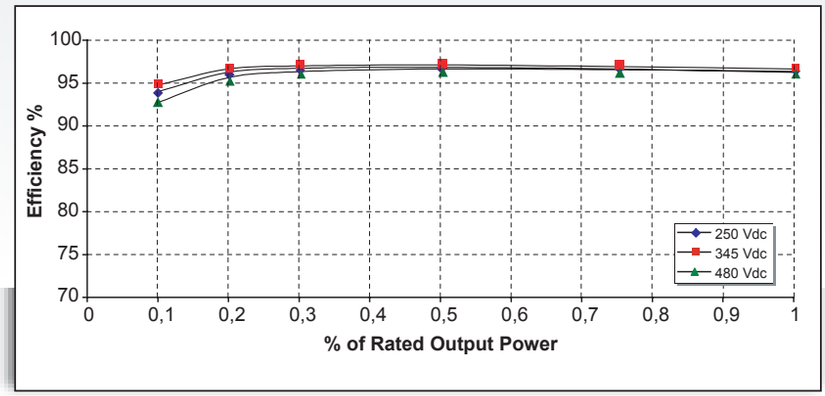
AURORA®
Photovoltaic Inverter

High Efficiencies Across a Broad Range of Operating Conditions

PVI-5000 and PVI-6000 inverters provide 208/240/277 Vac selectable outputs, at up to 97% efficiency (CEC 96.5). The graph to the right demonstrates the high efficiencies, across a continuous range of input voltages and load conditions, for the PVI-6000.

The graphs below depict the industry-leading performance of all models at three discrete MPPT-voltage reference points, and a continuous range of load conditions.





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AURORA®
Photovoltaic Inverter

SPECIFICATIONS	PVI-5000-OUTD	PVI-6000-OUTD
INPUT PARAMETERS (DC Side)		
Nominal DC Power [kW]	5.15	6.18
Total Max. Recommended DC Power [kW]	5.3	6.4
Operating MPPT Input Voltage Range [V]	90 to 580 (360 nominal)	
Full Power MPPT Range [V]	140-530	170-530
Max. Input Voltage [V]	600	
Activation Voltage [V]	200 nominal (adjustable within 120-350)	
No Of Independent MPPT Trackers	2	
Max. Input Power, Each MPPT [kW]	4	4
No. Of DC Inputs	2 (1 each MPPT)	2 (1 each MPPT)
Max. DC Current, Each MPPT [A]	18 (22 short circuit)	18 (22 short circuit)
Thermally Protected DC Side Varistor	4 (2 for each MPPT)	
DC Switch	Integrated (Rating: 600Vdc/25A)	
DC Connections	4 (2 POSITIVE, 2 NEGATIVE) SCREW TERMINAL BLOCK 3 KNOCK-OUTS: G1&1/2" or G1" (using ring reduction) CONDUCTOR CROSS SECTION : MAX AWG4	
OUTPUT PARAMETERS (AC Side)		
Nominal AC Power [kW]	5000	6000
Max. AC Power [kW]	5000	6000
AC Grid Connection	single phase / split phase	
Nominal AC Voltage Range [V]	Default : 240V split phase Optional : 208 or 277 single phase (setting required)	
Maximum AC Voltage Range [V]	187.2-224.6 ; 216-259.2 ; 249.3-299.2	
Nominal AC Frequency [Hz]	60	
Max. AC Line Current [A]	24; 20;18 (30 short circuit)	29; 25;21.6 (30 short circuit)
AC Side Varistor	2 (Live - Neutral / Live - PE)	
AC Connection	SCREW TERMINAL BLOCK 3 KNOCK-OUTS: G1&1/2" or G1" (using ring reduction) CONDUCTOR CROSS SECTION : AWG4/8	
Line Power Factor	1	
AC Current Distortion (THD)	<2% at rated power with sine wave voltage	
Max. Efficiency	97%	
CEC Efficiency	96.5%	
Feed In Power Threshold [W]	20	
Night Time Consumption [W]	< 2	
Isolation	Transformer-less	
ENVIRONMENTAL PARAMETERS		
Cooling	Natural cooling	
Ambient Temp. Range [°C]	-25 / + 60 (output power derating above 50°C)	
Operating Altitude [ft]	6.000	
Acoustical Noise [dBA]	< 50 @ 1mt	
Environmental IP Rating	IP65	
Relative Humidity	0-100% condensing	
MECHANICAL		
Dimensions (HxWxD) [Inches]	38 5/8" x 12 13/16" x 7 11/16"	
Weight [lbs]	66	
OTHER		
Display	YES (Alphanumeric 2 lines)	
Communication	RS485 (Spring terminal block - Conductor cross section: 0,08-1,5mmq/AWG28-16) USB connection (Service) "Aurora Easy-Control" system for remote control (Optional)	

