

## FLUSHMOUNT PRO

**INSTALLATION MANUAL** 



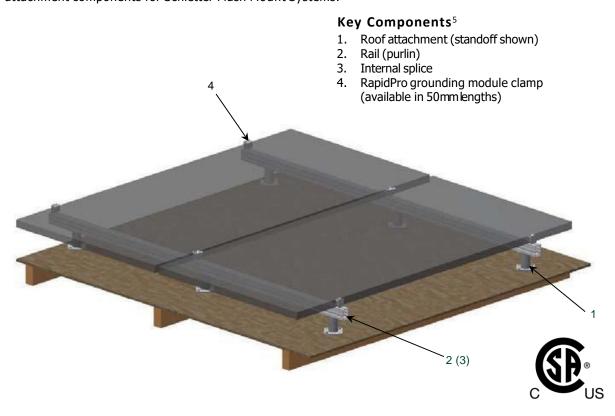
## **FLUSH MOUNT FEATURES**

Schletter Inc. offers a wide array of solutions for flush mount photovoltaic (PV) applications suitable for nearly any environmental condition. Every solar mounting system is designed for strength and ease-of-installation using high quality products to meet or exceed applicable IBC, ASCE, and UL standards.

#### Flush Mount Features

- Conforms to UL 2703<sup>1</sup>
- Certified to LTR AE-001<sup>2</sup>
- Fire class resistance rating: Class A when used with Types I and Type III photovoltaic modules only<sup>3</sup>
- Flexible design
- Modular components
- Industry leading installation times
- Electrically bonded unit
- Included RapidPro grounding module clamp (available in 50mm lengths)
- Portrait and landscape module orientation<sup>6</sup>

Once the attachment mechanism is installed (i.e. roof hook, Fix2000, etc.), the process for installing the rails, modules, and clamps is essentially the same. The following will review proper installation methods for commonly used roof attachment components for Schletter Flush Mount Systems.<sup>7</sup>



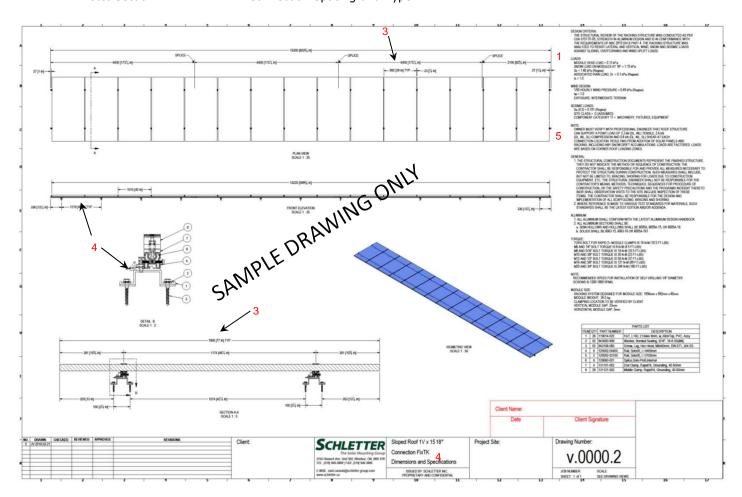
- <sup>1</sup>The Flush Mount System is evaluated for electrical bonding only. The Flush Mount System meets all IBC and ASCE requirements for structural loading; it was not evaluated for loading under UL 2703.
- <sub>2</sub> Maximum load 5,400 Pa. Flush Mount Systems generally have a roof connector every 2 modules.
- 3 Special consideration needs to be taken during design phase if system requires protective fire barrier.
- 4 Maximum number of modules shall not exceed maximum system voltage.
- 5 Individual parts and components will vary from system-to-system. Please reference system specific drawings.
- <sup>6</sup>This racking system may be used to ground and/or mount a PV module complying with UL1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included manual.
- 7 Installer is responsible for verifying that photovoltaic system meets applicable NEC standards.

## **SAMPLE DRAWINGS**

Specific drawings are provided for each project. Key information included on these drawings is as follows:

- 1. Design Criteria
- 3. Module Dimensions
- 5. Connection Forces

- 2. Notes Section
- 4. Connection Spacing and Type



## Recommended Maximum System lengths: Thermal expansion (Gap between racks 25-50mm)

System Type	Maximum length (ft)
Flush mount using self drilling screws	20 (6.1m)
Flush mount using using FixT, roof hooks, etc.	35 (10.7m)

## **INSTALLATION TOOL LIST**



- Tape measure
- Chalk line
- Marker
- Inclinometer
- Carpenters square
- Pliers
- Torx® bit (TX40) for RapidPro™ module clamps
- 3/8" drive socket for selfdrilling screws
- Drill bit check hardware to determine drill bit size
- Torque wrench
- Wrench and/or socket for all bolted connections
- Rubber mallet for installation of end caps
- Ratchet and/or rechargeable power drill
- Chop saw



