

Gen4 SR-DM Series DM60/80/120/160/200/260/300(-R/-W)

Waterproof All-in-one Constant Current MPPT Charge Controller



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: wireless remote control) |
| DM-NB | With IoT remote control (built-in NB-Iot module) |
| DM-GP | With IoT remote control (built-in GPRS module) |
| DM-C | With IoT remote control (RS485 interface, 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

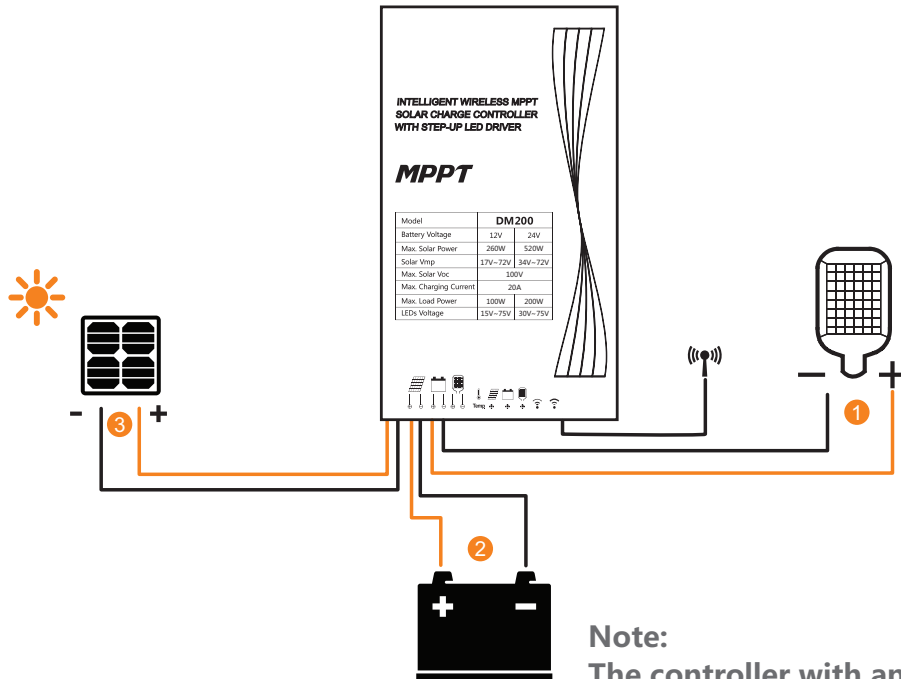
Three red indicators:

| Indicator | Status | Description | Remote control system status |
|-----------------------|--------------|--|---|
| PV indicator | Steady on | Solar panel voltage is higher than light control voltage | Idle |
| | Off | Solar panel 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 |
| BAT indicator | 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 |
| LOAD indicator | 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

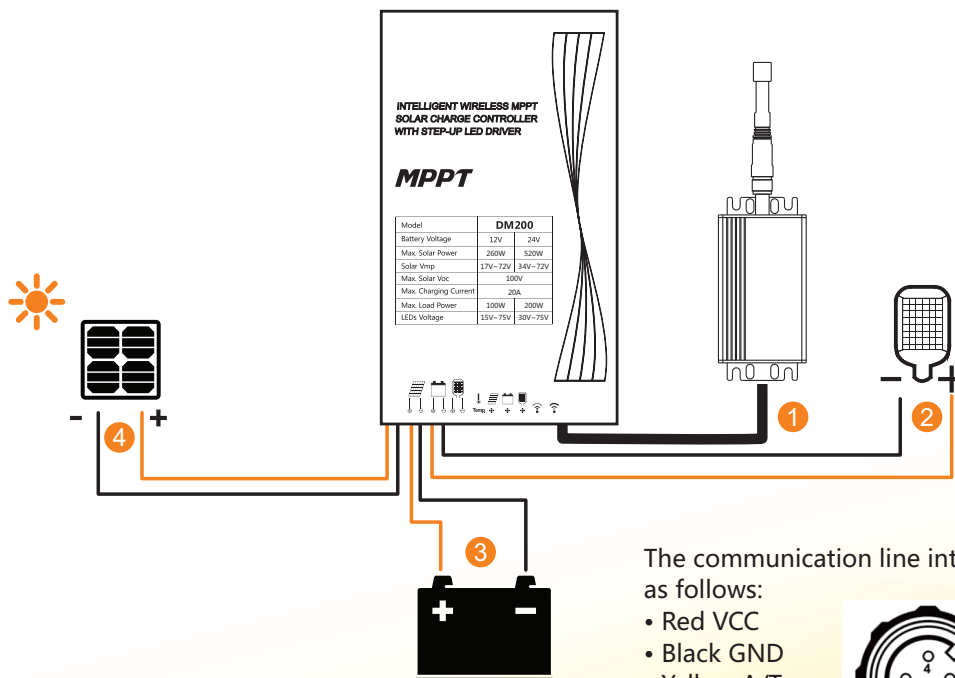
Wiring sequence: Firstly connect the load, then the battery and finally the solar panel.



