V1.1



## MPPT Solar Charge Controller

## Solar Mate

250V 100A / 70A 150V 120A / 80A / 60A 100V 20A / 40A



Solar Mate is a solar charge controller with built-in Maximum Power Point Tracking (MPPT) technology, which enables it to increase its PV output by as much as 30% compared with non-MPPT designs.

Solar Mate can optimize the PV's output and eliminate the fluctuation due to shading or temperatures variables. It is a multi-voltage MPPT with built-in sophisticated battery charging algorithm for both lead acid battery or lithium-ion battery, suitable for various system designs. Meantime, it supports data management of 365-day history records, which can tell users the system's actual performance.

- High dynamic MPPT efficiency more than 99.9%
- High efficiency up to 98%, and European weighted efficiency up to 97.3%
- Up to 7056W of charging power at 40°C
- Excellent performance at sunrise and low solar insulation levels
- Wide MPPT operating voltage range
- Parallel function, up to 6 units can be operated in parallel
- Built-in TBB premium II battery charging algorithm for lead acid battery
- Support 365days Data logging
- Communication: Auxiliary contact, RS485 support\T-bus



| *116.2 Weight (kg) 1.4 6.8 7.0 7.2 7.0 7.8   |          | Model Na                           | SP100-20                          | SP100-40   | SP150-60                     | SP150-80                   | SP150-120                          | SP250-70 | SP250-100           |            |
|--|----------|------------------------------------|-----------------------------------|--|------------------------------|----------------------------|------------------------------------|----------|---------------------|------------|
| Meximum charging current (A)   | Electric | cal                                |                                   |  |                              |                            |                                    |          |                     |            |
| Meximum charging current (A)   |          | Nominal battery voltage (VDC)      |                                   | 12,24,or 48  |                              |                            |                                    | 24 or 48 |                     |            |
| Meximum charging power (W)   |          |                                    |                                   |  |                              | 60                         | 80                                 | 120      | 70                  | 100        |
| Maximum PV input power (W)   24PUC   300   600   1200   2250   3000   4500   2700   NA   |          |                                    | 12VDC                             | 294  | 588                          |                            |                                    | N/A      |                     |            |
| Maximum PV input power (W)   24VDC   600   1200   2550   3000   4500   2700   N/A  |          | Maximum charging power (W)         | 24VDC                             | 588  | 1176                         | 1764                       | 2352                               | 3528     | 2058                | 2940       |
| Maximum PV input power (W)   |          |                                    | 48VDC                             | 1176   | 2352                         | 3528                       | 4704                               | 7056     | 4116                | 5880       |
| ABVDC   1200   2400   4500   6600   9000   5400   7500   |          |                                    | 12VDC                             | 300  | 600                          |                            |                                    | N/A      |                     |            |
| PV open circuit voltage (Voo) (VDC)  |          | Maximum PV input power (W)         | 24VDC                             | 600  | 1200                         | 2250                       | 3000                               | 4500     | 2700                | N/A        |
| Max. PV short circuit current (A)   20   Normal operations 40   PV palentity revereed 20   PV palent   |          |                                    | 48VDC                             | 1200   | 2400                         | 4500                       | 6000                               | 9000     | 5400                | 7500       |
| Max. PV ehort circuit current (A)   20   PV polarity prevented; 20   PV polarity pre   |          | PV open circuit voltage (Voc) (VDC | )                                 | 1  | 00                           |                            | 150                                |          | 2                   | 50         |
| Max. PV short circuit current (A)         20         operation: 40 PY protainly reversed: 20         40         80           Max efficiency         98.2% 6#48Vdc system         98%6#48VDC system           Max MPPT efficiency         >99.9%           Self-consumption (mA)         Leas then 1mA@12Vdc/ 3mA @24Vdc/5mA@48Vdc         37mA @ 48VDC system           Charge voltage 'absorption' (VDC)         Default setting: 14.1728.2/56.4         Default setting: 27.54           Charge voltage 'float' (VDC)         Default setting: 3mVC/cell         Default setting: 27.54           Charging algorithum         TBB II multiple stages         TBB II multiple stages           Temperature compensation         Default setting: 3mVC/cell         Programmable           Other           Displey         LED + LCD         RS485           Demonunication port         RS485, Bluetooth         RS485           Appropriate to a figure including solar array voltage, battery voltage, charging current, charging power, Record the daily PV start charging time, absorb to floating transfer time, PV power loss time and etc; Real time fault time and incremation.           Storage temperature         -40°C~70°C         -50°C~60°C (power derated above 40°C)   |          | MPPT voltage range (VDC)           |                                   | (Vbat+5)~95 (Vbat+5)~90  |                              | 65~145                     |                                    |          | 65~245              |            |
| Max MPPT efficiency  |          | Max. PV short circuit current (A)  | Max. PV short circuit current (A) |  | operation: 40<br>PV polarity | 40                         | 40 80                              |          |                     |            |
