

# Gen4 DM Series

DM60/80/120/160/200/260/300(-R/-W)

## Waterproof All-in-one Constant Current MPPT Charge Controller



DM60-R/W

DM80/120-R/W

DM160-R/W

DM200-R/W

### Main Features

- Using MovingTrack MPPT maximum power tracking technology, higher tracking efficiency and faster speed
- ◆ Both lead-acid battery and lithium battery are applicable, operating parameters can be set by remote control;
- ◆ Using UltraGreen power control technology with extremely low power consumption and sleep current
- ◆ Lead-acid battery multi-stage constant voltage charging with temperature compensation;
- ◆ 10-period programmable load power/time control;
- ◆ Battery charge and discharge high and low temperature protection, with operating temperature settable;
- ◆ A variety of intelligent power modes are available for choice, with load power adjustable automatically according to the battery level;
- ◆ High precision digital step-up constant current control algorithm, ensuring high efficiency and high constant current accuracy;
- ◆ Infrared wireless communication, allowing for setting/reading parameters, reading status, etc;
- ◆ Multiple protections such as battery/PV reverse polarity protection, LED short-circuit/open-circuit/limited power protection, etc;
- ◆ Extensible to IoT remote communication monitoring function;
- ◆ Full aluminum housing, IP67 waterproof rating, applicable to a variety of harsh environments.

## Products selection table

Product models	Description
DM-R/W	MPPT Solar Charge Controller (-R:infrared remote control; -W: wirelessremote control)
DM-C	With IoT remote control (RS485interface, external communication module is required)
DM-CT	With IoT remote control (TTL interface, external communication module is required)

## Indicator and remote control status

The DM series controllers have three red indicators

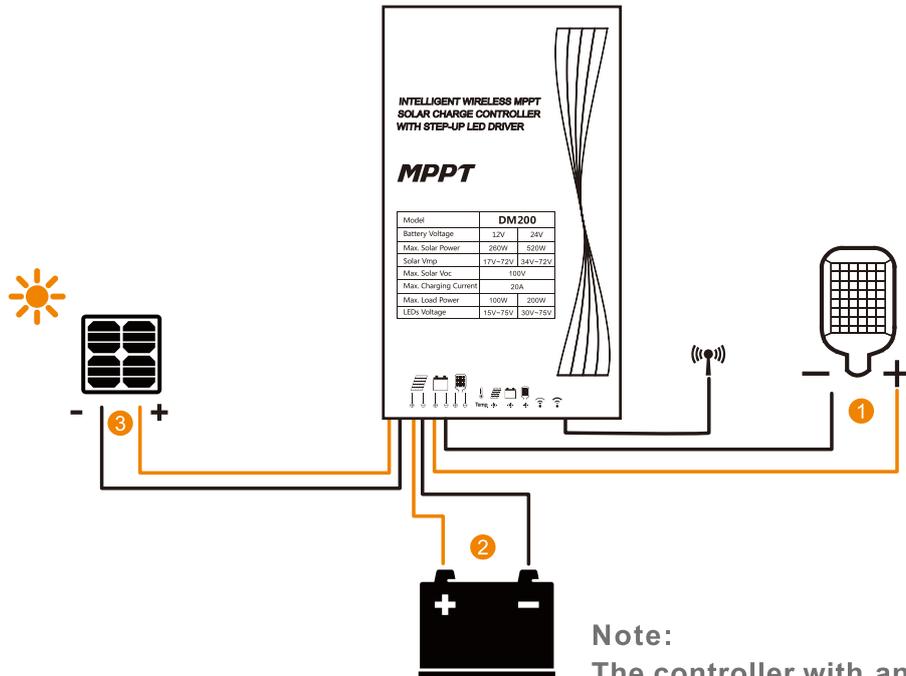
**Three red indicators:**

Indicator	Status	Description	Remote control system status
<b>PV indicator</b>	Steady on	Solarpanel voltage is higher than light control voltage	Idle
	Off	Solarpanel voltage is lower than light control voltage	Idle
	Double flash	Fully charged	Fully charged
	Slow flash	In charging	Charging
	Quick flash	BMS protection or BAT overvoltage or PV overvoltage or over temperature (ambient temperature) or power/ current limited charging	E-BMS Battery overvoltage PV panel overvoltage Over temperature Overcurrent
<b>BAT indicator</b>	Steady on	Battery works properly	Idle
	Off	Battery is not connected or lithium battery protection board over discharge protection	
	Quick flash	Battery over-discharge	Over discharge
<b>LOAD indicator</b>	Steady on	Load is turned on	Discharging
	Off	Load is turned off	Idle
	Slow flash	Load is open circuited	Open circuit
	Quick flash	Load is short circuited	Short circuit

