

HIGHWAY

HT72-156M
HT72-156M(V) * V means 1500V module
365W-390W

Comprehensive and first-rate certification system

IEC61215:2016, IEC61730:2016 Latest Standard
 ISO9001, ISO14001 and OHSAS18001, meeting the highest international standards
 Strict quality control



IEC 61215:2016
 IEC 61730:2016



Advanced surface treatment, less surface reflection and 5BB cell design can reduce the series resistance and improve the output



20.1%
 Module Efficiency



Designed for high voltage systems of up to 1500 VDC, increasing the string length of solar systems and saving on BoS costs



Certified to withstand dynamic mechanical load 1000 Pascal



Higher module's output power



PID resistant



Ammonia corrosion resistant
 Salt Mist Corrosion resistant



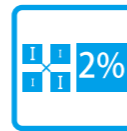
Microcrack resistant
 Triple EL tested of high quality control.



Entire module certified to withstand extreme wind (2400 Pa) and snow loads (5400 Pa)

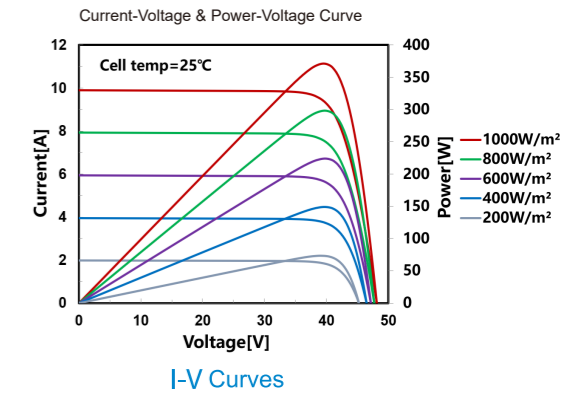
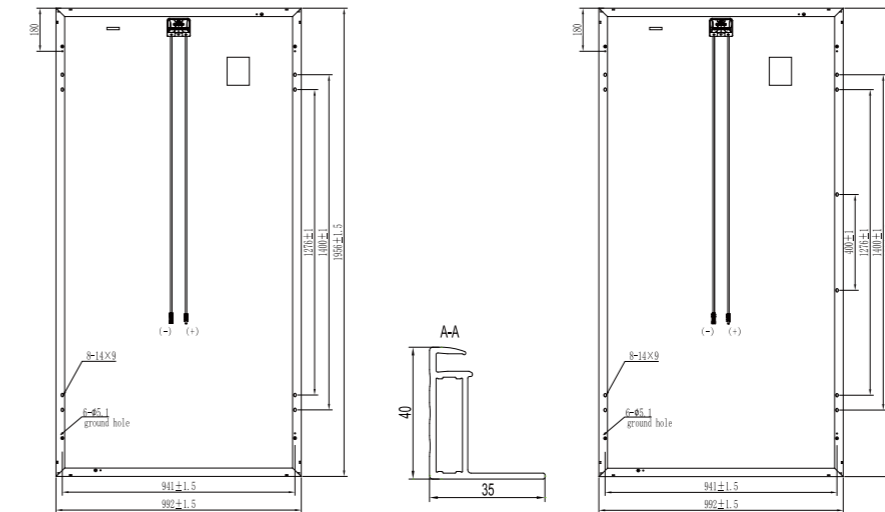


Strict quality control, meeting the highest international standards: ISO 9001, ISO14001



All the modules are sorted and packaged by amperage, reducing mismatch losses and maximizing system output.

Engineering Drawing



Electrical Characteristics

Module	HT72-156M/HT72-156M(V)					
	365W	370W	375W	380W	385W	390W
Maximum Power at STC(Pmax)	365W	370W	375W	380W	385W	390W
Open-Circuit Voltage(Voc)	47.9V	48.1V	48.3V	48.5V	48.7V	48.9V
Short-Circuit Current(Isc)	9.83A	9.90A	9.97A	10.04A	10.11A	10.18A
Optimum Operating Voltage (Vmp)	39.5V	39.9V	40.3A	40.7V	41.1V	41.5V
Optimum Operating Current(Imp)	9.26A	9.30A	9.33A	9.36A	9.39A	9.42A
Module Efficiency	18.8%	19.1%	19.3%	19.6%	19.8%	20.1%
Power Tolerance	0 ~ +5W					
Maximum System Voltage	1000V/1500V DC(IEC)					
Maximum Series Fuse Rating	15A					
Operating Temperature	-40 °C to +85 °C					

