



Photovoltaic Module Safety & Installation Manual

Version: 1.19 - English

NOTICE! Please carefully read and understand the provided installation manual before installing, wiring, or operating our product in your PV system. Failure to follow all proceeding terms and conditions will void Upsolar's Limited Warranty contract.



1.0 INTRODUCTION

Thank you for choosing the Upsolar Photovoltaic module. Our goal is to provide you with a top quality long lasting product. This installation guide, provided by Upsolar Co., Ltd. and supplied with Upsolar modules, contains information regarding proper handling, installation, and maintenance.

All instruction in this guide should be read and understood by all parties before attempting to install Upsolar photovoltaic modules. PV designers and installers should always comply with all safety precautions listed within this guide as well as any local or jurisdictional codes that pertain to PV installations.

Upsolar reserves the right to make changes to both products and installation manual without prior notice to the customer. Please contact support@upsolar.com for any additional questions or explanations.

1.1 Liability Condition

The installation techniques, handling and use of Upsolar product are beyond Upsolar's company control. Therefore, Upsolar does not assume responsibility for loss, damage or expense resulting from improper installation, handling or use.

1.2 Limited Warranty

All Upsolar PV module warranties are listed in the Upsolar warranty conditions which can be downloaded from our website. www.upsolar.com

2.0 SAFETY PRECAUTIONS



Before installing or operating modules, please read and understand all general safety instructions in this manual!

Module Installation should only be carried out by qualified individuals.

- **Always** follow and observe all appropriate regional and jurisdictional electric codes.
- **Always** use properly insulated and/or rated electrical and mechanical tools during installation of PV modules
- **Always** mount PV modules over a fire resistant roof, in case of roof mounting (according to IEC 61730-1 clause 12.4)
- **Always** ground all PV modules according to the local electrical codes.
- **Always** use only the same type of PV modules within 1 PV circuit.
- **Do not** step on or put heavy/sharp objects on PV module.
- **Do not** disconnect module under load.
- **Do not** use artificial methods for cooling the PV module (water).
- **Do not** touch PV module terminals (avoid wearing metallic jewelry or devices attached to the body during installation).
- **Do not** install PV modules in wet or windy conditions.
- **Do not** drill extra holes in module frame or glass surface
- **Do not** store or install PV modules near flammable gasses or materials
- **Do not** disassemble any part of the PV module
- **Do not** expose the artificially concentrated sunlight to a module or panel (according to IEC 61730-1 clause 12.5)

3.0 ELECTRICAL CHARACTERISTICS OF A PV MODULE

It is very important to understand that a photovoltaic module can have electrical characteristics different than the (Standard Test Conditions) STC rating on the module nameplate. Atmospheric conditions often increase the module's current and/or voltage higher than that reported at STC.

STC = 1000 W/m² AM 1.5 25°C

Always refer to your local jurisdictional codes when sizing conductors, fuses, inverters, and other Balance of System (BOS) components.



WARNING!

All installation and mounting instructions must be read and properly understood before attempting to install, wire, and/or operate PV modules. PV modules generate DC electricity when exposed to light. This can pose danger to the installer, user, and/or property. Any contact with electrically active module-terminals can result in arcing; leading to shocks, burns, fires, and/or death.

PV modules are electrically live when mounted and installed.

Danger: Electrical potential (SHOCK DANGER) increases with parallel (higher currents) and series (higher voltage) connection of PV modules.

The PV installer must assume all inherent risk of property damage and/or personal injury related to the mishandling of PV modules during installation and maintenance.

"Under normal conditions, a photovoltaic module is likely to experience conditions that produce more current and/or voltage than reported at standard test conditions. Accordingly, the values of ISC and VOC marked on this module should be multiplied by a factor of 1.25 when determining component voltage ratings, conductor current ratings, fuse sizes, and size of controls connected to the PV output." (Extract from IEC 61730-1 clause 12.7 and UL 1703 clause 48.9)

"Refer to Section 690-8 of the National Electrical Code for an additional multiplying factor of 125 percent (80 percent derating) which may be applicable." (according to UL 1703, clause 48.6)

4.0 ELECTRICAL CONFIGURATIONS

4.1 General Wiring / Configuration

Please follow all module specification and jurisdictional laws regarding interconnection of PV modules. Photovoltaic modules can be connected in both series and/or parallel to attain the desired electrical output. **Combined source circuits should contain only 1 type of PV module.**

Conductors must meet or exceed the following requirements (IEC 61730-1 clause 12.3):

- Size: minimum 4.0 mm² (12 AWG) for modules connected in series
- Temperature rating (-40°C to +90°C)
- Type PV-wire, USE-2 or equivalent

4.2 Maximum Voltage (i.e. series connections)



The maximum PV system voltage for a circuit should be calculated as the sum of the rated open circuit voltage of the series connected PV modules (corrected for the lowest expected ambient temperature). Open Circuit Voltage should be used to determine the voltage rating of all other BOS (Balance of System) components in the system

The open voltage of each string must never exceed the maximum system voltage value defined by the local regulation (IEC 61730-1 clause 12.3) Refer to the datasheets for PV modules Temperature Coefficients.

4.3 PV Module and Equipment Grounding



Please refer to the applicable regional and local codes in regards to grounding PV modules, and other PV system components.

If PV modules individual grounding is requested by the local legislation, Upsolar PV modules should be grounded to the module frame using one of the provided grounding holes (Figure 1). Please refer to NEC Article 250, 690.41-690.49, and UL Standard 1703 for proper grounding procedures.

Example (according to IEC61730-1 clause 12.3): Remove any anodization or oxidation from the module frame at the grounding lug point of contact. Apply a thin coat of anti-oxidant film, then use a stainless steel M10 screw (with serrated screwhead to penetrate the frame anodized layer), nut, and lock washer to attach an outdoor rated tin-plated copper lug. Attach an equipment grounding conductor (4mm²-12AWG-not provided by Upsolar) to the installed grounding lug (not provided by Upsolar).

4.4 Lightning protection



PV systems do not generally increase the risk of buildings being struck by lightning. If a lightning protection system currently exists on the installation building, the PV system should be connected to any lightning protection system.

Surge arrestors on the DC side of the PV system are recommended. If no lightning protection exists, all PV modules should be earth-grounded.

