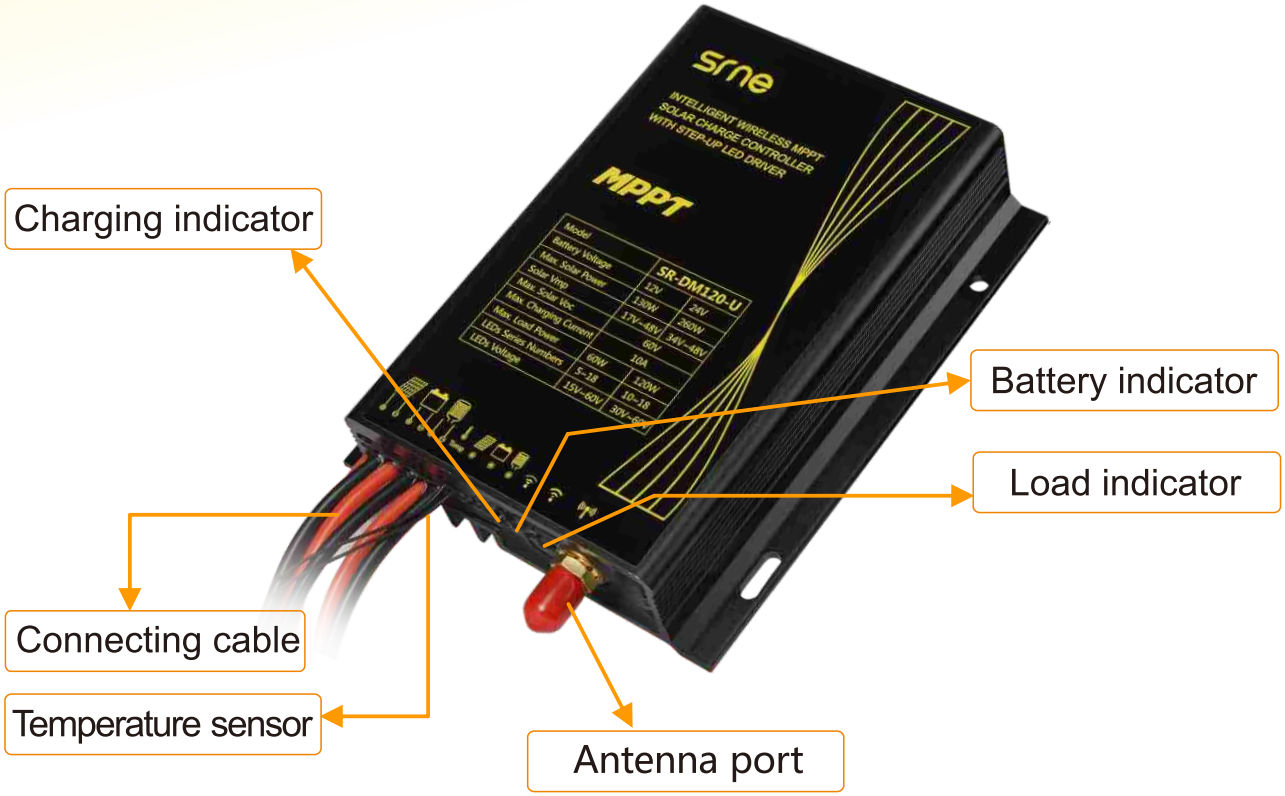
MPPT Integrated Constant-Current Charge Controller for Solar Street Lights