STC: Irradiance 1000W/m², module temperature 25°C, AM=1.5
 Optional black frame or white frame module according to customer requirements

NOCT

Module	HT72-156M/HT72-156M(V)					
	269W	273W	277W	280W	284W	288W
Maximum Power	269W	273W	277W	280W	284W	288W
Open Circuit Voltage (Voc)	44.8V	45.0V	45.1V	45.3V	45.5V	45.7V
Short Circuit Current (Isc)	7.94A	8.00A	8.05A	8.11A	8.17A	8.22A
Maximum Power Voltage (Vmp)	36.9V	37.2V	37.6V	38.0V	38.4V	38.7V
Maximum Circuit Current (Imp)	7.30A	7.33A	7.35A	7.38A	7.40A	7.42A

NOCT: Irradiance 800W/m², ambient temperature 20°C, wind speed 1 m/s

Mechanical Characteristics

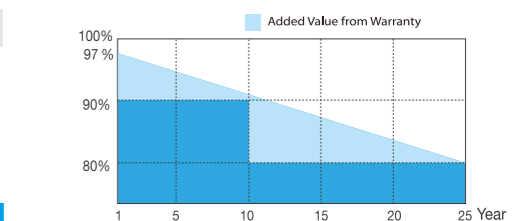
Solar Cells	Monocrystalline 156.75 × 156.75mm
No. of Cells	72 (6 × 12)
Dimensions	1956 × 992 × 40mm (77.0 × 39.1 × 1.6in)
Weight	22.0kg (48.5lbs)
Front Glass	High transmission tempered glass
Frame	Anodized aluminium alloy
Junction Box	IP67
Cable	4mm² (IEC)
Connectors	MC4/MC4 Compatible
Packaging Configuration	26pcs/box, 672pcs/40'HQ Container

Temperature Characteristics

Temperature Coefficient of Pmax	γ (Pm)	-0.39%/°C
Temperature Coefficient of Voc	β (Voc)	-0.29%/°C
Temperature Coefficient of Isc	α (Isc)	0.049%/°C

Warranty

10ys 10-year product warranty
 25ys 25-year warranty on power output



Information Box

Shanghai Aerospace Automobile Electromechanical Co., Ltd.
 Website: <http://htsolar.com/tr/>
 Email: trinfo@ht-saae.com
 Factory: HT SOLAR ENERJI ANONIM SIRKETI
 Lianyungang ShenZhou New Energy Co., Ltd.



SUNNY HIGHPOWER PEAK3 125-US / 150-US

SHP 125-US-20 / SHP 150-US-20



Cost effective

- Modular architecture reduces BOS and maximizes system uptime
- Compact design and high power density maximize transportation and logistical efficiency

Maximum flexibility

- Scalable 1,500 VDC building block with best-in-class performance
- Flexible architecture creates scalability while maximizing land usage

Simple install, commissioning

- Ergonomic handling and simple connections enable quick installation
- Centralized commissioning and control with SMA Data Manager

Highly innovative

- SMA Smart Connected reduces O&M costs and simplifies field-service
- Powered by award winning ennexOS cross sector energy management platform

SUNNY HIGHPOWER PEAK3 125-US / 150-US

A superior modular solution for large-scale power plants

The new Sunny Highpower PEAK3 is SMA's latest addition to a comprehensive portfolio of power plant solutions. The PEAK3 1,500 VDC inverter offers high power density in a modular architecture that achieves a cost-optimized solution for large-scale PV integrators. With fast, simple installation and commissioning, the Sunny Highpower PEAK3 is accelerating the path to energization. SMA has also brought its field-proven Smart Connected technology to the PEAK3, which simplifies O&M and contributes to lower lifetime service costs. The PEAK3 power plant solution is powered by the ennexOS cross sector energy management platform, 2018 winner of the Intersolar smarter E AWARD.