4.5 Overcurrent Protection (OCPD))

When the potential reverse current of a PV string exceeds the rated Upsolar PV module series fuse rating (values indicated in part 8.0 PV modules electrical data) an overcurrent protection device (OCPD) must be used (IEC 61730-1 clause 12.3). 1 or 2 strings of PV modules in parallel do not require OCPD's, but 3 or more PV strings in parallel will usually require an OCPD. In this case, it is recommended to use one fuse per string rated at $1.56 \times I_{sc}$ or higher (I_{sc} is the PV module short circuit current at STC). Example of fuse types: DCM 600Vdc for UL or PV Fuse – 1000Vdc for IEC.

Each Upsolar module is equipped with 3 by-pass diodes (Schottky type) connected in parallel of the strings of cells to limit the cells heating in case of shading (hot-spot effect). The characteristics of these diodes are:

- Voltage rating: $V_{RRM} = 45 \text{ V}$
- Current rating: $I_f = 15 \text{ A}$

5.0 MODULE CHARACTERISTICS

5.1 Operating Temperature



Always try to provide adequate ventilation around installed PV modules, especially in hot environments. Cells performance will be affected by temperature.

Predetermined Nominal Temperatures for Upsolar Modules:

Maximum Operating Temperature	+90°C	+194°F
Minimum Operating Temperature	-40°C	-40°F

Table 1: UPSOLAR MODULE OPERATING TEMPERATURES

- It is recommended that at least 5 cm or 2 inches is maintained between the mounting surface and the PV module.
- $\geq (3/16)$ inch or 5 mm gap is recommended between adjoining modules to allow for thermal expansion.

5.2 PV Module Design Strength

Upsolar PV modules have been tested according to IEC design qualification type EN 61215: 2005 and IEC safety standard EN 61730-1&2:2007 (Application class A, refer to clause 12.1).

Modules rated for use in the application class A may be used in systems operating at greater than 50 V DC or 240 W, where general contact access is anticipated. Modules qualified for safety through this part of IEC 61730 and IEC 61730-2 and within this application class are considered to meet the requirements for safety class II.

Upsolar PV modules have passed the mechanical load test to 5400 Pa. This corresponds to a wind speed of approximately 250 mph.

Upsolar PV modules comply with the test requirements for UL 790 Class C Spread of Flame Test and Burning Brand Test.

5.3 Mounting Hardware

All hardware that comes into contact with the PV module frame should be corrosion and UV resistant. Damage to the module frame or structure could occur if improper materials are used.

Stainless Steel = M6 (1/4") Nuts, Bolts, Washers

To minimize galvanic corrosion similar metals to aluminum should be used when in contact with the PV module frame.

Upsolar Module Frame material: Aluminum

Always apply proper torque settings to all mounting hardware according to manufactures specifications.

5.4 Operating Environments

Do not mount or operate Upsolar PV modules in the following environments:

- Extreme wind
- Extreme temperature (see Table 1)
- Corrosive, salty, acidic, or sulfurous environments
- Near flammable gasses or materials

6.0 MOUNTING CONFIGURATIONS

Always try and select a suitable orientation to maximize the sunlight exposure to the PV module surface. Shading can significantly affect the module and string performance in a PV array.

Sufficient space between the module frames and mounting structure is required to prevent module damage and to reduce high operating temperatures due to poor air circulation.

6.1 PV modules mounting techniques



Upsolar PV modules can be mounted either vertical or landscape as long as one of the following mounting procedures is followed (according to IEC 61730-1 clause 12.4)

1. **Mounting clamps (for open-rack and roof installations):** Attach the PV module to the mounting system using Clamps or Clips from a certified manufacture according to their instructions. Clamp and/or clips should be spaced at $\frac{1}{4}$ the length or width from the frame ends ($\pm 5 \text{ cm}$). Top mount clamps/clips should always be mounted symmetrically. See figure 1. Upsolar recommend the following minimum dimensions for each clamp: catch length: 30.0mm, catch width: 5.0mm, thickness: 3.0mm. The torque recommended to fix the clamps is 15 N.m (11.1 lb.ft).
2. **Frame Holes (for open-rack systems):** Attach the PV module to the mounting system using the provided factory mounting holes. At least 4 points of connection are required between each module and the mounting surface. *It is recommended* that 4 M6 (1/4") SS bolts with nuts and washers are used on each module. The torque recommended to fix the bolts is 15 N.m (11.1 lb.ft).
3. **End Mount (for open-rack and roof installations):** End mounting is the capture mounting of the length of the module's end frame to a supporting rail. The end frames are on the shorter sides of the module. The end-mounting rail and clips or clamps must be of sufficient strength to allow for maximum design pressure of the module. Verify this capacity with the mounting system vendor before installation.

Slope: PV module has class C fire rating and must be installed over a roof with appropriate fire resistance. A minimum slope of 5"/ft for installation is required to maintain fire class rating. Further consult local, regional and national building fire statutory regulation.