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.

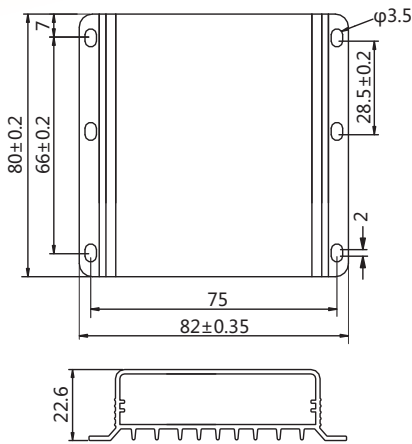


The communication line interfaces are defined as follows:

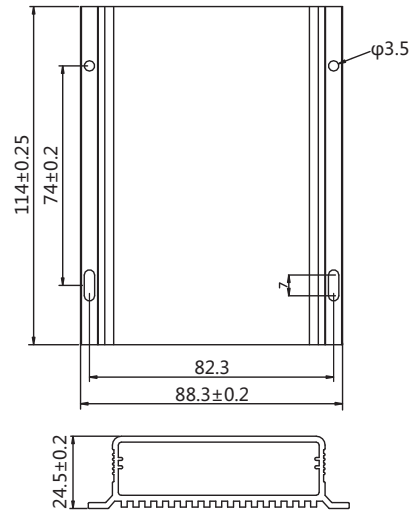
- Red VCC
- Black GND
- Yellow A/T
- White B/R



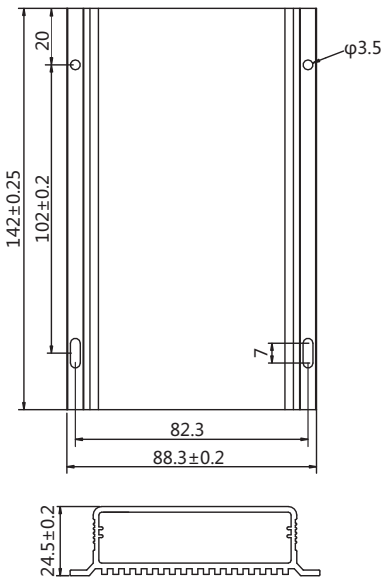
Installation method



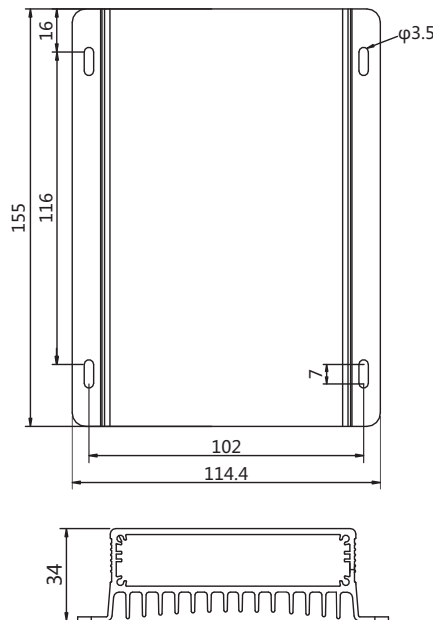
DM60 dimensions:
 Overall dimensions: 80*82*22.6mm
 Mounting dimensions: 66*75mm
 Mounting hole diameter: φ3.5mm