## ASPHALT SHINGLE ROOF ATTACHMENTS

### 1. Connect Roof Attachment

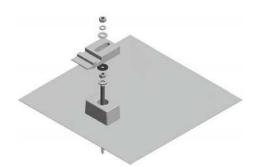
- Rapid 2+ PRO SML for asphalt roof
- See Quick Mount PV, EcoFasten, or Ejot installation specifications.<sup>8</sup>

www.quickmountpv.com www.ecofastensolar.com www.ejot-usa.com



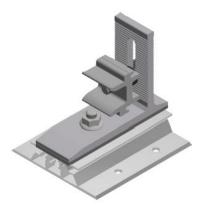
Connect KlickTop Pro HB as shown using provided hardware





Connect Rapid2+ PRO SML to rafters using lag bolt incl. sealing washer

919015-001 – Butyl Tape, required when installing Rapid2+ PRO SML on asphalt shingles. (not included with Rapid2+ PRO SML)



Rapid2+ PRO SML can be used with Power Clamp RT-Mini, no additional butyl tape required.

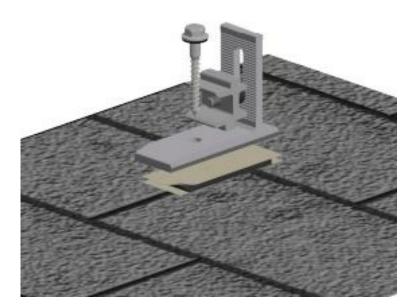
 $^{8}$ ©Quick Mount PV is owned exclusively by Quick Mount;  $^{\circ}$ EcoFasten is a registered tradename of EcoFasten Solar;  $^{\circ}$ EJOT is a registered tradename of EJOT; neither tradename is owned by Schletter

# MOUNTING INSTRUCTIONS RAPID2+PRO SML ON SHINGLED ROOFS

### **Mounting and Sealing**

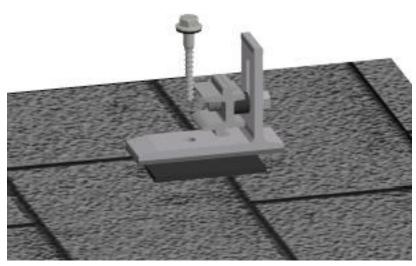
- Shingles must be in sound condition, dry and free of any damage or debris to ensure flush contact with butyl tape
- Service temperature range of the butyl tape is -40°F to 190°F (-40°C to 88°C)
- Application temperature = service temperature, must follow installation instructions according to butyl tape data sheet (page 7)
- Butyl tape must not be installed on seam or gap. If installing on overlaying shingles, additional butyl tape is required to create a flush surface
- Wood screw must be fastened vertically to ensure tightness of sealing washer
- While Schletter

NA offers components that can help to seal penetrations, responsibility for sealing penetrations lies with the installer



Press firmly on the corner before removing the paper! If you don't press firm enough, the paper will not peel off the butyl tape.





### **Technical Data Sheet**



### **Pitched Roof Solar Mount Tape**

Pitched Roof Solar Mount tape is a butyl, pressure sensitive high performance tape specifically for solar mounting applications on pitched roof. This product is compatible with a wide range of roofing materials and designed for installation and performance in wide range of temperatures.

### **Technical Data**

Property	Typical Value	Test Method
Service Temperature Range	-40°C to 88°C (-40°F to 190°F)	
Tensile Strength	80 kPa	ASTM D412, Die C
Peel Adhesion	2 N/mm	FLTM BU 112-02, Method A
Adhesive Strength	1.5 N/mm	FLTM BU 112-02, Method C
Burn Rate	0.99 in/min	FMVSS 302
Elongation	800%	ASTM D412, Die C

### Instructions

The substrate must be thoroughly dry before installation. A completely dry surface is critical to long-term performance, use of hot-air or a torch is recommended for any substrate showing obvious moisture. For this application, the application temperature of the substrate and tape is not critical to performance, if the product is immediately placed in compression by installation of the system.

To install: remove the protective release liner immediately prior to application, being careful not to contaminate the surface covered by the liner. Apply the part without entrapping air between the tape and the substrate. Install racking application as the next step using torque specified by the racking manufacturer.

#### Dimension and Packaging:

Individual Piece: 38 mm x 80 mm Box: 38 mm (1.5") x 80 mm (3.1") (die-cut)

### Dimension and Packaging:

Storage material in original unopened packaging at temperatures between 20°C to 50°C (68°F to 120°F). Shelf life is 24 months when stored as recommended.

### Dimension and Packaging:

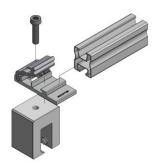
Prior to working with this or any product consult product label and Safety Data Sheet (SDS) for necessary health and safety precautions and disposal considerations.