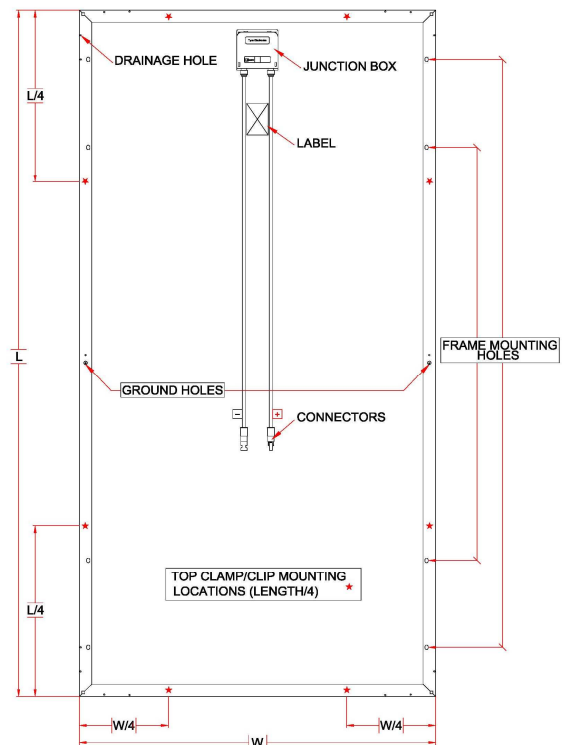


Figure 1: Module Mounting Location

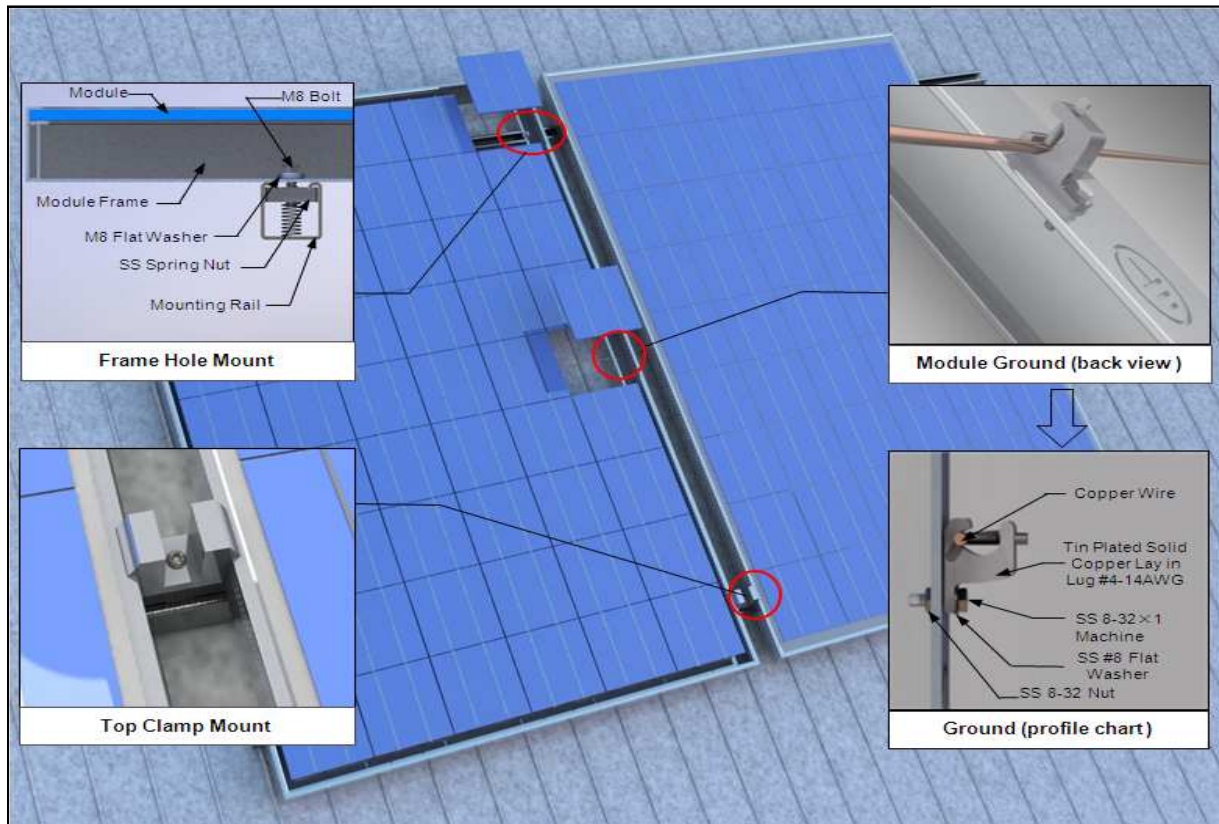


Figure 2: Module installation diagram (recommended)

6.2 PV modules handling

1. Do not expose the PV module to excessive load on the surface or bend the frame. DANGER: Risk of breaking Glass!
2. Do not stand or step on the PV module. The glass may be slippery. DANGER: Risk of injury and electric shock if glass is broken!
3. PV modules are heavy. Please handle with care! It is recommended for two qualified personal to handle one PV module at a time
4. Do not hit or put excessive load on the glass or back sheet. PV cells may break.
5. Do not twist the interconnect cable excessively. NEVER expose cables, wires, or other electrical parts to water! DANGER: risk of electric shock!
6. Do not drill holes in the frame. Modifications void the PV Module warranty
7. Do not touch the PV Module with bare hands. The frame of the PV Module has sharp edges and may cause injury. Wear suitable gloves when handling the PV Module.
8. Do not drop the PV Module or allow objects to fall on the PV module.
9. The packaging is not resistant to weathering. Do store PV modules in a dry place and NEVER expose directly to water (eg. Rain).
10. Transport the PV Modules to the installation site in the original packaging.
11. Protect the module cables from mechanical stress during transport and handling. ATTENTION: Never pull on cables!
12. Handle modules with care when lifting them from pallets. Never stack pallets and stack a maximum of 23 modules per pallet only – use appropriate Upsolar plastic corners when stacking PV Modules.

13. Check the PV modules for damage after unpacking.
14. Do not install damaged PV Modules. When in doubt about the condition of a PV module, please contact Upsolar customer service for advice.
15. Always wear protective head gear, insulating gloves and safety shoes (with rubber soles) when installing PV modules

7.0 MAINTENANCE

Annual inspection of the PV modules, array, and BOS is highly recommended. The following items (regarding the PV modules) should be checked periodically to keep the PV system functioning correctly for many years.

1. Ensure there is no corrosion on any mechanical connection between the PV module and the mounting structure. Tighten all loose components to specified torque settings.
2. Check all electrical connection for corrosion and separation on PV modules (connectors, cables, and grounds). **Never disconnect PV modules under load!**
3. Make sure PV modules are **clean and free of dirt and dust**. Use water and a soft sponge or cloth for cleaning. A mild, non-abrasive cleaning agent can be used if necessary.
 - Critical Cleaning Liquid Detergent is recommended. Do not use dishwasher detergent!
 - Use water pressure of 45 PSI (3 bar) or less.
 - De-ionized water is recommended if available.
 - Do not use cold water on hot modules
4. Make sure all maintenance work is executed by qualified personnel only.