| Self-consumption (mA)  Less than 1 mA@12\Vdol 3mA @48\Vdo 37mA @ 48\VDC system  The system of the sy |          | Max efficiency                     |                                   | 98.2% @4   | 8Vdc system                  | 98%@48VDC system           |                                    |          |                     |            |
| Charge voltage 'absorption' (VDC)  Charge voltage 'float' (VDC)  Default setting: 14.1/28.2/56.4  Charge voltage 'float' (VDC)  Default setting: Pefault setting: 27/54  Charging algorithum  TBB II multiple stages  Temperature compensation  Equalization charging  N/A  Programmable  Other  Display  LED + LCD  Communication port  RS485, Bluetooth  RS485  Dry contact  Remote on / off  Storage temperature  Storage temperature  Operating temperature  Poperating temperature  Operating temperature  Pundifty  Altitude  Max wire sizes (mm²)  Dimension (L*W*H) - mm  205*160*68.5  Pofault setting: 27/54  Default setting: 27/54  TBB II multiple stages  TB II stages  TB II stages  TC SC Co       |          | Max MPPT efficiency                |                                   | >99.9%   |                              |                            |                                    |          |                     |            |
| Charge voltage "float" (VDC)   |          | Self-consumption (mA)              |                                   |  |                              | 37mA @ 48VDC system        |                                    |          |                     |            |
| Default setting: 27/54   Charging algorithum   TBB II multiple stages  |          | Charge voltage 'absorption' (VDC)  |                                   |  |                              | Default setting: 28.8/57.6 |                                    |          |                     |            |
| Temperature compensation   Equalization charging   N/A   Programmable  |          | Charge voltage 'float' (VDC)       |                                   |  |                              |                            |                                    |          |                     |            |
| Other         N/A         Programmable           Other         Display         LED+LCD           Communication port         RS485, Bluetooth         RS485           Dry contact         30VDC/2A           Remote on / off         Yes (2 pole connector)           Data logging         365 days of history record, daily, monthly and total production; Real time figure including solar array voltage, battery voltage, charging current, charging power, Record the daily PV start charging time, absort foliability transfer time, PV power loss time and etc; Real time fault time and information.           Storage temperature         -40°C~70°C           Operating temperature         -40°C~70°C           (power derated above 50°C)         -25°C~60°C (power derated above 40°C)           Humidity         5%~95%, non-condensing           Altitude         3000m (full rated output up to 2000m)           Max wire sizes (mm²)         16           Protection category         IP31           Dimension (L*W*H) - mm         205*160*68.5           325.2*293*116.2         352.2*293*116.2           Weight (kg)         1.4           Cooling         Natural cooling         Forced fan   |          | Charging algorithum                |                                   | TBB II multiple stages   |                              |                            |                                    |          |                     |            |
| Display         LED + LCD           Communication port         RS485, Bluetooth         RS485           Dry contact         30VDC/2A           Remote on / off         Yes (2 pole connector)           Data logging         365 days of history record, daily, monthly and total production; Real time figure including solar array voltage, battery voltage, charging current, charging power; Record the daily PV start charging time, absorb to floating transfer time, PV power loss time and etc; Real time fault time and information.           Storage temperature         -40°C~70°C           Operating temperature         -40°C~70°C           Humidity         5%~95%, non-condensing           Altitude         3000m (full rated output up to 2000m)           Max wire sizes (mm²)         16         35           Protection category         IP31         IP21           Dimension (L*W*H) - mm         205*160*68.5         325.2*293*116.2         352.2*293*116.2           Weight (kg)         1.4         6.8         7.0         7.2         7.0         7.8           Cooling         Natural cooling         Forced fan   |          | Temperature compensation           |                                   | Default setting: -3mV/°C/cell  |                              |                            |                                    |          |                     |            |
| Display  |          | Equalization charging              |                                   | N  | N/A Programmable             |                            |                                    |          |                     |            |
| Dry contact   RS485, Bluetooth   RS485   | Other    |                                    |                                   |  |                              |                            |                                    |          |                     |            |
| Dry contact   RS485, Bluetooth   RS485   | -        | Display                            | LED + LCD                         |  |                              |                            |                                    |          |                     |            |
| Dry contact         30VDC/2A           Remote on / off         Yes (2 pole connector)           365 days of history record, daily, monthly and total production; Real time figure including solar array voltage, battery voltage, charging current, charging power; Record the daily PV start charging time, absorb to floating transfer time, PV power loss time and etc; Real time fault time and information.           Storage temperature         -40°C~70°C (power derated above 50°C)           Humidity         5%~95%, non-condensing           Altitude         3000m (full rated output up to 2000m)           Max wire sizes (mm²)         16         35           Protection category         IP31         IP21           Dimension (L*W*H) - mm         205*160*68.5         325.2*293*116.2         352.2*293*116.2           Weight (kg)         1.4         6.8         7.0         7.2         7.0         7.8           Cooling         Natural cooling         Forced fan  |          |                                    |                                   |  |                              |                            |                                    |          |                     |            |