Technical Data	Sunny Highpower PEAK3 125-US	Sunny Highpower PEAK3 150-US
Input (DC)		
Maximum array power	187500 Wp STC	225000 Wp STC
Maximum system voltage	1500 VDC	
Rated MPP voltage range	705 V ... 1450 V	880 V ... 1450 V
MPPT operating voltage range	684 V ... 1500 V	855 V ... 1500 V
MPP trackers	1	
Maximum operating input current	180 A	
Maximum input short-circuit current	325 A	
Output (AC)		
Nominal AC power	125000 W	150000 W
Maximum apparent power	125000 VA	150000 VA
Output phases / line connections	3 / 3-PE	
Nominal AC voltage	480 V	600 V
Compatible transformer winding configuration	Wye-grounded	
Maximum output current	151 A	
Rated grid frequency	60 Hz	
Grid frequency / range	50 Hz, 60 Hz / -6 Hz ... +6 Hz	
Power factor at rated power / adjustable displacement	1 / 0.0 leading ... 0.0 lagging	
Harmonics (THD)	<3%	
Efficiency		
CEC efficiency	98.5 %	99.0 %
Protection and safety features		
Ground fault monitoring: Riso / Differential current	● / ●	
DC reverse polarity protection	●	
AC short circuit protection	●	
Monitored surge protection (Type 2): DC / AC	● / ●	
Protection class / overvoltage category (as per UL 840)	I / IV	
General data		
Device dimensions (W / H / D)	770 / 830 / 444 mm (30.3 / 32.7 / 17.5 in.)	
Device weight	98 kg (216 lbs)	
Operating temperature range	-25°C ... +60°C (-13°F ... +140°F)	
Storage temperature range	-40°C ... +70°C (-40°F ... +158°F)	
Audible noise emission (full power @ 1m and 25°C)	< 69 dB(A)	
Internal consumption at night	< 5 W	
Topology	Transformerless	
Cooling concept	OptiCool (forced convection, variable speed fans)	
Enclosure protection rating	Type 4X (as per UL 50E)	
Maximum permissible relative humidity (non-condensing)	100%	
Additional information		
Mounting	Rack mount	
DC connection	Terminal lugs - up to 600 kcmil CU/AL	
AC connection	Screw terminals - up to 300 kcmil CU/AL	
LED indicators (Status/Fault/Communication)	●	
SMA Speedwire (Ethernet network interface)	● (2 x RJ45 ports)	
Data protocols: SMA Modbus / SunSpec Modbus / Webconnect	● / ● / ●	
OptiTrac Global Peak (shade tolerant MPP tracking)	●	
Integrated Plant Control / Q on Demand 24/7	● / ●	
Off-grid capable / SMA Hybrid Controller compatible	- / ●	
SMA Smart Connected (proactive monitoring and service)	●	
Certifications		
Certifications and approvals	UL 62109, UL 1998, CAN/CSA-C22.2 No.62109	
FCC compliance	FCC Part 15, Class A	
Grid interconnection standards	IEEE 1547, UL 1741 SA - CA Rule 21, HECO Rule 14H	
Advanced grid support capabilities	L/HVRT, L/HVRT, Volt-VAr, Volt-Watt, Frequency-Watt, Ramp Rate Control, Fixed Power Factor	
Warranty		
Standard	5 years	
Optional extensions	10 / 15 / 20 years	
Type designation	SHP 125-US-20	SHP 150-US-20
Technical data as of April 2019 ● Standard features ○ Optional features – Not available		

SHP150-US-14: Changes to products and services, including those resulting from country-specific requirements, as well as deviations from technical data are subject to change at any time without notice. SMA assumes no liability for typographical or other errors. Please visit www.SMA-Solar.com for the latest information.

Technical Data

Table 19.1-15. Typical Data for 480 V Class DOE 2016 Efficient Dry-Type Transformers, Aluminum Wound ①