# Electrical wiring diagrams

## A. Wiring diagram of the controller with built-in IoT module

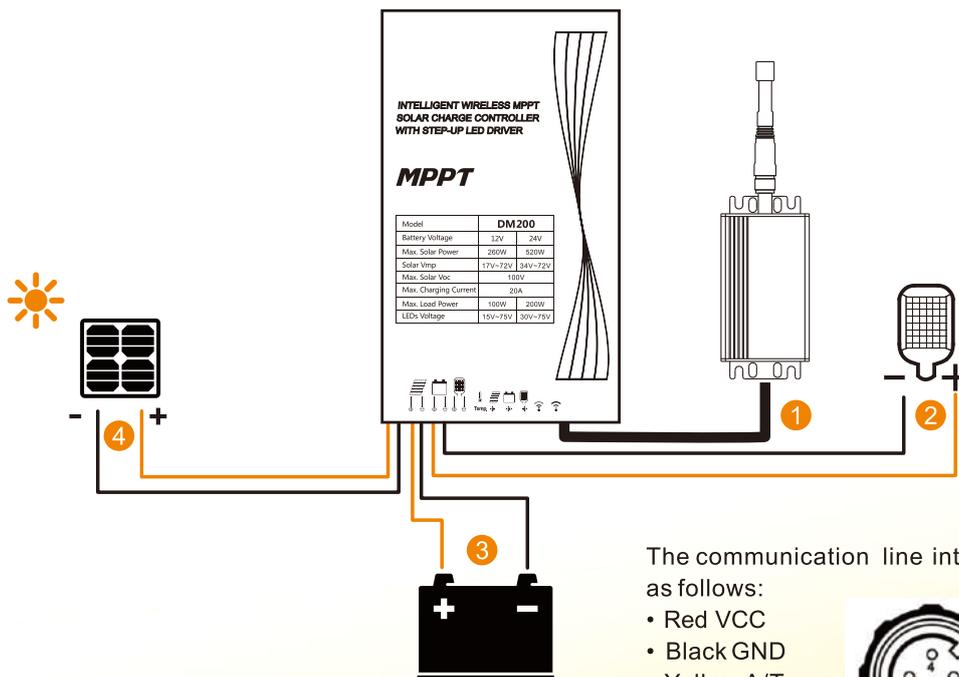
Wiring sequence: Firstly connect the load, then the battery and finally the solar panel.



**Note:**  
The controller with antenna is a IoT type.

## B. Wiring diagram of the controller with external IoT module

Wiring sequence: Firstly connect the external IoT module, then the load, then the battery and finally the solar panel.

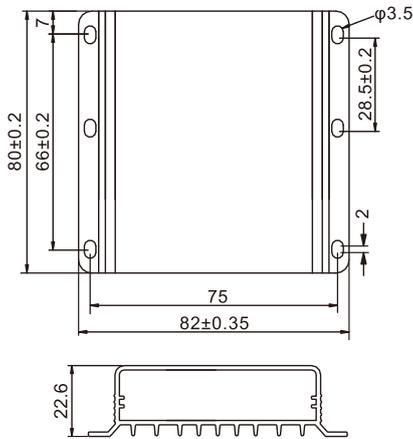


The communication line interfaces are defined as follows:

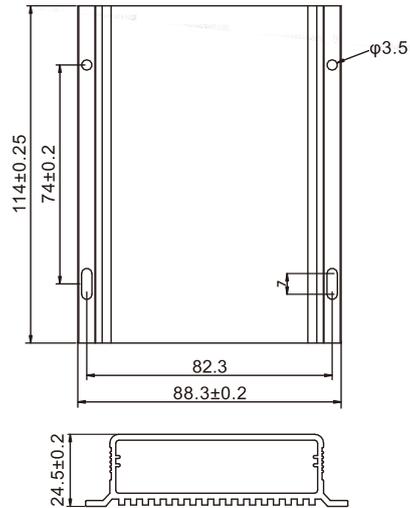
- Red VCC
- Black GND
- Yellow A/T
- White B/R