8.0 PV MODULES ELECTRICAL DATA:

PV modules with standard frames and standard junction box:

Monocrystalline 5" – 72 cells White type	Modules rating at STC (Standard Test Conditions)				
	UP-M185M	UP-M190M	UP-M195M	UP-M200M	UP-M205M
Module type	UP-M185M	UP-M190M	UP-M195M	UP-M200M	UP-M205M
P_m (W _p)	185	190	195	200	205
V_m (V)	36.0	36.3	36.6	37.0	37.4
I_m (A)	5.14	5.23	5.33	5.41	5.48
V_{oc} (V)	44.8	45.1	45.4	46.0	46.6
I_{sc} (A)	5.43	5.55	5.65	5.70	5.75
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 5" – 72 cells Black type	Modules rating at STC (Standard Test Conditions)				
	UP-M185M-B	UP-M190M-B	UP-M195M-B	UP-M200M-B	UP-M205M-B
Module type	UP-M185M-B	UP-M190M-B	UP-M195M-B	UP-M200M-B	UP-M205M-B
P_m (W _p)	185	190	195	200	205
V_m (V)	36.4	36.6	36.8	37	37.2
I_m (A)	5.08	5.19	5.30	5.41	5.51
V_{oc} (V)	45.0	45.3	45.6	45.9	46.2
I_{sc} (A)	5.30	5.40	5.50	5.60	5.70
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 6" – 60 cells White type	Modules rating at STC (Standard Test Conditions)				
	UP-M240M	UP-M245M	UP-M250M	UP-M255M	UP-M260M
Module type	UP-M240M	UP-M245M	UP-M250M	UP-M255M	UP-M260M
P_m (W _p)	240	245	250	255	260
V_m (V)	29.6	29.8	30.0	30.2	30.4
I_m (A)	8.10	8.22	8.34	8.44	8.55
V_{oc} (V)	37.1	37.4	37.7	38.0	38.3
I_{sc} (A)	8.60	8.70	8.80	8.88	8.96
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Monocrystalline 6" – 60 cells Black type	Modules rating at STC (Standard Test Conditions)				
	UP-M235M-B	UP-M240M-B	UP-M245M-B	UP-M250M-B	UP-M255M-B
Module type	UP-M235M-B	UP-M240M-B	UP-M245M-B	UP-M250M-B	UP-M255M-B
P_m (W _p)	235	240	245	250	255
V_m (V)	29.8	30.0	30.2	30.3	30.5
I_m (A)	7.88	8.00	8.12	8.24	8.36
V_{oc} (V)	37.1	37.4	37.7	38.0	38.3
I_{sc} (A)	8.40	8.50	8.60	8.70	8.80
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Monocrystalline 6" – 72 cells White type	Modules rating at STC (Standard Test Conditions)				
	UP-M290M	UP-M295M	UP-M300M	UP-M305M	UP-M310M
Module type	UP-M290M	UP-M295M	UP-M300M	UP-M305M	UP-M310M
P_m (W _p)	290	295	300	305	310
V_m (V)	35.6	35.8	36.0	36.2	36.4
I_m (A)	8.15	8.24	8.34	8.43	8.52
V_{oc} (V)	44.6	44.9	45.2	45.5	45.8
I_{sc} (A)	8.64	8.72	8.80	8.88	8.96
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A



Delivering safe solar

Monocrystalline 6" – 72 cells Black type	Modules rating at STC (Standard Test Conditions)				
Module type	UP-M290M-B	UP-M295M-B	UP-M300M-B	UP-M305M-B	UP-M310M-B
$P_m (W_p)$	290	295	300	305	310
$V_m (V)$	36.0	36.2	36.4	36.6	36.8
$I_m (A)$	8.06	8.15	8.24	8.33	8.42
$V_{oc} (V)$	45.0	45.3	45.6	45.9	46.2
$I_{sc} (A)$	8.54	8.62	8.70	8.78	8.86
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 54 cells White type	Modules rating at STC (Standard Test Conditions)				
Module type	UP-M210P	UP-M215P	UP-M220P	UP-M225P	UP-M230P
$P_m (W_p)$	210	215	220	225	230
$V_m (V)$	26.8	27.2	27.4	27.6	27.8
$I_m (A)$	7.84	7.91	8.03	8.15	8.27
$V_{oc} (V)$	33.3	33.4	33.5	33.6	33.7
$I_{sc} (A)$	8.40	8.47	8.54	8.61	8.68
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 54 cells Black type	Modules rating at STC (Standard Test Conditions)				
Module type	UP-M210P-B	UP-M215P-B	UP-M220P-B	UP-M225P-B	UP-M230P-B
$P_m (W_p)$	210	215	220	225	230
$V_m (V)$	27.0	27.4	27.6	27.8	28.0
$I_m (A)$	7.79	7.85	7.97	8.09	8.21
$V_{oc} (V)$	33.5	33.6	33.7	33.8	33.9
$I_{sc} (A)$	8.35	8.42	8.49	8.56	8.63
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 60 cells White type	Modules rating at STC (Standard Test Conditions)				
Module type	UP-M230P	UP-M235P	UP-M240P	UP-M245P	UP-M250P
$P_m (W_p)$	230	235	240	245	250
$V_m (V)$	29.7	30.0	30.2	30.4	30.6
$I_m (A)$	7.75	7.84	7.95	8.06	8.17
$V_{oc} (V)$	37.2	37.4	37.6	37.8	38.0
$I_{sc} (A)$	8.30	8.35	8.40	8.45	8.50
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 60 cells Black type	Modules rating at STC (Standard Test Conditions)				
Module type	UP-M230P-B	UP-M235P-B	UP-M240P-B	UP-M245P-B	UP-M250P-B
$P_m (W_p)$	230	235	240	245	250
$V_m (V)$	29.9	30.2	30.4	30.6	30.9
$I_m (A)$	7.70	7.79	7.89	8.00	8.10
$V_{oc} (V)$	37.4	37.6	37.8	38.0	38.2
$I_{sc} (A)$	8.25	8.30	8.35	8.40	8.45
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 72 cells White type	Modules rating at STC (Standard Test Conditions)				
	UP-M285P	UP-M290P	UP-M295P	UP-M300P	UP-M305P
Module type	UP-M285P	UP-M290P	UP-M295P	UP-M300P	UP-M305P
P _m (Wp)	285	290	295	300	305
V _m (V)	35.4	35.5	35.7	35.9	36.1
I _m (A)	8.06	8.17	8.26	8.36	8.45
V _{oc} (V)	45.0	45.2	45.4	45.6	45.8
I _{sc} (A)	8.42	8.50	8.58	8.66	8.74
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 72 cells Black type	Modules rating at STC (Standard Test Conditions)				
	UP-M285P-B	UP-M290P-B	UP-M295P-B	UP-M300P-B	UP-M305P-B
Module type	UP-M285P-B	UP-M290P-B	UP-M295P-B	UP-M300P-B	UP-M305P-B
P _m (Wp)	285	290	295	300	305
V _m (V)	35.6	35.7	35.9	36.1	36.3
I _m (A)	8.01	8.12	8.22	8.31	8.40
V _{oc} (V)	45.0	45.1	45.2	45.3	45.4
I _{sc} (A)	8.39	8.47	8.55	8.63	8.71
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