SR-DM120/SR-DM120-U

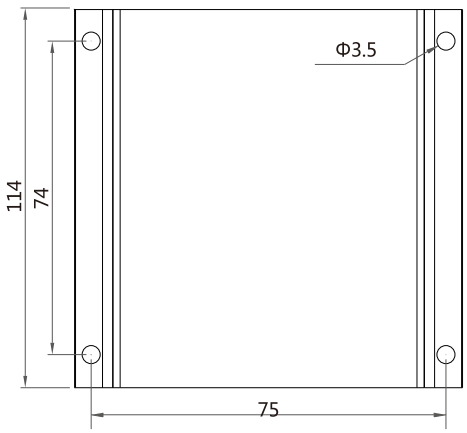
Main Features

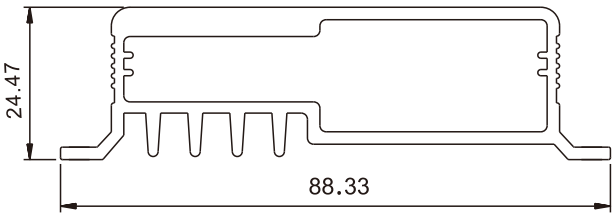
• Features true MPPT functions, applicable to monocrystalline, polycrystalline and amorphous silicon solar panels serially connected in various numbers, significantly improving the solar panels' energy utilization ratio.
• Adopts the MPPT solar charging technology, with a max. solar panel open-circuit voltage Voc ≤ 60V and a max. solar panel power Pm ≤ 260W.
• Features load boost constant-current output, able to directly power a maximum of 18 light bulbs in series, with a max. load power Pled ≤ 120 W.
• Adopts an improved charging algorithm that supports 12 V and 24 V lead-acid batteries and lithium batteries, and the user can set the operating modes for lead-acid batteries or lithium batteries accordingly.
• Boasts a load triple-stage brightness adjustment and morning on design, with an operating duration adjustable from 0 to 15 hours and a power settable from 0 to 100%.
• Features a system status log function, able to record a maximum of 7 days of system status, comprehensively and effectively monitoring the system's conditions.
• Data communication adopts a multi-time two-way handshake protocol and a data compression algorithm, realizing precise and fast data transmission.
• Features an intelligent power mode which can extend the battery life to its top limit by adjusting the load power automatically according to the remaining battery capacity.
• True constant current rather than current-limiting control ensures smooth and stable output current, effectively reducing LED light attenuation and extending LED service life.
• With an infrared remote control function, operations including setting parameters, reading status and viewing historical data can be conducted.
• A metal case and an IP68 waterproof level enable the device to operate in various kinds of tough conditions.
• An overheat protection function enables the device to scale down the load or shut off the load completely when its temperature exceeds a certain point.
• A range of protection measures such as battery reverse-connection protection, LED short-circuit and open-circuit protection, etc., put the system under comprehensive and constant guard.
The following are functions of "-U" series
• Boasts a wireless Internet communication function, able to conduct remote monitoring and real-time management on street lights via the solar power street light management system.
• Supports remote light on/off switching and dimming, as well as modification of battery and load parameters.
• Monitors solar panel voltage, current and power, battery charging and discharging current and voltage, load operating status, controller operating status and other data, and automatically triggers alarms when failures are detected.