## STANDING SEAM CLAMP

Schletter Flush Mount Systems are compatible with most standing seam clamps on the market.

### 1. Connect Standing Seam Clamp

- See S-5!/Solar Connections or similar clamp's webpage for proper installation
- Locate position of clamp on roof; arrange the clamps according to the required rail positions; attach clamps loosely to roof profile, set final torque once rail is positioned

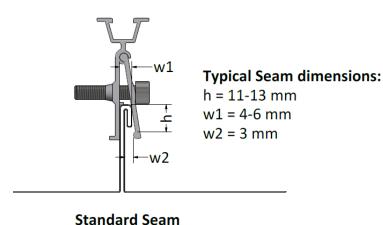


Connect RapFix Pro to standing seam clamp using M8 bolt

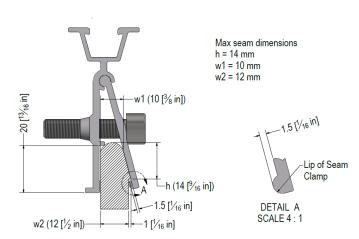
### 2. Railless - Folding Clamp Pro 503 Rapid for Standing Seam Roofs

To calculate the number of attachments for a specific location use the rail-less attachment calculator at www.schletter-group.com.





The tightening torque must be limited so that the sheet metal seam does not get distorted, and the thermal lengthening of the sheets is not prevented.



The lip of the Pro 503 must extend underneath the fold of the standing seam clamp to create a positive, interlocking connection.

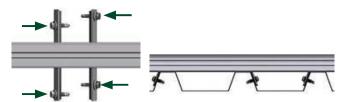
## SingleFix Pro / Clampfit Pro

## 1. SingleFix Pro to Rail Connection

 Connect Single FixPro to rails before attaching to the roof



Slide hook into bottom channel of rail



Tighten self-drilling screws until there is slight pressure on the gasket

### 2. Connect SingleFix Pro to Roof

- Measure and mark distances between attachments before installing (screws should not be uninstalled and reinstalled in same location)
- Connect SingleFix-V to Roof with Pro35 Rail
- 450 mm module support profile



### 3. ClampFit Pro Fastener

Can be combined with the universal RapidPro module clamps.

- For all common trapezoidal sheets with a min. of 26 gauge
- Used only for landscape applications
- Clamping location must be verified with module manufacturer
- To calculate the number of attachments for a specific location use the rail-less attachment calculator at <a href="https://www.schletter-group.com">www.schletter-group.com</a>.



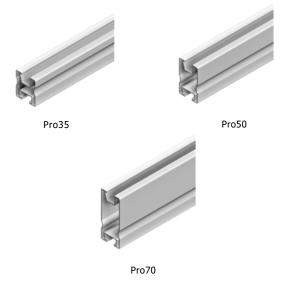
## **RAIL INSTALLATION**

### 1. Rail Options for Flush Mount Application

Pro35, Pro50 & Pro70

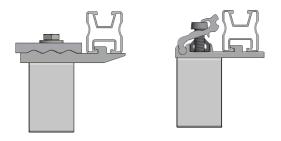
Top channel: M8

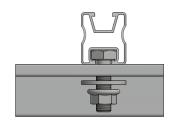
Bottom channel: M10



### 2. Install Rail

 Installation method varies depending on the type of roof attachment-to-rail connector being used; follow appropriate instructions shown to the right



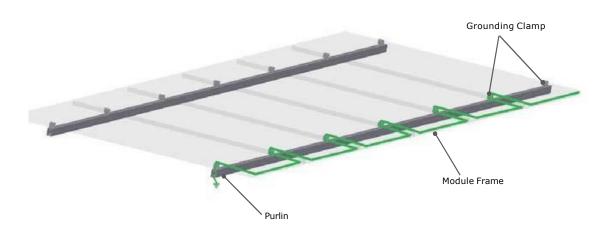


Slide M10 hexagon-head screw into rail channel, secure with M10 flange nut from underside of roof attachment

## **RAIL INSTALLATION**

# 3. Add Rail Splice Insert half of internal splice into first rail, push until reaches mid point stop tab under splice. Add second rail to opposite end until fully reaches middle stop plate. (no screws required) Splice fully installed stop tab Pre-installed stop tab Bottom view installation

## GROUNDING PATH DIAGRAM



The following purlin rails can be used for this grounding path.