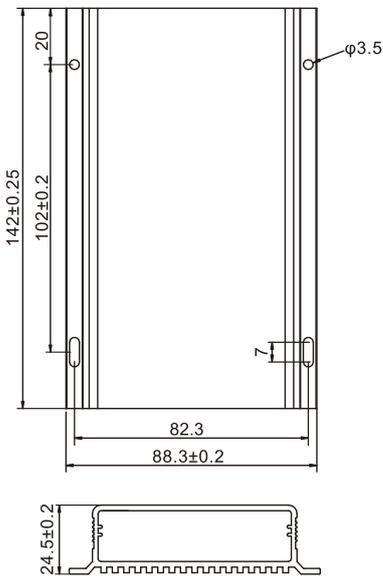
# Installation method



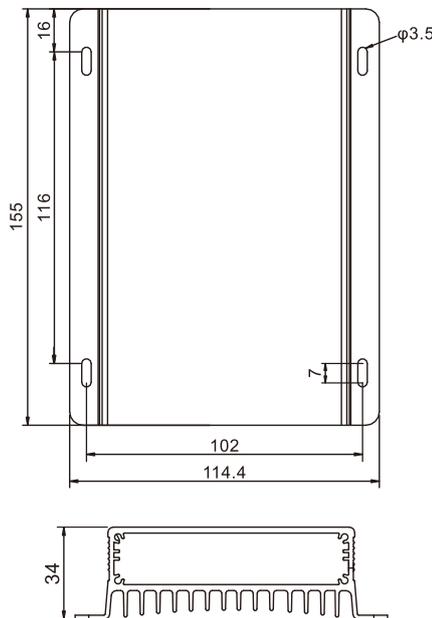
DM60 dimensions:  
 Overall dimensions: 80\*82\*22.6mm  
 Mounting dimensions: 66\*75mm  
 Mounting hole diameter:  $\phi 3.5$ mm



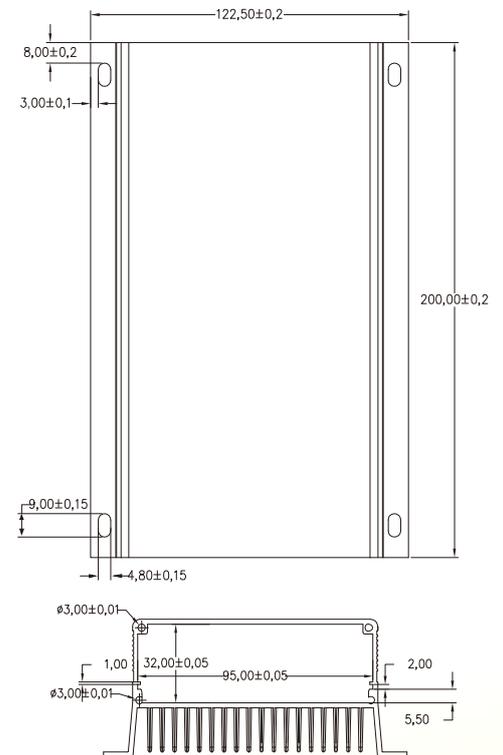
DM80/120 dimensions:  
 Overall dimensions: 114\*88.3\*24.5mm  
 Mounting dimensions: 74\*82.3mm  
 Mounting hole diameter:  $\phi 3.5$ mm



DM160 dimensions:  
 Overall dimensions: 142\*88.3\*24.5mm  
 Mounting dimensions: 102\*82.3mm  
 Mounting hole diameter:  $\phi 3.5$ mm



DM200 dimensions:  
 Overall dimensions: 155\*114.4\*34mm  
 Mounting dimensions: 116\*102mm  
 Mounting hole diameter:  $\phi 3.5$ mm