kVA	Frame	Weight	Losses in Watts		Efficiency (T Rise +20 °C)				% Regulation		% Imp. T Rise +20 °C	X T Rise +20 °C	R T Rise +20 °C	Sound Level dB (per NEMA ST-20)	Efficiency at 35% Load 75 °C	Inrush Practical Max.
			No Load	Total at Rise +20 °C	25%	50%	75%	Full Load	100% PF	80% PF						
Type DS-3 150 °C Rise DOE 2016 Efficient Single-Phase																
15	816	246	80	549	97.6	97.6	97.2	96.6	2.0	2.9	4.3	3.0	3.1	45	97.70	245
25	818	359	300	848	97.7	98.1	97.9	97.5	1.4	2.7	3.5	2.8	2.2	45	98.00	379
37.5	818	374	125	1314	98.1	97.8	97.2	96.6	2.2	4.6	5.8	4.8	3.2	45	98.20	355
50	819	555	300	1668	98.2	98.1	97.6	97.0	1.9	4.0	5.1	4.3	2.7	45	98.30	528
75	820	740	170	2266	98.4	98.2	97.6	97.0	2.3	5.3	6.9	6.3	2.8	50	98.50	701
100	821	841	260	2543	98.5	98.4	98.0	97.6	1.9	4.7	6.1	5.6	2.3	50	98.60	944
167	814	1610	900	3987	68.7	98.7	98.4	98.0	1.4	6.8	9.7	9.5	1.8	55	98.70	416
Type DS-3 115 °C Rise DOE 2016 Efficient Single-Phase																
15	816	246	80	519	97.8	97.8	97.3	96.8	2.1	3.1	3.9	2.6	2.9	45	97.70	244
25	818	373	300	766	97.7	98.1	98.0	97.7	1.4	2.8	3.3	2.8	1.9	45	98.00	367
37.5	818	380	125	1182	98.2	98.4	98.1	97.8	2.0	3.1	4.1	2.9	2.8	45	98.20	205
50	819	590	300	417	98.4	98.3	97.9	97.4	1.8	4.1	5.2	5.2	0.2	45	98.30	511
75	820	689	170	2356	98.5	98.2	97.6	97.0	2.7	5.6	6.9	6.3	2.9	50	98.50	572
Type DS-3 80 °C Rise DOE 2016 Efficient Single-Phase																
15	818	360	115	269	97.4	98.3	98.4	98.4	0.8	1.7	2.0	1.8	1.0	45	97.70	460
25	818	370	120	580	97.8	98.2	98.0	97.8	1.5	3.2	3.9	3.4	1.8	45	98.00	348
37.5	819	565	150	834	98.1	98.4	98.1	97.8	1.5	3.3	4.1	3.6	1.8	45	98.20	490
50	820	680	175	1014	98.4	98.5	98.4	98.1	1.5	3.4	4.2	3.9	1.7	45	98.30	577
75	821	900	260	1387	98.3	98.6	98.5	98.2	1.4	3.5	4.3	4.0	1.5	50	98.50	807
Type DT-3 150 °C Rise DOE 2016 Efficient																
15	939	225	64	517	97.5	97.5	96.9	96.3	3.41	4.04	3.74	2.08	3.46	45	97.89	70
30	940	409	121	689	97.9	98.1	97.8	97.4	2.25	2.49	2.74	1.13	2.25	45	98.23	218
45	940	416	125	1220	98.2	98.1	97.7	97.1	2.64	3.74	3.51	2.64	2.67	45	98.40	165
75	942	570	193	1761	98.4	98.3	97.9	97.5	2.26	3.86	3.61	3.34	2.29	50	98.60	270
112.5	943	976	256	2306	98.6	98.6	98.2	97.8	1.94	4.14	4.37	4.22	1.99	50	98.74	302
150	943	1239	350	2560	98.7	98.7	98.4	98.1	1.60	3.16	3.46	3.09	1.61	50	98.83	516
225	944	1571	489	3289	98.8	98.9	98.6	98.4	1.36	3.51	4.29	3.96	1.39	55	98.94	721
300	945	2157	592	4178	98.9	98.9	98.7	98.4	1.29	3.63	4.45	4.26	1.32	55	99.02	731
Type DT-3 115 °C Rise DOE 2016 Efficient																
15	939	231	64	472	97.6	97.6	97.2	96.6	3.10	3.78	3.54	2.08	3.14	45	97.89	70
30	940	399	121	586	97.9	98.3	98.0	97.7	1.91	2.35	2.21	1.37	1.90	45	98.23	196
45	940	429	125	1156	98.3	98.2	97.8	97.2	2.49	4.10	3.81	3.44	2.52	45	98.40	146
75	942	605	193	1655	98.4	98.4	98.0	97.6	2.11	4.07	3.82	3.90	2.14	50	98.60	244
112.5	943	982	256	2236	98.6	98.6	98.2	97.8	1.86	4.43	4.53	4.81	1.89	50	98.74	265
150	943	1253	350	2400	98.7	98.8	98.5	98.2	1.48	3.37	3.97	3.59	1.49	50	98.83	447
225	944	1607	489	3092	98.8	98.9	98.7	98.4	1.26	3.89	5.30	4.73	1.28	55	98.94	610
300	945	2193	592	3874	98.9	99.0	98.8	98.5	1.18	3.77	4.52	4.65	1.21	55	99.02	675
Type DT-3 80 °C Rise DOE 2016 Efficient																
15	939	237	65	508	98.0	97.9	97.4	96.8	3.63	3.81	3.81	2.40	2.96	45	97.89	70
30	940	436	125	452	98.0	98.4	98.3	98.1	1.45	2.49	2.50	1.76	1.78	45	98.23	165
45	942	570	193	531	98.0	98.6	98.6	98.4	1.12	2.31	3.61	2.01	1.37	50	98.40	270
75	943	970	256	865	98.4	98.8	98.7	98.5	1.06	2.76	3.11	2.81	1.32	50	98.60	302
112.5	943	1274	350	1220	98.5	98.9	98.8	98.6	0.99	2.37	2.62	2.31	1.21	50	98.74	516
150	944	1628	489	1244	98.5	98.9	99.0	98.9	0.74	2.34	2.90	2.64	0.93	55	98.83	721
225	945	2157	592	1999	98.7	99.0	99.0	98.9	0.80	2.73	3.35	3.20	0.99	55	98.94	731