## **OPTIONAL ACCESSORIES**

### 1. Bonding Jumper

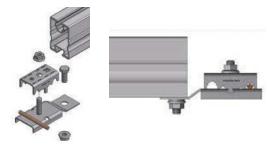
- Electrically bonds adjacent systems, forming a continuous ground path
- Available in 6-inch to 48-inch lengths
- Required at expansion joints/ physical breaks

# Bonding jumper

Bonding jumper connects directly to the top channel of rail using M8 or M10 hardware or bottom channel using M10 hardware

## 2. Overcurrent Protection Device (Grounding)

- Accommodates strandard or solid copper wire (2 gauge to 14 gauge)
- Must use bare copper wire to make connection. Remove at least 2 inches of insulation to expose copper wire
- Connects to bottom M10 rail channel



Loosen or remove top portion of grounding lug and insert grounding wire into appropriate groove



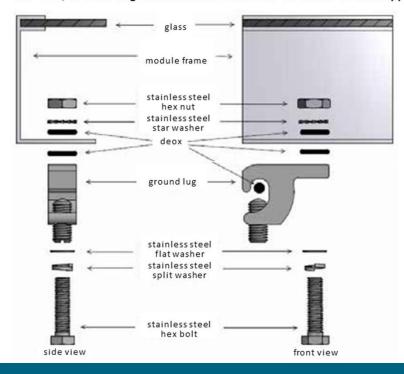


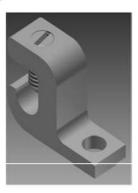


Grounding wire must extend through grounding lug by at least 1/4 inch

### ILSCO GROUNDING PATH INSTALLATION INSTRUCTION

#### GBL-4SS, Ground Lug Installation Instructions for Photo Voltaic Applications





GBL-4SS

### FIRE BARRIER

- Required in systems installed on roofs with slopes less than 9.5 degrees (not for use on roofs with slopes greater than 9.5 degrees)
- Fire barrier should be installed after modules are properly installed
- Start at one corner of the system and place the horizontal and vertical fire barrier pieces between the module frame and rail
- Ensure correct dimension of the side alignment of module and rail
- Maximum opening between fire barrier and roof deck is one inch
- Provides for a Class A fire rating when used with Type I modules
- For Type II modules, a minimum of 8" clearance between module and roof deck must be maintained, but no fire barrier is required for a Class A rating
- Only required on perimeter of array

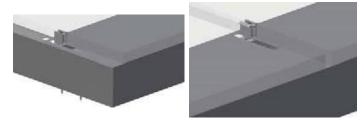




Position side fire flashings



Position front and back fire flashings



Position Modules; see page 14 for module installation instructions. Secure all connections using module clamps

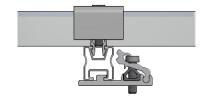
## **MODULE MOUNTING**

### 1. Position Modules

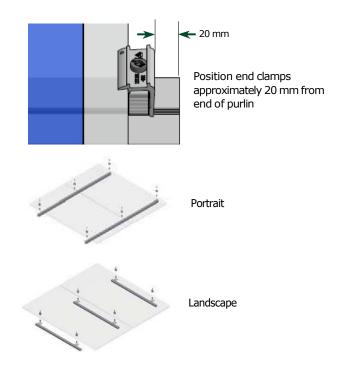
- Position end clamps on rail approximately 20 mm from end of rail, do not tighten
- Position first module and secure using prepositioned end clamps, do not tighten
- Attach middle clamps to rail on the exposed side of first module
- Place second module next to first module and secure using middle clamp, do not tighten
- Repeat until end of row
- Modules installed in landscape require Module Support Plate (Part #139004-005) installed between module and rail

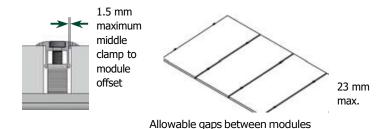
#### 2. Secure Modules

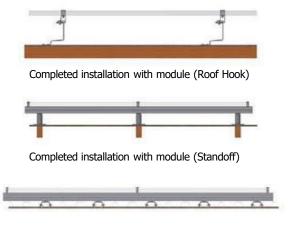
- Verify that the module clamp is fully engaged on the rail and 1.5 mm maximum middle clamp to module offset is aligned with the module frame
- Secure all clamps to specified torque values
- When mounting modules, please observe the clamping points specified by the module manufacturer



RapidPro clamp connected to purlin (side view)







Completed installation with module (Fix2000)