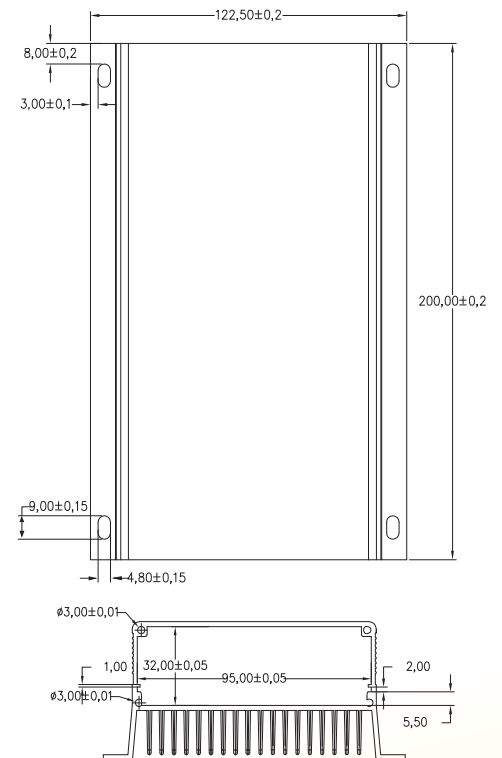
DM80/120 dimensions:
 Overall dimensions: 114*88.3*24.5mm
 Mounting dimensions: 74*82.3mm
 Mounting hole diameter: φ3.5mm



DM160 dimensions:
 Overall dimensions : 142*88.3*24.5mm
 Mounting dimensions: 102*82.3mm
 Mounting hole diameter: φ3.5mm



DM200 dimensions:
 Overall dimensions: 155*114.4*34mm
 Mounting dimensions: 116*102mm
 Mounting hole diameter: φ3.5mm



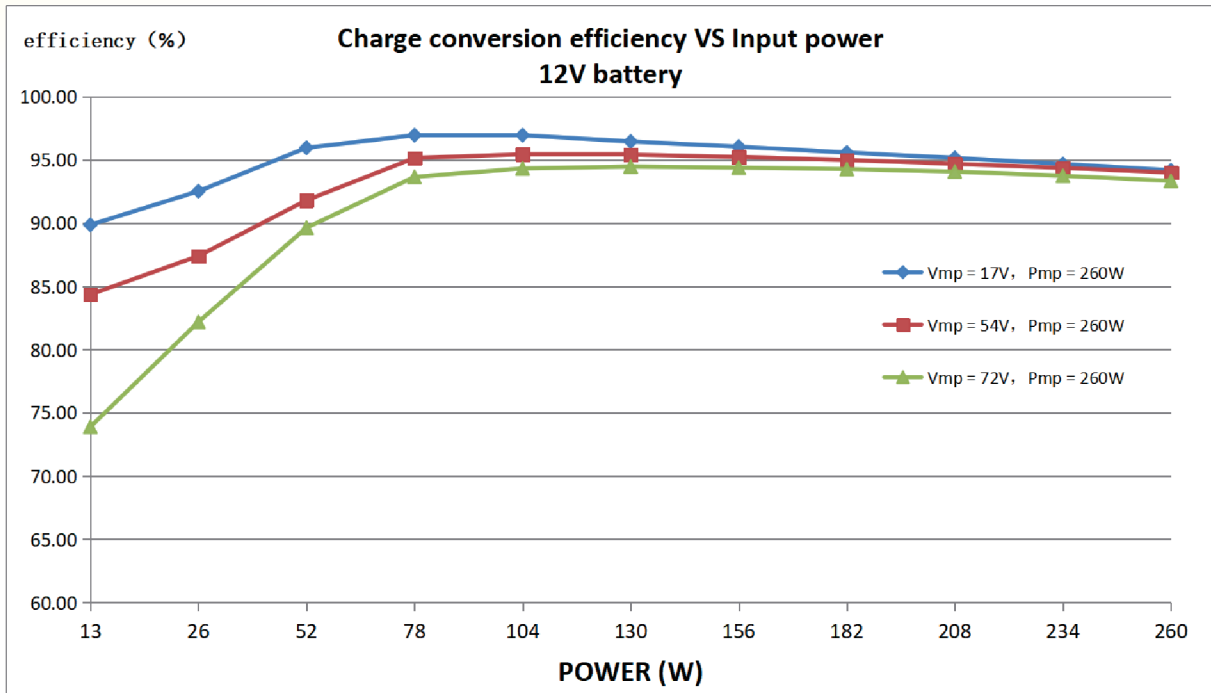
DM260/DM300 dimensions:
 Overall dimensions: 200*122.5*56mm
 Mounting dimensions: 175*113mm
 Mounting hole diameter: φ3.5mm