Standards and Codes

Aurora inverters comply with standards set for grid-tied operation, safety, and electromagnetic compatibility including: UL1741/IEEE1547 & CSA -C22.2 N.107.1-01, VDE0126, CEI 11-20, DK5940, CEI64-8, IEC 61683, IEC 61727, EN50081, EN50082, EN61000, CE certification, El Real Decreto RD1663/2000 de España.

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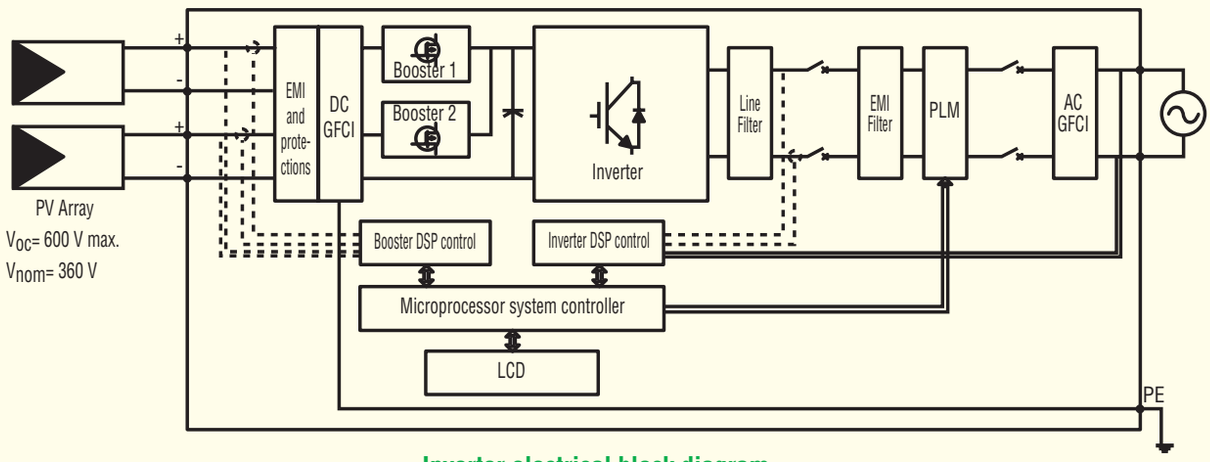
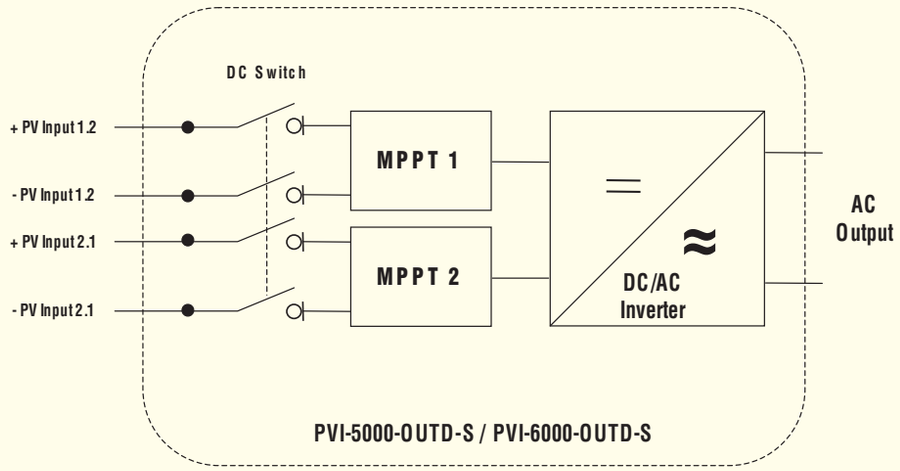
AURORA®
Photovoltaic Inverter