## **EQUIPMENT GROUNDING**

- UL 2703 Clause 26.7: For devices that are only to be utilized one time, such as torque to yield fasteners or single-use bonding/grounding devices; the installation instructions shall include the statement "For single-use only", or the equivalent.
- Many PV installations contain more than one mounting system. Such cases call for electrically bonding each of the different mounting systems. Since individual racks are fully bonded units, it is only necessary to connect individual racks together from one single point to another single point. Only use stainless steel hardware when connecting harnesses or jumpers to the mounting system. Take care to prevent copper wires from directly contacting aluminum surfaces as this will cause corrosion. For this purpose, Schletter supplies a bonding jumper (see page 6).
- The PV INSTALLER of Schletter's electrically bonded PvMax system must provide the components necessary for the final
  connections to the grounding electrode system. Typically, the installation will incorporate a grounding electrode (ground
  rod), appropriately sized copper wire, rated wire connectors, and grounding lugs which are rated for this purpose. The PV
  INSTALLER must follow all manufacturers' installation literature. Installation must comply with all applicable NEC/CSA
  sections
  - including but not limited to; NEC 250 (Grounding and Bonding), NEC 690 (Solar Photovoltaic Systems), CSA 22.1 (Safety Standard for Electrical Installations), and all other applicable state and local electrical code requirements.
- PV INSTALLER shall be fully responsible for all connections between Schletter's bonded PvMax system and PV grounding electrode system.
- Equipment grounding conductors shall be no less than 14AWG (copper) or 12AWG (aluminum).
- Equipment grounding conductors can be connected to any exposed metallic portion of rack system provided that:
  - a. connection area is sufficiently sized
  - b. dissimilar metals are not in direct contact
  - c. connection does not interfere with other components
  - d. connection is protected from damage

## TORQUE SPECIFICATIONS AND TOLERANCES

Systems are specifically designed for each project. Please reference the specific project drawing for allowable tolerances and recommended torque for each size of bolt used in the system.

In the event of deviation from approved drawings, contact Schletter immediately.

Torx Bolt for RapidPro Module Clamps	15 N-M	10.5 FT-LBS
M6 and 1/4" Bolt	6 N-M	4.5 FT-LBS
M8 and 5/16" Bolt	14 N-M	10.5 FT-LBS
M10 and 3/8" Bolt	30 N-M	23 FT-LBS
M12 and 1/2" Bolt	50 N-M	37 FT-LBS
M16 and 5/8" Bolt	121 N-M	89 FT-LBS
M20 and 3/4" Bolt	244 N-M	180 FT-LBS
Note: Recommended speed for installation of s 1/4" diameter is 1200-1800 RPMS.	self-drilling	

 $<sup>{}^{6}</sup> S chletter \ recommends \ two \ bonding \ jumpers \ to \ connect \ separate \ systems \ for \ redundancy.$ 

### **MAINTENANCE**

- Yearly inspection of system should be conducted to maintain optimal performance.
- Visually inspect for signs of damage, wear, corrosion, or movement. Replace any affected components immediately.
- · Check for loose wiring.
- Maintenance should only be performed by qualified personnel.
- Check mechanical details of structure:
  - At least 2% of bolted connections must be checked using a calibrated torque wrench. The torque wrench must have a display or be a click type torque wrench.
  - Torque wrench should be set at 50% of intended tightening torque. Check is successful if bolt cannot be loosened.
  - If >10% of checked bolted connections are loose, check has to be increased to 10% of all bolted connections.
  - If more than 10% of connections are still loose, all bolted connections much be checked.
  - Tighten all non-conforming bolts to specified torques
  - Requirements per ASME B107 and AISC

WARNING: Risk of death by electric shock.

AVERTISSEMENT: Danger de mort par secousse electrique.

## SAFETY PRECATIONS

Follow proper installation and safety procedures at all times. Edges of parts may be sharp. Follow proper lifting procedures.

### FOR MORE INFORMATION

For United States, visit <u>www.schletter.us</u> or call 888-608-0234 or for Canada, visit <u>www.schletter.ca</u> or call 519-946-3800 to speak to a Schletter representative for more information.

 ${\sf Torx}^* is \ a \ registered \ trademark \ of the \ {\sf Camcar} \ {\sf Corp.} \ division \ of \ {\sf Textron} \ Industries.$ 

MANUFACTURER	MODEL NUMBERS
Boviet Solar	BVM6612
Canadian Solar	CS6X-P-FG
Canadian Solar	CS6X-P
	CS6V-M
	CS6U-P
	CS6U-M
	CS6U
	CS6P-P-SD
	CS6P-P
	CS6P-M
	CS6K-P-FG
	CS6K-P
	CS6K-MS
	CS6K-M AB
	CS6K-M
	CS6K
	CS5A-M
	CS3W-PB-AG
	CS3W-P
	CS3W-MS
	CS3W-MB-AG
	CS3W
	CS3U-PB-AG
	CS3U-P
	CS3U-MS
	CS3U-MB-AG
	CS3U
	CS3U MS-FG
	CS3L-P
	CS3L-MS
	CS3L
	CS3K-PB-AG
	CS3K-P
	CS3K-MS
	CS3K-MB-AG
	CS3K
	CS1Y-MS
	CS1U-MS
	CS1K-MS
	CS1H-MS
	CS3Y-MB-AG
	CS3Y-PB-AG
	CS3Y-MS
	CS3Y-P
	C331-r
T Solor	ET-M660290 285 280 275 270WW WB
ET Solar	ET-M672340 335 330 325 320BB
	ET-M672345 340 335 330 325WW WB
	ET-P660 265   260   255   250 BB
	ET-P660270 265 260 255WW WB
	ET-P672315 310 305 300BB
	ET-P672320 315 310 305WW WB
	ET-M672BH-xxx-GL ET-M672BH-xxx-TW
	ET-M672BH-xxx-WW/WB
	E1-WO7ZBH-XXX-WWW/WB
lanwha Q Cells	L-G2
	L-G3
	L-G4
	Q.PEAK DUO BLK-G5
	Q.Peak DUO BLK-G6
	Q.Peak DUO G6
	Q.Peak DUO LG6
	U.PEAN DUU-133.A
	Q.PEAK DUO-G5.X Q.PEAK DUO-G5