① Typical values for aluminum windings. Refer to Page 19.1-23 for typical data for copper windings. Up-to-date design data is available at www.eaton.com.

Note: Performance data is based upon 480 V delta primary and a 208Y/120 V secondary for three-phase transformers; 240 x 480 V primary and a 120/240 V secondary for single-phase transformers. Refer to Eaton for 5 kV class information. All data is subject to future revision.



PHOENIX FENCE

EDMONTON

12816-156 STREET T5V 1E9
 PHONE: (780) 447-1919
 FAX: (780) 447-2512
 TOLL FREE: 1-800-661-9847
 E-MAIL: phoenix@phoenixfence.ca

CALGARY

6204-2nd STREET S.E. T2H 1J4
 PHONE: (403) 259-5155
 FAX: (403) 259-2262
 TOLL FREE: 1-888-220-2525
 E-MAIL: calgary@phoenixfence.ca

WEBSITE: www.phoenixfence.ca

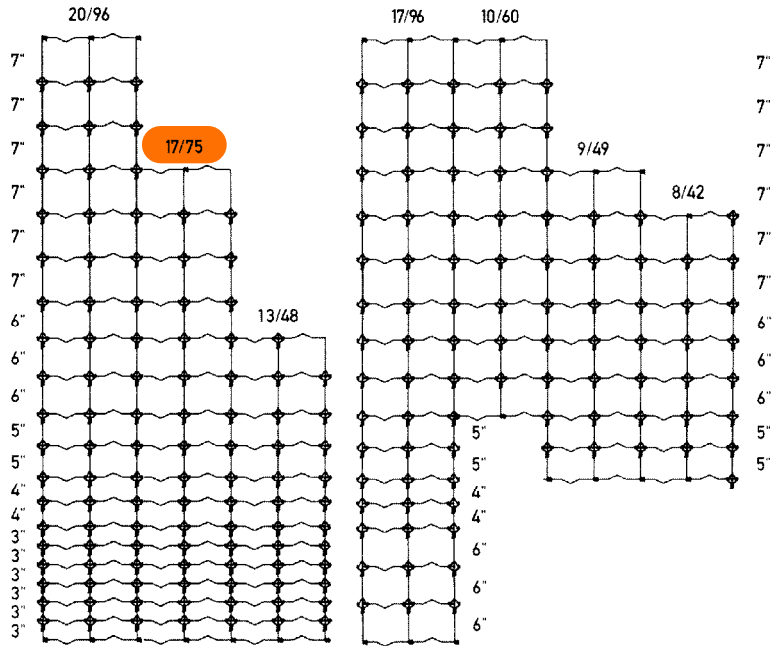
Fixed Knot Fence Specifications

Wire	Gauge	Tensile Strength	Breaking Load	Galvanization
Line Wires	12 1/2 ga.	Hi-Tensile 179K-210K	1350 lbs – 1584 lbs	.85 oz.-1.4oz. per sq.ft.
Stay Wires	12 1/2 ga.	Med-Tensile 125K-145K	943 lbs – 1094 lbs	.85 oz.-1.4oz. per sq.ft.
Knot Wires	13 ga.	Low Tensile 72K-95K	438 lbs – 580 lbs	.85 oz.-1.4oz. per sq.ft.