PV modules with Tigo DC maximizer

Monocrystalline 5" – 72 cells White type	Modules rating at STC (Standard Test Conditions)				
	UP-M185MT	UP-M190MT	UP-M195MT	UP-M200MT	UP-M205MT
Module type	UP-M185MT	UP-M190MT	UP-M195MT	UP-M200MT	UP-M205MT
P _m (W _p)	185	190	195	200	205
V _m (V)	36.0	36.3	36.6	37.0	37.4
I _m (A)	5.14	5.23	5.33	5.41	5.48
V _{oc} (V)	44.8	45.1	45.4	46.0	46.6
I _{sc} (A)	5.43	5.55	5.65	5.70	5.75
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 5" – 72 cells Black type	Modules rating at STC (Standard Test Conditions)				
	UP-M185MT-B	UP-M190MT-B	UP-M195MT-B	UP-M200MT-B	UP-M205MT-B
Module type	UP-M185MT-B	UP-M190MT-B	UP-M195MT-B	UP-M200MT-B	UP-M205MT-B
P _m (W _p)	185	190	195	200	205
V _m (V)	36.4	36.6	36.8	37	37.2
I _m (A)	5.08	5.19	5.30	5.41	5.51
V _{oc} (V)	45.0	45.3	45.6	45.9	46.2
I _{sc} (A)	5.30	5.40	5.50	5.60	5.70
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 5" – 72 cells White type – Solrif frame	Modules rating at STC (Standard Test Conditions)				
	UP-S185MT	UP-S190MT	UP-S195MT	UP-S200MT	UP-S205MT
Module type	UP-S185MT	UP-S190MT	UP-S195MT	UP-S200MT	UP-S205MT
P _m (W _p)	185	190	195	200	205
V _m (V)	36.0	36.3	36.6	37.0	37.4
I _m (A)	5.14	5.23	5.33	5.41	5.48
V _{oc} (V)	44.8	45.1	45.4	46.0	46.6
I _{sc} (A)	5.43	5.55	5.65	5.70	5.75
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 5" – 72 cells Black type – Solrif frame	Modules rating at STC (Standard Test Conditions)				
	UP-S185MT-B	UP-S190MT-B	UP-S195MT-B	UP-S200MT-B	UP-S205MT-B
Module type	UP-S185MT-B	UP-S190MT-B	UP-S195MT-B	UP-S200MT-B	UP-S205MT-B
P_m (W _p)	185	190	195	200	205
V_m (V)	36.4	36.6	36.8	37	37.2
I_m (A)	5.08	5.19	5.30	5.41	5.51
V_{oc} (V)	45.0	45.3	45.6	45.9	46.2
I_{sc} (A)	5.30	5.40	5.50	5.60	5.70
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 5" – 72 cells White type – ZEP frame	Modules rating at STC (Standard Test Conditions)				
	UP-Z185MT	UP-Z190MT	UP-Z195MT	UP-Z200MT	UP-Z205MT
Module type	UP-Z185MT	UP-Z190MT	UP-Z195MT	UP-Z200MT	UP-Z205MT
P_m (W _p)	185	190	195	200	205
V_m (V)	36.0	36.3	36.6	37.0	37.4
I_m (A)	5.14	5.23	5.33	5.41	5.48
V_{oc} (V)	44.8	45.1	45.4	46.0	46.6
I_{sc} (A)	5.43	5.55	5.65	5.70	5.75
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 5" – 72 cells Black type – ZEP frame	Modules rating at STC (Standard Test Conditions)				
	UP-Z185MT-B	UP-Z190MT-B	UP-Z195MT-B	UP-Z200MT-B	UP-Z205MT-B
Module type	UP-Z185MT-B	UP-Z190MT-B	UP-Z195MT-B	UP-Z200MT-B	UP-Z205MT-B
P_m (W _p)	185	190	195	200	205
V_m (V)	36.4	36.6	36.8	37	37.2
I_m (A)	5.08	5.19	5.30	5.41	5.51
V_{oc} (V)	45.0	45.3	45.6	45.9	46.2
I_{sc} (A)	5.30	5.40	5.50	5.60	5.70
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 6" – 60 cells White type	Modules rating at STC (Standard Test Conditions)				
	UP-M240MT	UP-M245MT	UP-M250MT	UP-M255MT	UP-M260MT
Module type	UP-M240MT	UP-M245MT	UP-M250MT	UP-M255MT	UP-M260MT
P_m (W _p)	240	245	250	255	260
V_m (V)	29.6	29.8	30.0	30.2	30.4
I_m (A)	8.10	8.22	8.34	8.44	8.55
V_{oc} (V)	37.1	37.4	37.7	38.0	38.3
I_{sc} (A)	8.60	8.70	8.80	8.88	8.96
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 6" – 60 cells Black type	Modules rating at STC (Standard Test Conditions)				
	UP-M235MT-B	UP-M240MT-B	UP-M245MT-B	UP-M250MT-B	UP-M255MT-B
Module type	UP-M235MT-B	UP-M240MT-B	UP-M245MT-B	UP-M250MT-B	UP-M255MT-B
P_m (W _p)	235	240	245	250	255
V_m (V)	29.8	30.0	30.2	30.3	30.5
I_m (A)	7.88	8.00	8.12	8.24	8.36
V_{oc} (V)	37.1	37.4	37.7	38.0	38.3
I_{sc} (A)	8.40	8.50	8.60	8.70	8.80
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A