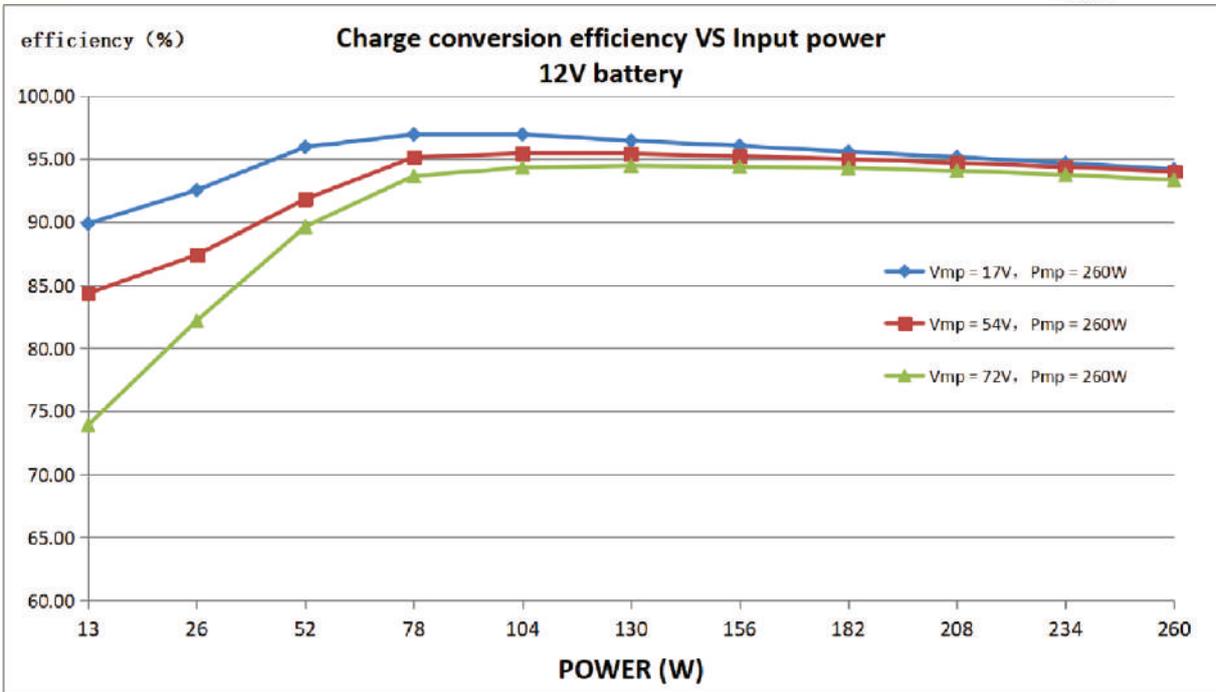
DM260/DM300 dimensions:  
 Overall dimensions: 200\*122.5\*56mm  
 Mounting dimensions: 175\*113mm  
 Mounting hole diameter:  $\phi 3.5$ mm