Wire Type	Length	Weight
20/96/6	330'	386 lbs
20/96/6	500'	585 lbs
20/96/12	330'	276 lbs
20/96/12	660'	552 lbs
17/96/6	330'	346 lbs
17/96/6	500'	525 lbs
17/96/12	330'	247 lbs
17/75/6	330'	318 lbs
17/75/12	330'	229 lbs
10/60/6	330'	205 lbs
10/60/12	660'	293 lbs
9/49/12	660'	256 lbs
13/48/6	330'	220 lbs
8/42/12	660'	220 lbs

Order Nomenclature:

The first number indicates the number of horizontal wires, while the second number indicates the height of the fence. The last number is the distance between vertical stays.
 Eg. 20/96/12 is a roll with 20 horizontal wires, is 96" high, with vertical stays 12" apart

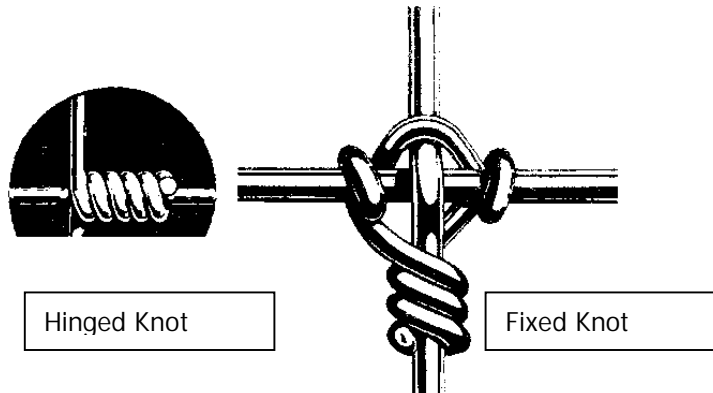


FIXED-KNOT fencing is designed specifically for wildlife and is not a domestic livestock fence being used as a wildlife fence. Here is the ultimate in fencing for all animals, large or small, wild or domestic. FIXED-KNOT, a North American product, gives excellent control for animal containment, exclusion and protection from predators.

FIXED-KNOT Hi-Tensile fencing is the best of its kind. Exceeding Class 3 galvanizing assures three times the life over conventional hinge joint fencing. The combination of Hi-Tensile wire (which provides three times the strength of conventional 12 1/2 ga. Wire) and fixed knot vertical stays allow fence installation using 20' post centers.

FIXED-KNOT vs. Hinge lock

Fixed lock (game fence) has continuous horizontal (line) and vertical (stay) wires, and the wires are fastened together using a fixed lock knot. Hinge lock (farm fence) has continuous horizontal (line) wires and vertical wires that are wrapped between the line wires using a hinge lock. The fixed knot is considerably stronger





ORDER FORM
Under Array

E-mail to: thom@solarscrim.com Order date: _____

Company Name: _____ Phone: _____

Contact Person: _____ Phone (Cell): _____

Address: _____ E-Mail: _____

City: _____ Purchase Order #: _____

State: _____ Zip: _____ Job Reference: _____

Please give measurements in inches only. Round down to the nearest quarter of an inch. Use decimal equivalents for fractions (25 = 1/4, etc.)

<p>Measurements: _____</p> <p>Width: _____ Height: _____ Quantity: _____</p>	<p>Measurements: _____</p> <p>Width: _____ Height: _____ Quantity: _____</p>
<p>Measurements: _____</p> <p>Width: _____ Height: _____ Quantity: _____</p>	<p>Measurements: _____</p> <p>Width: _____ Height: _____ Quantity: _____</p>

thom@solarscrim.com 720.452.5352 Denver, Colorado

INSTALLATION
Under Array

Supplies Check List (per panel)	Tools Needed...	Tips...
• 14- to 18' Black UV rated zip-ties or black coated electrical wire.	• Heavy Duty Pliers with Wire Cutter feature.	• Loosely hang panels, tighten when complete.

Step 1. Binder, Purlin

Step 2. Purlin

Step 3. Binder, Purlin

Using zip-ties, loosely attach each side of all four corners of the scrim panel.

Using the zip-ties loosely attach all sides of the scrim panel through each of the grommets.

Tighten the zip-ties from the 4 corners before working around the entire perimeter of the panel.

Note: May also zip tie to holes on Solar Panel frames when available.

Step 4. Purlin

Trim the excess tails of the zip-ties, leaving approximately 1/2" to spare. A small tail in place may be helpful for making adjustments in the future.

Step 5. Purlin

Rotate each of the zip-ties towards the interior of the frame structure for a clean, finished look.

Under Array Detail: (view of Solar Panel from below). Scrim covers circuitry.

Option 1: Panel per section. Purlin

Option 2: One continuous panel. Binder, Purlin

thom@solarscrim.com 720.452.5352 Denver, Colorado