Exterior



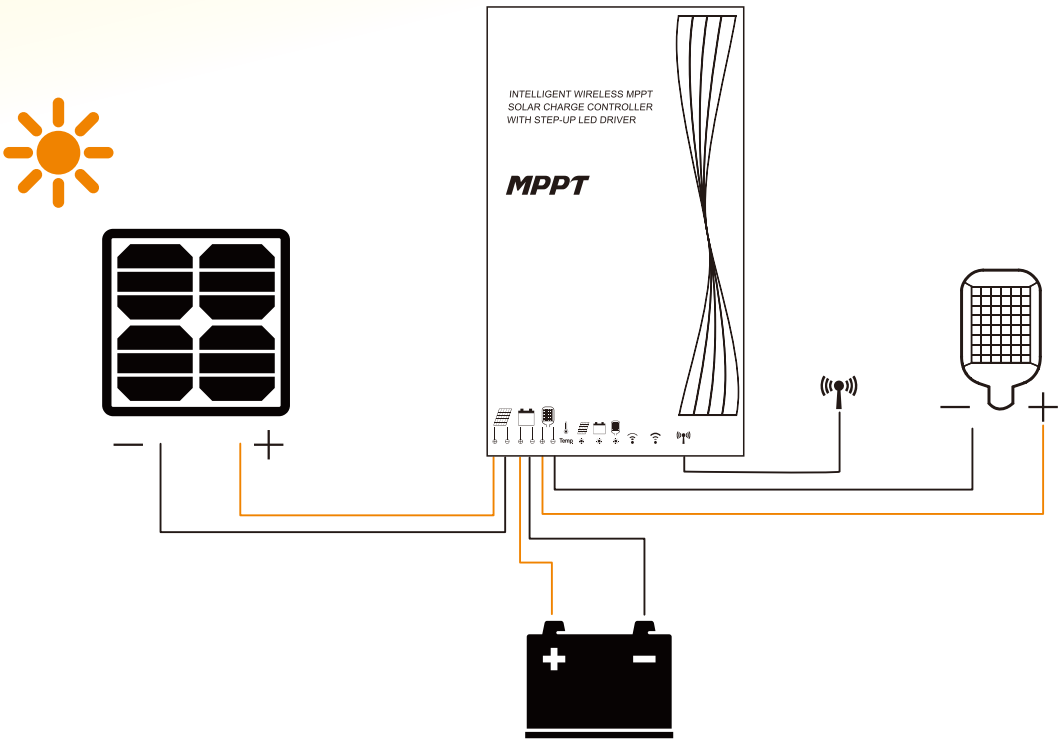
Installation Dimensions



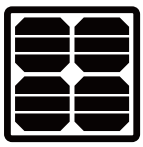


DM120/DM120-U 's dimensions are as follows:
External dimensions: 114x88.3x24.5(mm)
Installation dimensions: 74×82.33(mm)
Installation hole diameter: 3.5(mm)

Wiring Diagram



State Indicators

LED indicator	Indicated item	Status	Meaning
	Charging	Steady on	Solar panel voltage higher than light control voltage
		Off	Solar panel voltage lower than light control voltage
		Slow flashing	Charging in process
		Quick flashing	System over-voltage
	Battery	Steady on	Normal battery function
		Off	Battery not connected
		Quick flashing	Battery over discharged
	Load	Steady on	Load turned on
		Slow flashing	Open-circuit LED load
		Quick flashing	Short-circuit LED load
		Off	Load switched off

Parameters

Parameter		Value		Adjustable or not	Default
Model		DM120	DM120-U		
No-load loss		26mA/12V;15mA/24V	40mA/12V;21mA/24V		
System voltage		12V/24V			
Charging current		10A			
Max. solar panel power		130W/12V;260W/24V			
Solar panel input voltage		＜60V			
MPPT tracking efficiency		＞99%			
Charging conversion efficiency		90% ～ 96%			
Load conversion efficiency		90% ～ 96%			
Output current		70mA～4200mA		√	900mA
Load current accuracy		±3% (load current＞300mA)			
Max. load power		60W/12V;120W/24V			
Load output voltage		＜60V			
Load current accuracy		±3% (load current＞300mA)			
Over-voltage protection	Lead-acid batteries	17.0V； ×2/24V			
Charging voltage limit	Lead-acid batteries	15.5V； ×2/24V			
Equalizing charging voltage	Lead-acid batteries	(Boost charging voltage+0.2V)； ×2/24V(25℃)			14.6V
Equalizing charging time	Lead-acid batteries	1 hours			
Equalizing charging interval	Lead-acid batteries	30 days			
Boost charging voltage	Lead-acid batteries	7.5V～15.5V； ×2/24V(25℃)		√	14.4
Boost charging time	Lead-acid batteries	4 hours			
Floating charging voltage	Lead-acid batteries	7.5V～15.5V； ×2/24V(25℃)		√	13.8
Temperature compensation factor	Lead-acid batteries	-3.0mV/℃/2V			
Over-voltage protection	Lithium batteries	(over charge voltage+2V)； ×2/24V(25℃)		√	16.6V
Whether charging is prohibited below 0 ℃	Lithium batteries	Yes, No		√	No
Overcharge voltage	Lithium batteries	7.5V～15.5V； ×2/24V(25℃)		√	14.6V
Overcharge recovery voltage	Lithium batteries	7.5V～15.5V； ×2/24V(25℃)		√	13.6V
Over-discharge voltage		7.5V～15.5V； ×2/24V(25℃)		√	11.0V
Over-discharge recovery voltage		7.5V～15.5V； ×2/24V(25℃)		√	12.6V
Light control voltage		5V～11V； ×2/24V		√	10V
Light control delay		1～50min		√	1min
Operating temperature		-35℃ ～ +65℃			
Protection degree		IP68			
Weight(g)		380			
Dimensions (mm)		114x88.3x24.5			

Note: parameter settings shall comply with the following rule, i.e. Boost charging voltage＞ floating charging voltage ＞ over-discharge recovery voltage ＞ over-discharge voltage.