# Technical parameters

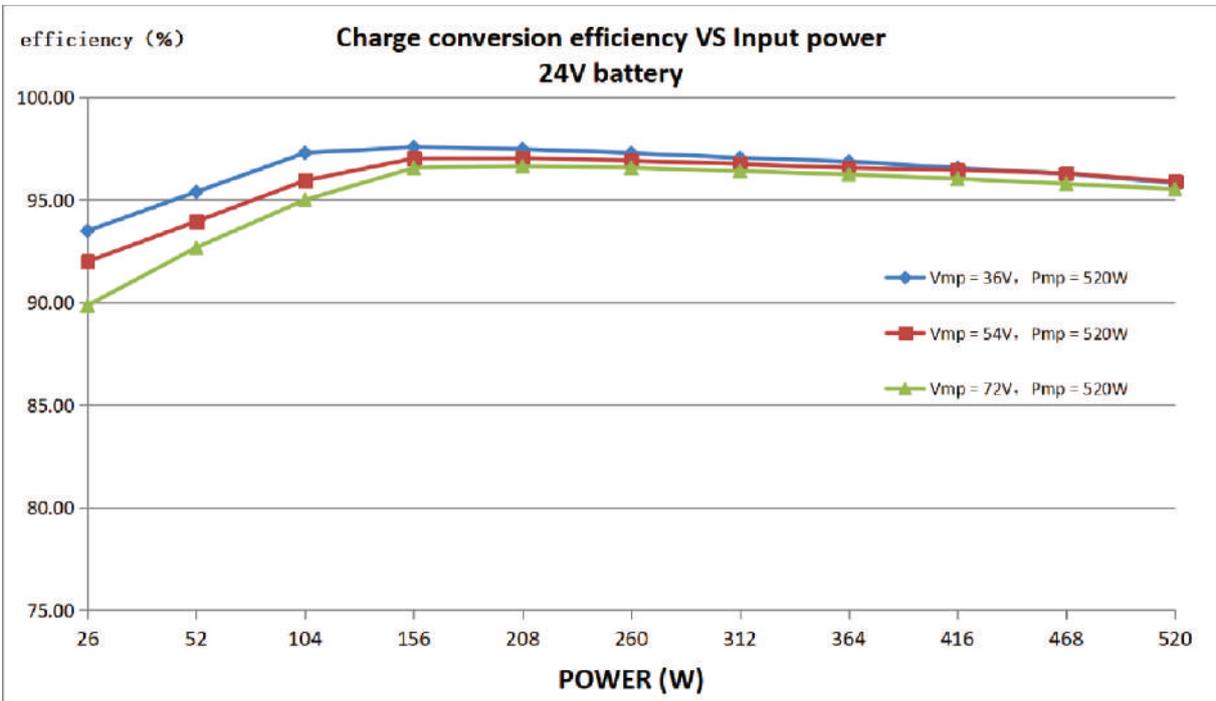
Items	Values							Adjustable	Default
	DM60	DM80	DM120	DM160	DM200	DM260	DM300		
Model	DM60	DM80	DM120	DM160	DM200	DM260	DM300		
Controller type	-R: infrared remote control ; -W: 2.4G wireless remote control ; -C: with 485 communication interface								
System voltage	12V		12V/24V						Lead-acid
Static power consumption	-R: ≤5mA -W: ≤20mA	-R: ≤6mA -W: ≤20mA	-R: 6mA/12V; 4mA/24V -W: 18mA/12V; 13mA/24V		-R: 8mA/12V; 12mA/24V -W: 20mA/12V; 16mA/24V				
Sleep power consumption	≤1mA			≤2mA					
Load current	50~3000mA		50~4200mA	50~5600mA		70~7000mA		√	330mA
Load voltage	15V~50V	15V~40V	15V~60V		15V~75V				
Maximum load power	60W/12V	80W/12V	60W/12V 120W/24V	80W/12V 160W/24V	100W/12V 200W/24V	130W/12V 260W/24V	150W/12V 300W/24V		
Load conversion efficiency	85%-96% ((Typical efficiency 95%))								
Load current accuracy	≤3%±30mA								
Intelligent power	High, Moderate, Low, Auto, USE, No							√	Medium
Load working period	9-Period + Pre-dawn lighting								
Period adjustment range	1min / 10min								
Power adjustment range	1% / 10%								
Maximum solar input power	130W/12V	200W/12V	130W/12V 260W/24V	200W/12V 400W/24V	260W/12V 520W/24V	400W/12V 800W/24V	550W/12V 1100W/24V		
Maximum charge current	10A	15A	10A	15A	20A	30A	40A		
Maximum solar input voltage	≤50V	≤35V	≤60V		≤100V				
MPPT Tracking efficiency	> 99%								
Charging conversion eff.	85%-98% (Typical efficiency 97%)								
Over voltage	PB-16.0V; LI-overcharge voltage +2V; × 2, 24V system								16.0V
Limited charge voltage	PB-15.5V; LI-overcharge voltage +1V; × 2, 24V system								15.5V
Equalizing charge voltage	PB-14.6V; LI-None; ×2, 24V system								14.6V
Equalizing charge interval	PB: 30 days; LI: no;								30D
Boost charge voltage (lead-acid)	8.5V ~ 17.0V; ×2, 24V system							√	14.4V
Charge voltage (lithium)									
Floating charge voltage (lead-acid)	8.5V ~ 17.0V; ×2, 24V system							√	13.8V
Charge return voltage (lithium)									
Over discharge voltage	8.5V ~ 17.0V; ×2, 24V system							√	11.0V
Over discharge return voltage	8.5V ~ 17.0V; ×2, 24V system							√	12.5V
Temperature compensation coefficient	PB: -3.0mV/°C/2V; lithium battery: no compensation								
Light control voltage	3V ~ 11V; ×2, 24V system							√	5V
Light control delay	0S~60S/2min ~ 60min							√	10S
High temperature charge	+40°C ~ +90°C							√	65°C
Low temperature charge	0°C ~ -35°C							√	-35°C
Operating temperature	-35°C ~ +65°C								
IP rating	IP67; 10%~98%								
Operating humidity range									
Protections	Battery reverse polarity protection, solar panel reverse polarity protection, solar panel over-voltage protection, lithium battery overcharge and over-discharge protection, lithium battery BMS overcharge detection protection, over temperature protection, load open circuit and short circuit protection,								
Weight	260g	400g	510g	770g	1800g				
Controller dimensions (mm)	80*82*22.6	114*88.3*24.5	142*88.3*24.5	155*114.4*34	200*122.5*56				
Controller mounting dimensions (mm)	66*75	74*82.3	102*82.3	116*102	175*113				
Mounting hole diameter (mm)	Φ3.5								