Block Diagram and Operating Configurations



Inverter electrical block diagram



PVI-5000-OUTD-S / PVI-6000-OUTD-S

Rev.1.1 June.10, 2009

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aesales-eu@power-one.com

North America - Power-One Inc.
740 Calle Plano
Camarillo, California - 93012-8583
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www.power-one.com

Power One inverter benefit: Dual modulation, not singular. Strings in different orientation (S, W, E) can be connected to a single inverter, so if the sun saturation is different on each string, it does not affect the performance of the other strings. In a conventional inverter, a string with only 60% sun saturation will bring down the level of a 100% saturated string to an 80% power level. This will not happen with the Power One dual modulating inverter. In addition, Power One inverters have very low startup Voltage (120V) and cutoff Voltage (90V), so the PV array starts generating power earlier in the day, and stops generating later in the day than most other inverters on the market.

Mounting & Racking System Catalog

Next Generation Energy® has combined NEX® Tube with the patent pending, tremendous Zilla™ system to make racking so simple it's scary. The capabilities of this new system are outstanding. There has never been a more dynamic, omni-laterally strong racking system available. Supporting all solar panel modules and products, Zilla™ has been engineered with versatility and simplicity in mind. Using less total material, it allows for a finer, stronger product exhibiting the highest standard of craftsmanship. Our attractive new design is an asset to any solar system.

Zilla™ is made with recycled aluminum and is 100% recyclable.

next generation energy®

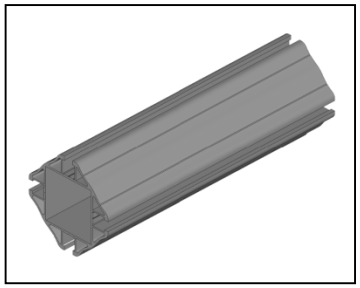
It's in the Sun!™

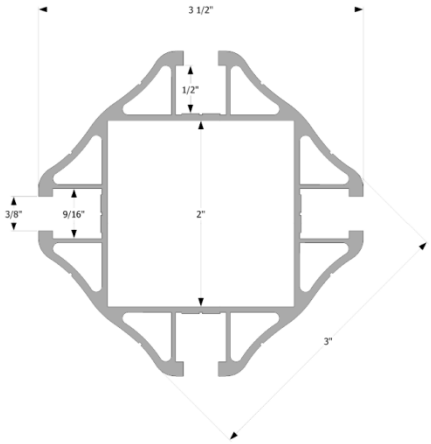
www.zillarac.com

Zilla™ Rac

The superiority of design allows compatibility with any racking and standoff components. Every type of solar system installation is made simple with Zilla™, and therefore costs are cut down significantly. We have focused on the strength, durability, and outstanding engineering, in order to deliver the best racking system possible. In conjunction with the Zilla™ Flashing mounting system, this rack allows for a near flush mounting at any angle with unlimited options. Zilla™ Rac is also perfectly integrated with NEX®, which provides a hybrid solution with superior strength.

Zilla™ Rac 3.5





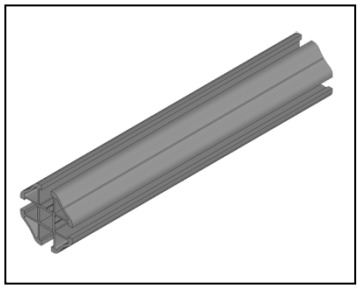
ZR-3.5

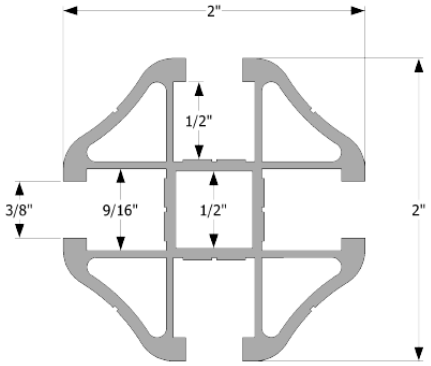
3.5" Diameter

The 3.5 series was designed to hold the heaviest of loads, while still providing the largest variety of applications.