### MANUFACTURER

Hanwha Q Cells (continued)

#### **MODEL NUMBERS**

Q.PEAK BLK G4.1/TAA Q.PEAK L G4.2 / 4.5 Q.PEAK-G4.1|G4.1/MAX Q.PLUS BFR G4.1/ TAA or MAX Q.PLUS G4 Q.PLUS L G4.1 | G4.2 Q.PRO BFR G4|G4.1|G4.3|G4.4 Q.PRO G4 Q.PRO L G4.1 Q.PRO L G4.2 Q.PRO L G4.5 Q.PEAK DUO BLK-G5/SC Q.PEAK DUO BLK-G6+ Q.PEAK DUO BLK-G6+/TS Q.PEAK DUO BLK-G6+/AC Q.PEAK DUO BLK-G6+/SC Q.PEAK DUO BLK-G7 Q.PEAK DUO BLK-G8 Q.PEAK DUO BLK-G8+ Q.PEAK DUO G6+/AC Q.PEAK DUO L-G5 Q.PEAK DUO L-G5.1 Q.PEAK DUO L-G5.2 Q.PEAK DUO L-G5.3 Q.PEAK DUO L-G6 Q.PEAK DUO L-G6.1 Q.PEAK DUO L-G6.2 Q.PEAK DUO L-G6.3 Q.PEAK DUO L-G6.4 Q.PEAK DUO L-G6.5 Q.PEAK DUO L-G6.6 Q.PEAK DUO L-G6.7 Q.PEAK DUO L-G7 Q.PEAK DUO L-G7.1 Q.PEAK DUO L-G7.2 Q.PEAK DUO L-G7.3 Q.PEAK DUO L-G7.4 Q.PEAK DUO L-G7.5 Q.PEAK DUO L-G7.6 Q.PEAK DUO L-G7.7 Q.PEAK DUO L-G8 Q.PEAK DUO L-G8.1 Q.PEAK DUO L-G8.2 Q.PEAK DUO L-G8.3 Q.PEAK DUO L-G8.3/BFF Q.PEAK DUO L-G8.3/BFG Q.PEAK DUO ML BLK-G9 O.PEAK DUO ML BLK-G9+ Q.PEAK DUO ML-G9 Q.PEAK DUO ML-G9+ Q.PEAK DUO XL-G9 Q.PEAK DUO XL-G9.1 Q.PEAK DUO XL-G9.2 Q.PEAK DUO XL-G9.3/BFG/BGT Q.PEAK DUO-G5 Q.PEAK DUO-G5/SC O.PEAK DUO-G6 Q.PEAK DUO-G6/SC Q.PEAK DUO-G6+ Q.PEAK DUO-G6+/SC O PEAK DUO-G7 O.PEAK DUO-G8 O.PEAK DUO-G8+

Heliene

Heliene 36|60|72|96M Heliene 36|60|72|96P Heliene MAX HOMEPV Black 350 Heliene MAX Series 430 Helien 72 M G1

Q.PLUS DUO L-G5 Q.PLUS DUO L-G5.1 Q.PLUS DUO L-G5.2

Q.Peak Duo XL G10.3 Q.Peak Duo XL G10.3 BFG Q.Peak Duo BLK ML G10 Q.Peak Duo XL G11.3