# A typical curve

## Charge Conversion Efficiency VS Input Power -12V battery

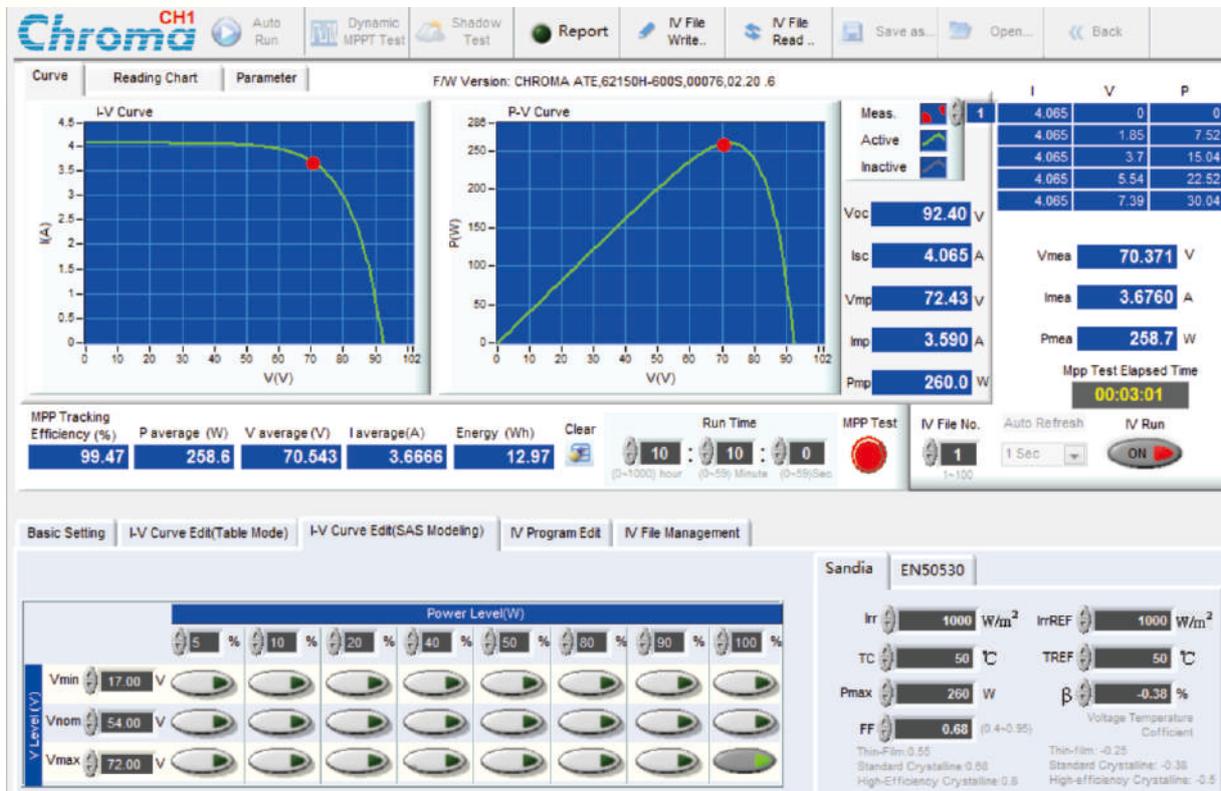


## Charge Conversion Efficiency VS Input Power -24V battery



## MPPT Tracking Efficiency-12V Battery 260W

$V_{mp} = 72V$ ;  $V_{oc} = 92V$ ;  $P_{mp} = 260W$



## MPPT Tracking Efficiency-24V Battery 520W

$V_{mp} = 72V$ ;  $V_{oc} = 92V$ ;  $P_{mp} = 520W$