Monocrystalline 6" – 60 cells White type – ZEP frame	Modules rating at STC (Standard Test Conditions)				
	UP-Z240MT	UP-Z245MT	UP-Z250MT	UP-Z255MT	UP-Z260MT
Module type	UP-Z240MT	UP-Z245MT	UP-Z250MT	UP-Z255MT	UP-Z260MT
P_m (W _p)	240	245	250	255	260
V_m (V)	29.6	29.8	30.0	30.2	30.4
I_m (A)	8.10	8.22	8.34	8.44	8.55
V_{oc} (V)	37.1	37.4	37.7	38.0	38.3
I_{sc} (A)	8.60	8.70	8.80	8.88	8.96
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 6" – 60 cells Black type – ZEP frame	Modules rating at STC (Standard Test Conditions)				
	UP-Z235MT-B	UP-Z240MT-B	UP-Z245MT-B	UP-Z250MT-B	UP-Z255MT-B
Module type	UP-Z235MT-B	UP-Z240MT-B	UP-Z245MT-B	UP-Z250MT-B	UP-Z255MT-B
P_m (W _p)	235	240	245	250	255
V_m (V)	29.8	30.0	30.2	30.3	30.5
I_m (A)	7.88	8.00	8.12	8.24	8.36
V_{oc} (V)	37.1	37.4	37.7	38.0	38.3
I_{sc} (A)	8.40	8.50	8.60	8.70	8.80
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Polycrystalline 6" – 54 cells White type	Modules rating at STC (Standard Test Conditions)				
	UP-M210PT	UP-M215PT	UP-M220PT	UP-M225PT	UP-M230PT
Module type	UP-M210PT	UP-M215PT	UP-M220PT	UP-M225PT	UP-M230PT
P_m (W _p)	210	215	220	225	230
V_m (V)	26.8	27.2	27.4	27.6	27.8
I_m (A)	7.84	7.91	8.03	8.15	8.27
V_{oc} (V)	33.3	33.4	33.5	33.6	33.7
I_{sc} (A)	8.40	8.47	8.54	8.61	8.68
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Polycrystalline 6" – 54 cells Black type	Modules rating at STC (Standard Test Conditions)				
	UP-M210PT-B	UP-M215PT-B	UP-M220PT-B	UP-M225PT-B	UP-M230PT-B
Module type	UP-M210PT-B	UP-M215PT-B	UP-M220PT-B	UP-M225PT-B	UP-M230PT-B
P_m (W _p)	210	215	220	225	230
V_m (V)	27.0	27.4	27.6	27.8	28.0
I_m (A)	7.79	7.85	7.97	8.09	8.21
V_{oc} (V)	33.5	33.6	33.7	33.8	33.9
I_{sc} (A)	8.35	8.42	8.49	8.56	8.63
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Polycrystalline 6" – 60 cells White type	Modules rating at STC (Standard Test Conditions)				
	UP-M230PT	UP-M235PT	UP-M240PT	UP-M245PT	UP-M250PT
Module type	UP-M230PT	UP-M235PT	UP-M240PT	UP-M245PT	UP-M250PT
P_m (W _p)	230	235	240	245	250
V_m (V)	29.7	30.0	30.2	30.4	30.6
I_m (A)	7.75	7.84	7.95	8.06	8.17
V_{oc} (V)	37.2	37.4	37.6	37.8	38.0
I_{sc} (A)	8.30	8.35	8.40	8.45	8.50
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A



Polycrystalline 6" – 60 cells Black type	Modules rating at STC (Standard Test Conditions)				
	UP-M230PT-B	UP-M235PT-B	UP-M240PT-B	UP-M245PT-B	UP-M250PT-B
Module type	UP-M230PT-B	UP-M235PT-B	UP-M240PT-B	UP-M245PT-B	UP-M250PT-B
P _m (Wp)	230	235	240	245	250
V _m (V)	29.9	30.2	30.4	30.6	30.9
I _m (A)	7.70	7.79	7.89	8.00	8.10
V _{oc} (V)	37.4	37.6	37.8	38.0	38.2
I _{sc} (A)	8.25	8.30	8.35	8.40	8.45
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Polycrystalline 6" – 60 cells White type – ZEP frame	Modules rating at STC (Standard Test Conditions)				
	UP-Z230PT	UP-Z235PT	UP-Z240PT	UP-Z245PT	UP-Z250PT
Module type	UP-Z230PT	UP-Z235PT	UP-Z240PT	UP-Z245PT	UP-Z250PT
P _m (Wp)	230	235	240	245	250
V _m (V)	29.7	30.0	30.2	30.4	30.6
I _m (A)	7.75	7.84	7.95	8.06	8.17
V _{oc} (V)	37.2	37.4	37.6	37.8	38.0
I _{sc} (A)	8.30	8.35	8.40	8.45	8.50
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Polycrystalline 6" – 60 cells Black type – ZEP frame	Modules rating at STC (Standard Test Conditions)				
	UP-Z230PT-B	UP-Z235PT-B	UP-Z240PT-B	UP-Z245PT-B	UP-Z250PT-B
Module type	UP-Z230PT-B	UP-Z235PT-B	UP-Z240PT-B	UP-Z245PT-B	UP-Z250PT-B
P _m (Wp)	230	235	240	245	250
V _m (V)	29.9	30.2	30.4	30.6	30.9
I _m (A)	7.70	7.79	7.89	8.00	8.10
V _{oc} (V)	37.4	37.6	37.8	38.0	38.2
I _{sc} (A)	8.25	8.30	8.35	8.40	8.45
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Polycrystalline 6" – 72 cells White type	Modules rating at STC (Standard Test Conditions)				
	UP-M285PT	UP-M290PT	UP-M295PT	UP-M300PT	UP-M305PT
Module type	UP-M285PT	UP-M290PT	UP-M295PT	UP-M300PT	UP-M305PT
P _m (Wp)	285	290	295	300	305
V _m (V)	35.4	35.5	35.7	35.9	36.1
I _m (A)	8.06	8.17	8.26	8.36	8.45
V _{oc} (V)	45.0	45.2	45.4	45.6	45.8
I _{sc} (A)	8.42	8.50	8.58	8.66	8.74
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Polycrystalline 6" – 72 cells Black type	Modules rating at STC (Standard Test Conditions)				
	UP-M285PT-B	UP-M290PT-B	UP-M295PT-B	UP-M300PT-B	UP-M305PT-B
Module type	UP-M285PT-B	UP-M290PT-B	UP-M295PT-B	UP-M300PT-B	UP-M305PT-B
P _m (Wp)	285	290	295	300	305
V _m (V)	35.6	35.7	35.9	36.1	36.3
I _m (A)	8.01	8.12	8.22	8.31	8.40
V _{oc} (V)	45.0	45.1	45.2	45.3	45.4
I _{sc} (A)	8.39	8.47	8.55	8.63	8.71
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