Q.PLUS DUO L-G5.3 B10B68:B138



MANUFACTURER	MODEL NUMBERS
lyundai Solar	HIS-M250 255 260 265RG HIS-
	M310 315 320 325TIHiS-
	S265 270 275RG
	HiS-S330 335 340 345 350TI
IA Solar	JAM72D30 525-550/MB
Jinko Solar	Eagle 60 72
	Eagle Black 60   72
	Eagle MX JK07A   JK07B
	Eagle PERC
	JKM265PP-60
	JKM270P-60-V JKM275P-60
	JKM275P-60-V
	JKM320P-72-V
	JKM330P-72
	JKM330PP-72-V
	JKM390/395/400/405/410M-72HL-V
	JKMxxxM-60HBL
	JKMxxxM-72HL-TV
	JKMxxxM-7RL3-TV
	JKMxxxM-7RL3-V
	JKMxxxM-6RL3-B
Kyocera	KD260 265GX-LFB2
	KU260 265 270-6MCA
	KU260-6MCA
	KU315 320-7ZPA
LG	LGxxxN1C-A5
	LGxxxN1C-G4
	LGxxxN1K-G4
	LGxxxN1W-G4
	LGxxxN2C-B3
	LGxxxN2W-A5 LGxxxN2W-B3
	LGXXXIVZVV-BS LGXXXS1C-A5
	LGxxxS1C-G4
	LGxxxS1W-G4
	LGxxxS2W-A5
	LGxxxN2T-A5
	LGxxxN1T-V5
	LGxxxN2T-V5
	LGxxxQ1C-V5
	LGxxxQ1K-V5
	LGxxxA1C-V5
	LGxxxN2T-J5
	LGxxxN1C-V5
	LGxxxN1K-V5
	LGxxxN1C-N5
	LGxxxN1C-A6
	LGxxxN1K-L5
	LGxxxN1K-A6
	LGxxxQ1C-A6
	LGxxxQ1K-A6
	LGxxxN2W-L5
	LGxxxN2W-E6
	LGxxxN2T-E6
	LGxxxN2T-L5
	LGxxxN1T-E6
	LGxxxN1K-E6
	LGxxxN1K-E6 LGxxxN1C-E6
	LGxxxN1K-E6



MANUFACTURER	MODEL NUMBERS
Longi	LR6-60PE 300-320M
Longi	LR6-60HPH xxx M
	LR6-72BP 355-375M
	LR6-72HPH xxx M
	LR6-72PH xxx M
	LR4-72HBD 415-435M
	LR4-72HBH 420-440M
	LR4-72HBD xxx M
	LR4-60HBD xxx M
	LR4-72HPH/HIH xxx M
	LR4-60HPH/HIH xxx M
	LR4-60HPB/HIB xxx M
	LR5-66HPH xxx M
	LR5-66HBD xxx M
	LR5-72HPH xxx M
	LR5-72HBD xxx M
	LR4-60HPH xxx M
	LR4-72HPH xxx M
	LR4-72HBD xxx M
	LR4-60HPB xxx M
	ER4-00FFB XXX IVI
Moyer Purger	Black 375-395 Wp
Meyer Burger	Glass 370-390 Wp
	<u> </u>
anasonic	EVPV xxx
anasome	EVPV xxx K
	CA422514 (FD)
eimar	SM325M (FB)
	SM330M (BF)
	SM385M
	SM390M
	SM400M
	DC AACO
Philadelphia Solar	PS-M60
	PS-M60(BF)
	PS-M72
	PS-M72(BF)
	PS-P60
	PS-P72
Dhana Calan	PS xxx P-20/U PS
Phono Solar	xxx PH-20/U PS
	xxx M-20/UH
	PS xxx MH-20/UH
	13 MA (WIII 20) 011
REC Solar	PEAK Energy Series REC245   250   255   260   265   270 PE PEAK
REC Solai	Energy BLK2 Series REC245 250 255 260PE BLK2 TWINPEAK
	SERIES REC265 270 275 280 285TP
	PEAK Energy 72 Series REC300 295 - 315PE
	TWINPEAK REC330 335 340TP72 TWINPEAK 2
	· ·
	BLK2 SERIES RECXXXTP2 BLK2 TWINPEAK 2 SERIES
	TWINPEAK 2S 72 Series RECxxxxTP2S 72
	REC Alpha - RECXXXAA
	REC Alpha 72 - RECxxxAA 72 REC
	Alpha Black - RECxxx Black REC
	N-Peak-RECxxxNP
	REC N-Peak-RECxxxNP Black
	REC TP2SM72-RECxxxTP2SM72
	Twin Peak 3M - RECxxxTP3M
	Twin Peak 3M - RECxxxTP3M Twin Peak 3M - RECxxxTP3M Black
	Twin Peak 3M - RECxxxTP3M Black
isen	Twin Peak 3M - RECxxxTP3M Black REC xxx AA Pure Black REC xxx TP4 Black
isen	Twin Peak 3M - RECxxxTP3M Black REC xxx AA Pure Black
	Twin Peak 3M - RECxxxTP3M Black REC xxx AA Pure Black REC xxx TP4 Black RSM60-6-270M-290M/5BB SEG-xxx-BMA-HV
	Twin Peak 3M - RECxxxTP3M Black REC xxx AA Pure Black REC xxx TP4 Black RSM60-6-270M-290M/5BB
	Twin Peak 3M - RECxxxTP3M Black REC xxx AA Pure Black REC xxx TP4 Black RSM60-6-270M-290M/5BB SEG-xxx-BMA-HV
	Twin Peak 3M - RECxxxTP3M Black REC xxx AA Pure Black REC xxx TP4 Black RSM60-6-270M-290M/5BB SEG-xxx-BMA-HV SEG-xxx-BMA-BG
Risen eraphim	Twin Peak 3M - RECxxxTP3M Black REC xxx AA Pure Black REC xxx TP4 Black  RSM60-6-270M-290M/5BB  SEG-xxx-BMA-HV SEG-xxx-BMA-BG SEG-xxx-BMB-HV
	Twin Peak 3M - RECxxxTP3M Black REC xxx AA Pure Black REC xxx TP4 Black  RSM60-6-270M-290M/5BB  SEG-xxx-BMA-HV SEG-xxx-BMA-BG SEG-xxx-BMB-HV SRP-xxx-BMA-BG
	Twin Peak 3M - RECxxxTP3M Black REC xxx AA Pure Black REC xxx TP4 Black  RSM60-6-270M-290M/5BB  SEG-xxx-BMA-HV SEG-xxx-BMA-BG SEG-xxx-BMB-HV SRP-xxx-BMA-BG SRP-xxx-BMA-BG SRP-xxx-BMA-HV
	Twin Peak 3M - RECxxxTP3M Black REC xxx AA Pure Black REC xxx TP4 Black  RSM60-6-270M-290M/5BB  SEG-xxx-BMA-HV SEG-xxx-BMA-BG SEG-xxx-BMB-HV SRP-xxx-BMA-BG SRP-xxx-BMA-BG SRP-xxx-BMA-HO