Product	Material	Size	Color	#/ pkg
ZR-3.5	6005 T5 aluminum alloy	3.5"x19'	Clear	4
ZR-3.5BLK			Black	

Zilla™ Rac 2.0





ZR-2.0

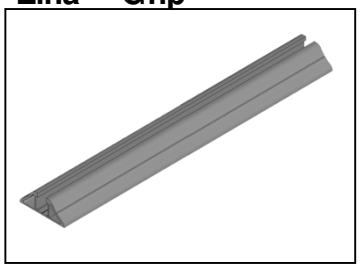
2.0" Diameter

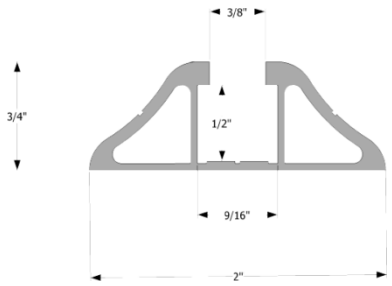
The 2.0 series was designed to hold the medium of loads, and also provide the largest variety of applications possible.

Product	Material	Size	Color	#/ pkg
ZR-2.0	6005 T5 aluminum alloy	2"x19'	Clear	4
ZR-2.0BLK			Black	

Note: All Nex® and Zilla™ Products are 100% compatible with all sizes of Zilla™ Rac and Zilla™ Grip

Zilla™ Grip



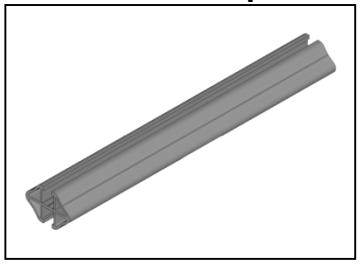


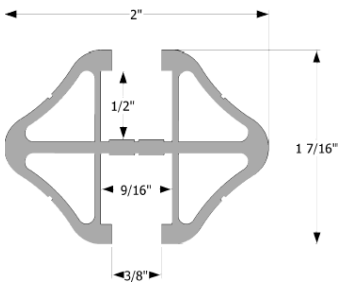
ZG-2.0

The Zilla™ Grip was designed to hold light loads but it is still able to be used in many different ways.

Product	Material	Size	Color	#/ pkg
ZG-2.0	6005 T5 aluminum alloy	2"x8' 2"x10' 2"x12'	Clear	4
ZG-2.0BLK			Black	

Zilla™ Dual Grip





ZGD-2.0

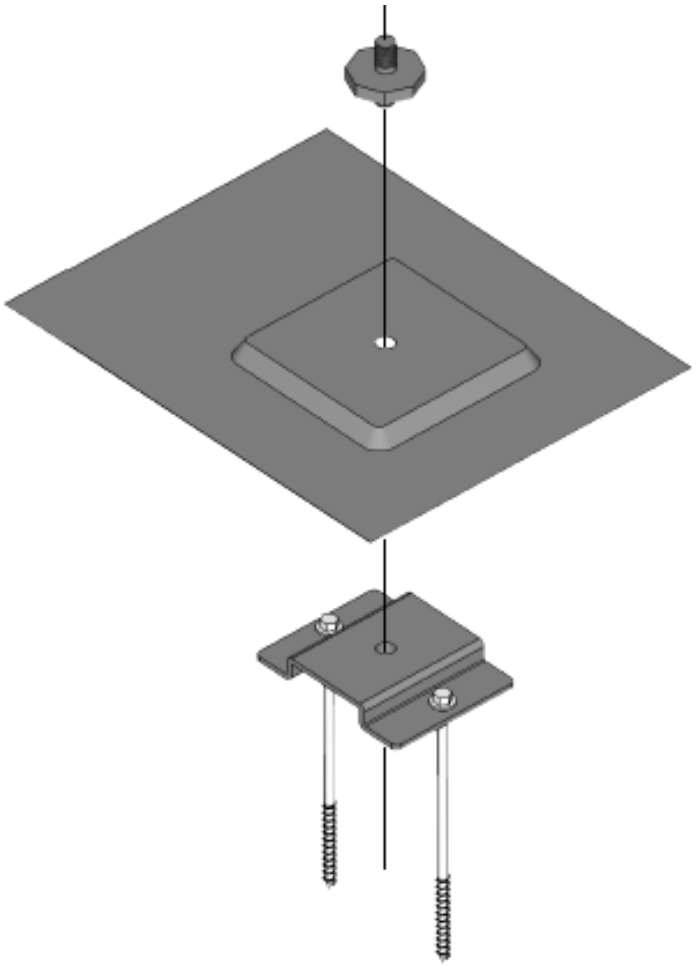
The Zilla™ Dual Grip was designed to hold light loads just like the Grip, except pieces can be attached on both sides of it.