PV modules with Solaredge Power optimizer

Monocrystalline 5" – 72 cells White type	Modules rating at STC (Standard Test Conditions)				
	Module type	UP-M185MS	UP-M190MS	UP-M195MS	UP-M200MS
P_m (W _p)	185	190	195	200	205
V_m (V)	36.0	36.3	36.6	37.0	37.4
I_m (A)	5.14	5.23	5.33	5.41	5.48
V_{oc} (V)	44.8	45.1	45.4	46.0	46.6
I_{sc} (A)	5.43	5.55	5.65	5.70	5.75
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 5" – 72 cells Black type	Modules rating at STC (Standard Test Conditions)				
	Module type	UP-M185MS-B	UP-M190MS-B	UP-M195MS-B	UP-M200MS-B
P_m (W _p)	185	190	195	200	205
V_m (V)	36.4	36.6	36.8	37	37.2
I_m (A)	5.08	5.19	5.30	5.41	5.51
V_{oc} (V)	45.0	45.3	45.6	45.9	46.2
I_{sc} (A)	5.30	5.40	5.50	5.60	5.70
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 5" – 72 cells White type – Solrif frame	Modules rating at STC (Standard Test Conditions)				
	Module type	UP-S185MS	UP-S190MS	UP-S195MS	UP-S200MS
P_m (W _p)	185	190	195	200	205
V_m (V)	36.0	36.3	36.6	37.0	37.4
I_m (A)	5.14	5.23	5.33	5.41	5.48
V_{oc} (V)	44.8	45.1	45.4	46.0	46.6
I_{sc} (A)	5.43	5.55	5.65	5.70	5.75
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 5" – 72 cells Black type – Solrif frame	Modules rating at STC (Standard Test Conditions)				
	Module type	UP-S185MS-B	UP-S190MS-B	UP-S195MS-B	UP-S200MS-B
P_m (W _p)	185	190	195	200	205
V_m (V)	36.4	36.6	36.8	37	37.2
I_m (A)	5.08	5.19	5.30	5.41	5.51
V_{oc} (V)	45.0	45.3	45.6	45.9	46.2
I_{sc} (A)	5.30	5.40	5.50	5.60	5.70
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 5" – 72 cells White type – ZEP frame	Modules rating at STC (Standard Test Conditions)				
	Module type	UP-Z185MS	UP-Z190MS	UP-Z195MS	UP-Z200MS
P_m (W _p)	185	190	195	200	205
V_m (V)	36.0	36.3	36.6	37.0	37.4
I_m (A)	5.14	5.23	5.33	5.41	5.48
V_{oc} (V)	44.8	45.1	45.4	46.0	46.6
I_{sc} (A)	5.43	5.55	5.65	5.70	5.75
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 5" – 72 cells Black type – ZEP frame	Modules rating at STC (Standard Test Conditions)				
Module type	UP-Z185MS-B	UP-Z190MS-B	UP-Z195MS-B	UP-Z200MS-B	UP-Z205MS-B
P_m (W _p)	185	190	195	200	205
V_m (V)	36.4	36.6	36.8	37	37.2
I_m (A)	5.08	5.19	5.30	5.41	5.51
V_{oc} (V)	45.0	45.3	45.6	45.9	46.2
I_{sc} (A)	5.30	5.40	5.50	5.60	5.70
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	15A	15A	15A	15A	15A

Monocrystalline 6" – 60 cells White type	Modules rating at STC (Standard Test Conditions)				
Module type	UP-M240MS	UP-M245MS	UP-M250MS	UP-M255MS	UP-M260MS
P_m (W _p)	240	245	250	255	260
V_m (V)	29.6	29.8	30.0	30.2	30.4
I_m (A)	8.10	8.22	8.34	8.44	8.55
V_{oc} (V)	37.1	37.4	37.7	38.0	38.3
I_{sc} (A)	8.60	8.70	8.80	8.88	8.96
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Monocrystalline 6" – 60 cells Black type	Modules rating at STC (Standard Test Conditions)				
Module type	UP-M235MS-B	UP-M240MS-B	UP-M245MS-B	UP-M250MS-B	UP-M255MS-B
P_m (W _p)	235	240	245	250	255
V_m (V)	29.8	30.0	30.2	30.3	30.5
I_m (A)	7.88	8.00	8.12	8.24	8.36
V_{oc} (V)	37.1	37.4	37.7	38.0	38.3
I_{sc} (A)	8.40	8.50	8.60	8.70	8.80
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Monocrystalline 6" – 60 cells White type – ZEP frame	Modules rating at STC (Standard Test Conditions)				
Module type	UP-Z240MS	UP-Z245MS	UP-Z250MS	UP-Z255MS	UP-Z260MS
P_m (W _p)	240	245	250	255	260
V_m (V)	29.6	29.8	30.0	30.2	30.4
I_m (A)	8.10	8.22	8.34	8.44	8.55
V_{oc} (V)	37.1	37.4	37.7	38.0	38.3
I_{sc} (A)	8.60	8.70	8.80	8.88	8.96
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Monocrystalline 6" – 60 cells Black type – ZEP frame	Modules rating at STC (Standard Test Conditions)				
Module type	UP-Z235MS-B	UP-Z240MS-B	UP-Z245MS-B	UP-Z250MS-B	UP-Z255MS-B
P_m (W _p)	235	240	245	250	255
V_m (V)	29.8	30.0	30.2	30.3	30.5
I_m (A)	7.88	8.00	8.12	8.24	8.36
V_{oc} (V)	37.1	37.4	37.7	38.0	38.3
I_{sc} (A)	8.40	8.50	8.60	8.70	8.80
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A