Technical parameters

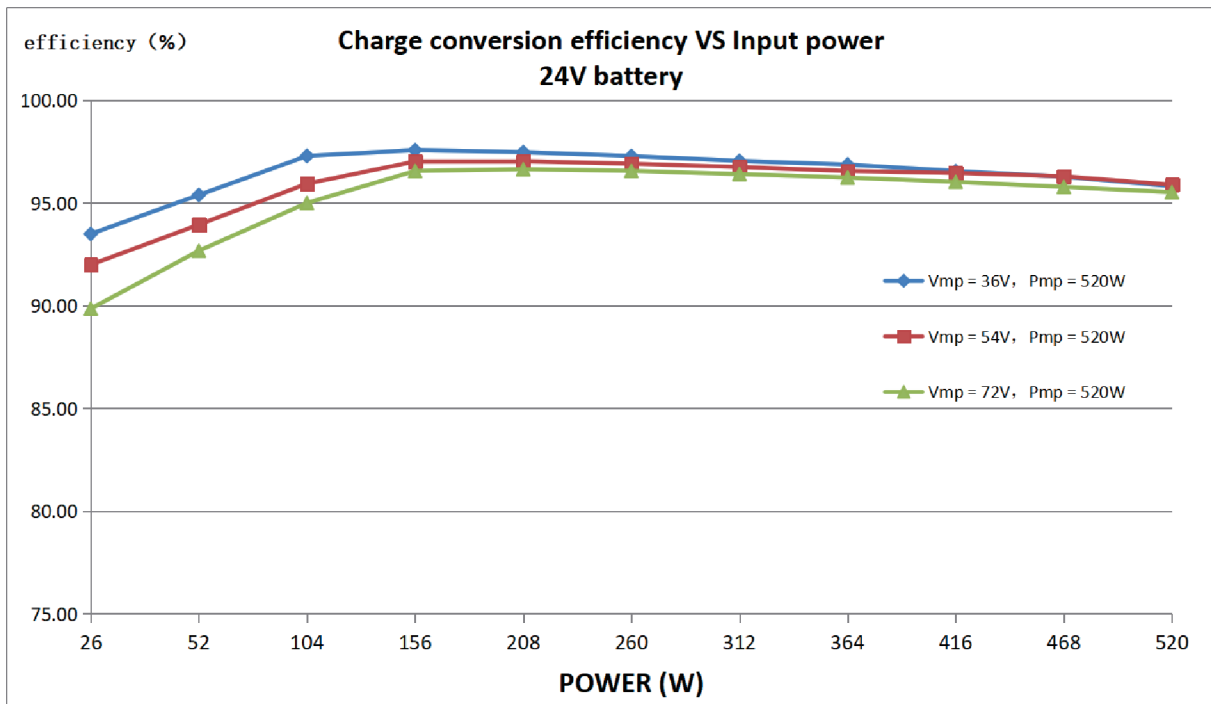
| Items | Values | | | | | | | Adjustable | Default |
|--------------------------------------|--|-----------------------|---|----------------------|--|----------------------|-----------------------|------------|-----------|
| | DM60 | DM80 | DM120 | DM160 | DM200 | DM260 | DM300 | | |
| Model | DM60 | 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 efficiency97%) | | | | | | | | |
| 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 | | | | | | | | |
| 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

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