Product	Material	Size	Color	#/ pkg
ZGD-2.0	6005 T5 aluminum alloy	2"x8' 2"x10' 2"x12'	Clear	4
ZGD-2.0BLK			Black	

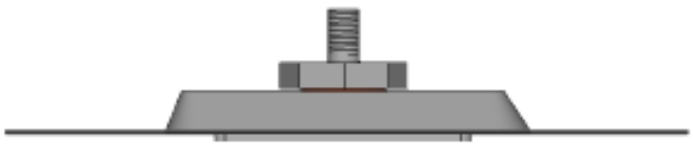
Zilla™ Flashing Assembly

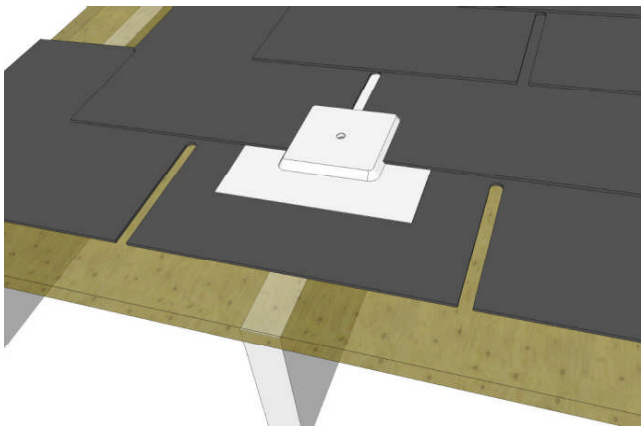
Zilla™ Flashing is a multi component racking system that incorporates a complete flashing system, adjustable standoffs and other mounting hardware options, in order for it to outlast your solar system. Simple installation & less material used cuts the costs of traditional racking systems significantly. It uses either Zilla™ or standard hardware in order to mount flush, roof, ground, pole, awning and other special applications. The Zilla™ Flashing is also completely integrated with NEX® Tube racking and components.

Zilla™ Flashing is the best flashing assembly available on the market. Zilla™ can be used with any available standoff and components. The longevity of this product is outstanding, outlasting the roof and your solar system due to the innovative design that protects all of the components from environmental factors.



The Zilla™ Flashing Assembly is sold as 4 piece assembly. This assembly includes: double stud bolt, silicone washer, flashing, and base plate. However, we also sell the double studded bolts and washers separately.





- Greatly simplifies input and output wiring
- Available in 6 to 52 circuit configurations
- Compact, rugged low cost design
- Reliable bus-work for efficient high current conductor combining
- PV positive wires all land directly on Touch Safe™ fuse holders
- Sturdy NEMA 3R/4 wall mount steel enclosure
- ETL listed to UL 1741

SB/SC COMBINER BOXES

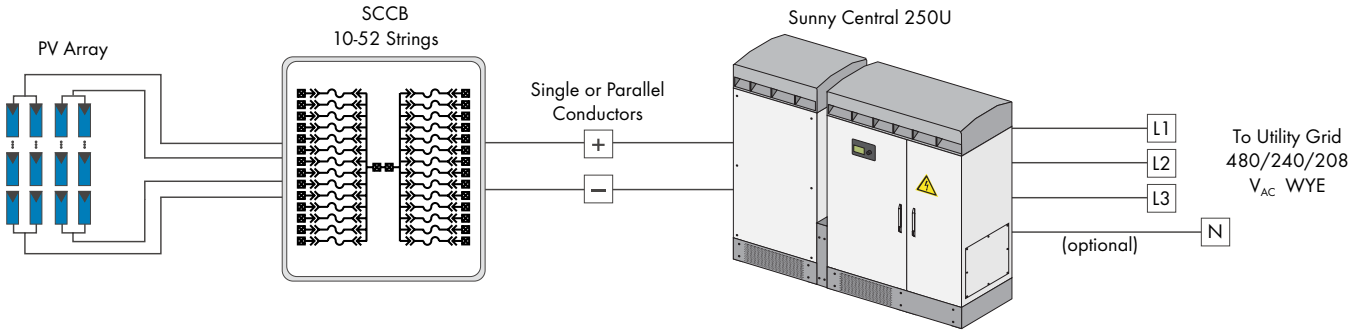
Simplify wiring for added convenience and safety