Delivering safe solar

Polycrystalline 6" – 54 cells White type	Modules rating at STC (Standard Test Conditions)				
	UP-M210PS	UP-M215PS	UP-M220PS	UP-M225PS	UP-M230PS
Module type	UP-M210PS	UP-M215PS	UP-M220PS	UP-M225PS	UP-M230PS
P_m (W _p)	210	215	220	225	230
V_m (V)	26.8	27.2	27.4	27.6	27.8
I_m (A)	7.84	7.91	8.03	8.15	8.27
V_{oc} (V)	33.3	33.4	33.5	33.6	33.7
I_{sc} (A)	8.40	8.47	8.54	8.61	8.68
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 54 cells Black type	Modules rating at STC (Standard Test Conditions)				
	UP-M210PS-B	UP-M215PS-B	UP-M220PS-B	UP-M225PS-B	UP-M230PS-B
Module type	UP-M210PS-B	UP-M215PS-B	UP-M220PS-B	UP-M225PS-B	UP-M230PS-B
P_m (W _p)	210	215	220	225	230
V_m (V)	27.0	27.4	27.6	27.8	28.0
I_m (A)	7.79	7.85	7.97	8.09	8.21
V_{oc} (V)	33.5	33.6	33.7	33.8	33.9
I_{sc} (A)	8.35	8.42	8.49	8.56	8.63
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 60 cells White type	Modules rating at STC (Standard Test Conditions)				
	UP-M230PS	UP-M235PS	UP-M240PS	UP-M245PS	UP-M250PS
Module type	UP-M230PS	UP-M235PS	UP-M240PS	UP-M245PS	UP-M250PS
P_m (W _p)	230	235	240	245	250
V_m (V)	29.7	30.0	30.2	30.4	30.6
I_m (A)	7.75	7.84	7.95	8.06	8.17
V_{oc} (V)	37.2	37.4	37.6	37.8	38.0
I_{sc} (A)	8.30	8.35	8.40	8.45	8.50
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 60 cells Black type	Modules rating at STC (Standard Test Conditions)				
	UP-M230PS-B	UP-M235PS-B	UP-M240PS-B	UP-M245PS-B	UP-M250PS-B
Module type	UP-M230PS-B	UP-M235PS-B	UP-M240PS-B	UP-M245PS-B	UP-M250PS-B
P_m (W _p)	230	235	240	245	250
V_m (V)	29.9	30.2	30.4	30.6	30.9
I_m (A)	7.70	7.79	7.89	8.00	8.10
V_{oc} (V)	37.4	37.6	37.8	38.0	38.2
I_{sc} (A)	8.25	8.30	8.35	8.40	8.45
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 60 cells White type – ZEP frame	Modules rating at STC (Standard Test Conditions)				
	UP-Z230PS	UP-Z235PS	UP-Z240PS	UP-Z245PS	UP-Z250PS
Module type	UP-Z230PS	UP-Z235PS	UP-Z240PS	UP-Z245PS	UP-Z250PS
P_m (W _p)	230	235	240	245	250
V_m (V)	29.7	30.0	30.2	30.4	30.6
I_m (A)	7.75	7.84	7.95	8.06	8.17
V_{oc} (V)	37.2	37.4	37.6	37.8	38.0
I_{sc} (A)	8.30	8.35	8.40	8.45	8.50
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 60 cells Black type – ZEP frame	Modules rating at STC (Standard Test Conditions)				
	UP-Z230PS-B	UP-Z235PS-B	UP-Z240PS-B	UP-Z245PS-B	UP-Z250PS-B
Module type	UP-Z230PS-B	UP-Z235PS-B	UP-Z240PS-B	UP-Z245PS-B	UP-Z250PS-B
Pm (Wp)	230	235	240	245	250
Vm (V)	29.9	30.2	30.4	30.6	30.9
Im (A)	7.70	7.79	7.89	8.00	8.10
Voc (V)	37.4	37.6	37.8	38.0	38.2
Isc (A)	8.25	8.30	8.35	8.40	8.45
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 72 cells White type	Modules rating at STC (Standard Test Conditions)				
	UP-M285PS	UP-M290PS	UP-M295PS	UP-M300PS	UP-M305PS
Module type	UP-M285PS	UP-M290PS	UP-M295PS	UP-M300PS	UP-M305PS
Pm (Wp)	285	290	295	300	305
Vm (V)	35.4	35.5	35.7	35.9	36.1
Im (A)	8.06	8.17	8.26	8.36	8.45
Voc (V)	45.0	45.2	45.4	45.6	45.8
Isc (A)	8.42	8.50	8.58	8.66	8.74
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

Polycrystalline 6" – 72 cells Black type	Modules rating at STC (Standard Test Conditions)				
	UP-M285PS-B	UP-M290PS-B	UP-M295PS-B	UP-M300PS-B	UP-M305PS-B
Module type	UP-M285PS-B	UP-M290PS-B	UP-M295PS-B	UP-M300PS-B	UP-M305PS-B
Pm (Wp)	285	290	295	300	305
Vm (V)	35.6	35.7	35.9	36.1	36.3
Im (A)	8.01	8.12	8.22	8.31	8.40
Voc (V)	45.0	45.1	45.2	45.3	45.4
Isc (A)	8.39	8.47	8.55	8.63	8.71
Maximum System voltage (IEC)	1000V	1000V	1000V	1000V	1000V
Maximum System voltage (UL)	600V	600V	600V	600V	600V
Maximum Reverse Current	20A	20A	20A	20A	20A

NOTE: The electrical characteristics are within $\pm 10\%$ of the indicated values of Isc, Voc, and within $\pm 3\%$ of Pmax under standard test conditions (irradiance of 100 mW/cm², AM 1.5 spectrum, and cell temperature of 25°C)

Further guidance for modules equipped with Tigo maximizer, Solaredge power optimizer, ZEP systems or Solrif frame modules installation can be found online on Upsolar web page, see following link (select "Special products") :

<http://www.upsolar.com/uk/products/>

Further contact information: Upsolar Technical department:

Upsolar Group (Shanghai)
Silver Centre, 19F – 1388 North Shaanxi Road
200060 Shanghai, China
Tel: +86 21 6277 5477
Fax: +86 21 6277 5664
E-mail: support@upsolar.com