MANUFACTURER	MODEL NUMBERS
SolarWorld	Sunmodule Plus SW 275-290 MONO BLACK Sunmodule Plus SW 280-290 MONO BLACK (5-busbar) Sunmodule Plus SW 280-295 MONO Sunmodule Plus SW 285-300 MONO (5-busbar) Sunmodule Pro-Series SW 260 POLY WOB Sunmodule Protect SW 275-280 MONO BLACK Sunmodule SW 100 POLY RGP Sunmodule SW 150 MONO R6A Sunmodule SW 150 POLY R6A Sunmodule SW 320-325   340-350 XL MONO Sunmodule SW 80 MONO RHA
SUNPOWER	SPR-X21-xxx-COM SPR-A-xxx-G-AC SPR-MAX2-xxx-COM SPR-MAX3-xxx-COM SPR-MAX5-xxx-COM SPR-MAX5-xxx-COM SPR-MAX5-xxx-E3-AC SPR-P3-xxx-COM-1500 SPR-X22-xxx-COM
Suntech	STPxxxS – A60U/Wfhb STPxxxS - A72U/Vfh STPxxxS - A72U/Vnh STPxxxS-24/Vfw
Talesun	FEATHER 2.0 TP660P Hipro M295+ TP660M Hipro M350+ TP672M PID ZERO TP672M TD660M TD660M TD660P TP660 672M TP660  672P TP660 672P(H)
Trina	TSM-xxx PA05.08  TSM-DE14A TSM-DD14A TSM-PD05 TSM-PD05.05 TSM-PD05.08 TSM-xxx DD05A.05(II) TSM-xxx PD05.08 TSM-xxx PD05.10 TSM-PD14 TSM-PE14 TSM-PE641 TSM-PE641 TSM-PEG5 TSM-PEG5.07 TSM-DD06M.05(II) TSM-DE06H TSM-DE15H TSM-DE15M TSM-DE15M TSM-DE15M TSM-DE63BM TSM-DEG15HC.20(II) TSM-DEG15MC.20(II) TSM-DEG15HC.20(II) TSM-DEG15HC.20(II) TSM-PEG06H TSM-PEG06H TSM-PEG06H



MANUFACTURER	MODEL NUMBERS
WattPower	Glacier Series G3
	WP-xxxM/G3-60H-V (325 330 335 340PC)
Yingli Green Energy	YL260P 255P 250P 245P 240P-29b YL275P
ringii Green Energy	270P 265P 260P 255P 250P-29b YL290D
	285D 280D 275D 270D-30b YL300C 295C
	290C 285C 280C 275C-30bYL325P 320P
	315P 310P 305P 300P-35bYL340D 335D
	330D 325D 320D 315D-36b
	ZXM6-60-xxx_M
ZNShine	ZXM6-H120-xxx_M
	ZXM6-H144-xxx_M
	ZXM6-HLD120-xxx_M
	ZXM6-HLD144-xxx_M
	ZXM6-HLDD144-xxx_M
	ZXM6-LD60-xxx_M
	ZXM6-LD72-xxx_M
	ZXM6-LDD72-xxx_M
	ZXM6-NH120-xxx_M
	ZXM6-NH144-xxx_M
	ZXM6-NHLD120-xxx_M
	ZXM6-NHLD144-xxx_M
	ZXM6-NHLDD120-xxx_M
	ZXM6-NHLDD144-xxx_M ZXP6-72-xxx P
	ZXP6-72-xxx_P ZXP6-H144-xxx P
	ZXP6-HLD120-xxx P
	ZXP6-HLD120-XXX_P
	ZXP6-LD72-xxx_P