SMA America's SB/SC Combiner Boxes are available in sizes ranging from 6 to 52 PV inputs to provide greater flexability and expandability in system design. Oversized bus-work adds high efficiency and dependability where it's needed most. The large NEMA 3R/4 enclosure provides ample room for conductors which reduces installation time. Designed with installers in mind, we know you'll find the SB/SC Combiner Boxes a welcome addition to our great line of inverter products.

Technical Data
SB/SC COMBINER BOX

	SBCB-6 (Sunny Boy)	SCCB-12 (Sunny Central)	SCCB-28 (Sunny Central)	SCCB-52 (Sunny Central)
Number of Inputs (Positive & Negative)	6	12	28	52
Positive Input Wire Size	10 to 6 AWG	10 to 6 AWG	10 to 6 AWG	10 to 6 AWG
Positive Input Terminal Torque	14 in-lb.	14 in-lb.	14 in-lb.	14 in-lb.
Negative Input Wire Size	10 to 6 AWG	10 to 6 AWG	10 to 6 AWG	10 to 6 AWG
Negative Input Terminal Torque	35 in-lb.	35 in-lb.	35 in-lb.	35 in-lb.
Output Wire Size	6 to 350 AWG	6 to 350 AWG	6 to 350 AWG	6 AWG to 300 MCM
Output Terminal Torque	350 in-lb.	350 in-lb.	350 in-lb.	350 in-lb.
Max. Input Fuse Rating (Midget)	15 A, 600 V_{DC}	20 A, 600 V_{DC}	15 A, 600 V_{DC}	8 A, 600 V_{DC}
Max. Output Current	90 A_{DC}	240 A_{DC}	420 A_{DC}	416 A_{DC}
Max. Continuous Output Current	72 A_{DC}	192 A_{DC}	336 A_{DC}	333 A_{DC}
Max. Number of Output Wires	1 Pos, 1 Neg	1 Pos, 1 Neg	2 Pos, 2 Neg	2 Pos, 2 Neg
PV Array Configuration	Negative Grounded*	Negative Grounded*	Negative Grounded*	Negative Grounded*
Enclosure Type	NEMA 3R, Steel	NEMA 3R/4, Steel	NEMA 3R/4, Steel	NEMA3R/4, Steel
Weight (Approximate)	11 lbs	48 lbs	56 lbs	70 lbs
Dimensions W x H x D in inches	8 x 10 x 6	16 x 16 x 6	20 x 20 x 8	30 x 42 x 8

Other sizes and designs available upon request.
*Fusing available on positive or negative input, specify when ordering



SMA's line of SB and SC Combiner Boxes is a culmination of many years of experience with the difficulties of combining large numbers of PV strings. This simple component has generally become known as a common point of failure in large PV arrays. The SMA design minimizes the number of components, resulting in the most robust, easy to install, low cost and reliable combiner boxes in the PV industry. PV wires are landed directly to individual Touch Safe™ fuse holders. The fuse holder outputs are combined into heavy-duty bus-bar combs where the output wires are connected to over-sized mechanical lugs. All wiring is routed in an orderly manner through the enclosure, minimizing the chance of shorting caused by pinched or abraded wires. Individual PV string circuit fuses may be safely de-energized and removed by opening the Touch Safe™ fuse holders. No special tools are required. Output wires may be paralleled, keeping wire sizes small and easy to pull through conduit. Combiner boxes may be paralleled to increase the total number of PV strings. The steel enclosure is rated for outdoor installations and all SMA combiner boxes are ETL listed to UL 1741. Please call for availability of models not listed in the chart above or for special order configurations.

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SMA America, Inc.