| Natural cooling   Second   S   |          | Dry contact                        |                                   | 20 00 00 00 € 100000000000000 10 100000000   |                              |                            |                                    |          |                     |            |
| Data logging   Solar array voltage, battery voltage, charging current, charging power; Record the daily PV start charging time, absorb to floating transfer time, PV power loss time and etc; Real time fault time and information.    Storage temperature   Storage t   |          | , 5                                |                                   |  |                              |                            |                                    |          |                     |            |
| Operating temperature       -40°C~70°C (power derated above 50°C)       -40°C~70°C (power derated above 40°C)       -25°C~60°C (power derated above 40°C)         Humidity       5%~95%, non-condensing         Altitude       3000m (full rated output up to 2000m)         Max wire sizes (mm²)       16       35         Protection category       IP31       IP21         Dimension (L*W*H) - mm       205*160*68.5       325.2*293*116.2       352.2*293*116.2         Weight (kg)       1.4       6.8       7.0       7.2       7.0       7.8         Cooling       Natural cooling       Forced fan   |          | Data logging                       |                                   | solar array voltage, battery voltage, charging current, charging power; Record the daily PV start charging time, absorb to floating transfer time, PV power loss time and etc; |                              |                            |                                    |          |                     |            |
| Operating temperature       -40°C~70°C (power derated above 50°C)       -40°C~70°C (power derated above 40°C)       -25°C~60°C (power derated above 40°C)         Humidity       5%~95%, non-condensing         Altitude       3000m (full rated output up to 2000m)         Max wire sizes (mm²)       16       35         Protection category       IP31       IP21         Dimension (L*W*H) - mm       205*160*68.5       325.2*293*116.2       352.2*293*116.2         Weight (kg)       1.4       6.8       7.0       7.2       7.0       7.8         Cooling       Natural cooling       Forced fan   |          | Storage temperature                |                                   |  |                              |                            |                                    |          |                     |            |
| Altitude       3000m (full rated output up to 2000m)         Max wire sizes (mm²)       16       35         Protection category       IP31       IP21         Dimension (L*W*H) - mm       205*160*68.5       325.2*293*116.2       352.2*293*116.2         Weight (kg)       1.4       6.8       7.0       7.2       7.0       7.8         Cooling       Natural cooling       Forced fance   |          |                                    |                                   | (power derated   | (power<br>derated            |                            |                                    |          |                     |            |
| Altitude       3000m (full rated output up to 2000m)         Max wire sizes (mm²)       16       35         Protection category       IP31       IP21         Dimension (L*W*H) - mm       205*160*68.5       325.2*293*116.2       352.2*293*116.2         Weight (kg)       1.4       6.8       7.0       7.2       7.0       7.8         Cooling       Natural cooling       Forced fance   |          | Humidity                           |                                   | 5%~95%, non-condensing   |                              |                            |                                    |          |                     |            |
| Protection category         IP31         IP21           Dimension (L*W*H) - mm         205*160*68.5         325.2*293*116.2         352.2*293*116.2           Weight (kg)         1.4         6.8         7.0         7.2         7.0         7.8           Cooling         Natural cooling         Forced fan   |          | Altitude                           |                                   | 3000m (full rated output up to 2000m)  |                              |                            |                                    |          |                     |            |
| Dimension (L*W*H) - mm       205*160*68.5       325.2*293*116.2       352.2*293*116.2         Weight (kg)       1.4       6.8       7.0       7.2       7.0       7.8         Cooling       Natural cooling       Forced fan   |          | Max wire sizes (mm²)               |                                   | 16 35  |                              |                            |                                    |          |                     |            |
| Weight (kg)  |          | Protection category                |                                   | IF   | P31                          | IP21                       |                                    |          |                     |            |
| Cooling Natural cooling Forced fan   |          | Dimension (L*W*H) - mm             |                                   | 205*1  | 60*68.5                      | 323,2 233 110,2            |                                    |          | 352.2*293<br>*116.2 |            |
|  |          | Weight (kg)                        |                                   | 1  | .4                           | 6.8                        | 7.0                                | 7.2      | 7.0                 | 7.8        |
| Standard ECE-10-6 EN61000-6-1,EN61000-6-3, EN62109-1   |          | Cooling                            |                                   |  |                              | Natural                    | cooling                            |          | 1                   | Forced fan |
|  |          | Standard                           |                                   | ECE  | E-10-6                       |                            | EN61000-6-1,EN61000-6-3, EN62109-1 |          |                     |            |