

Gen4

DM160 Series

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)

Indicator and remote control status

The DM series controllers have three red indicators

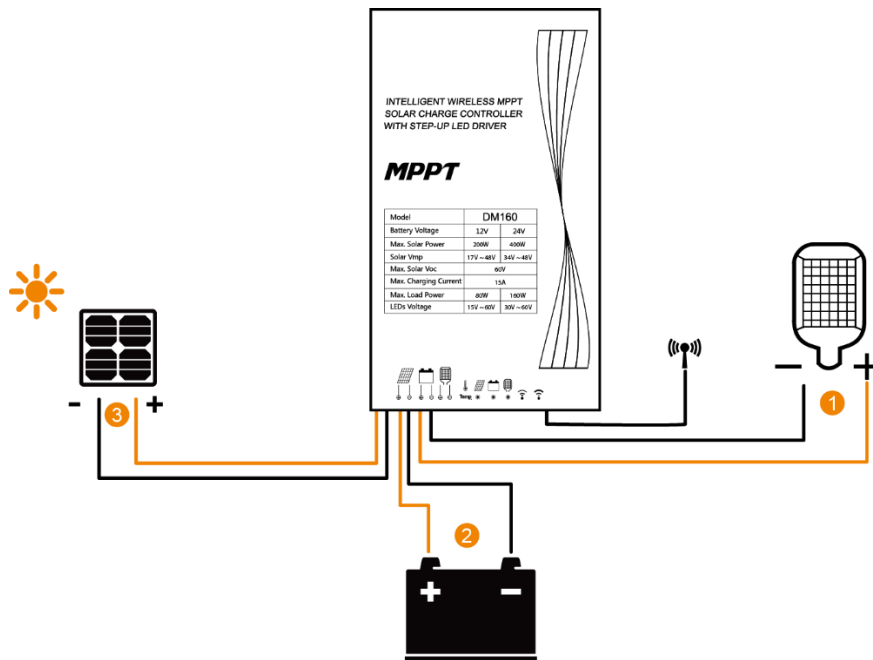
Three red indicators:

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

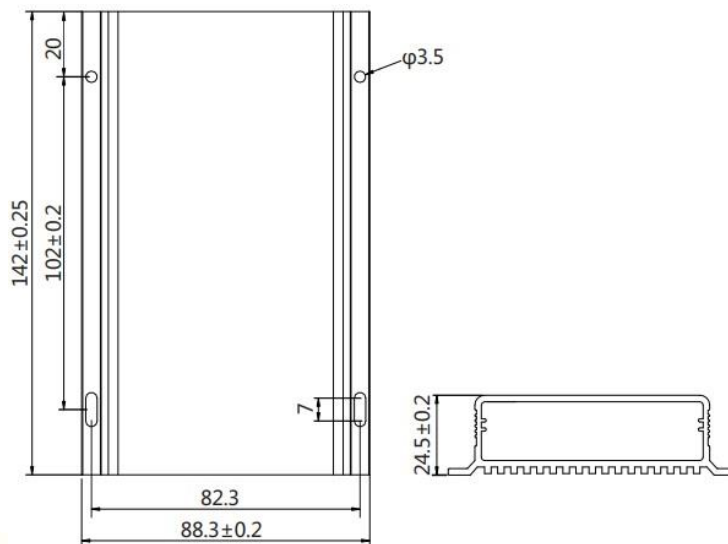
Electrical wiring diagrams

Wiring diagram of the controller with built-in IoT module

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



Installation method



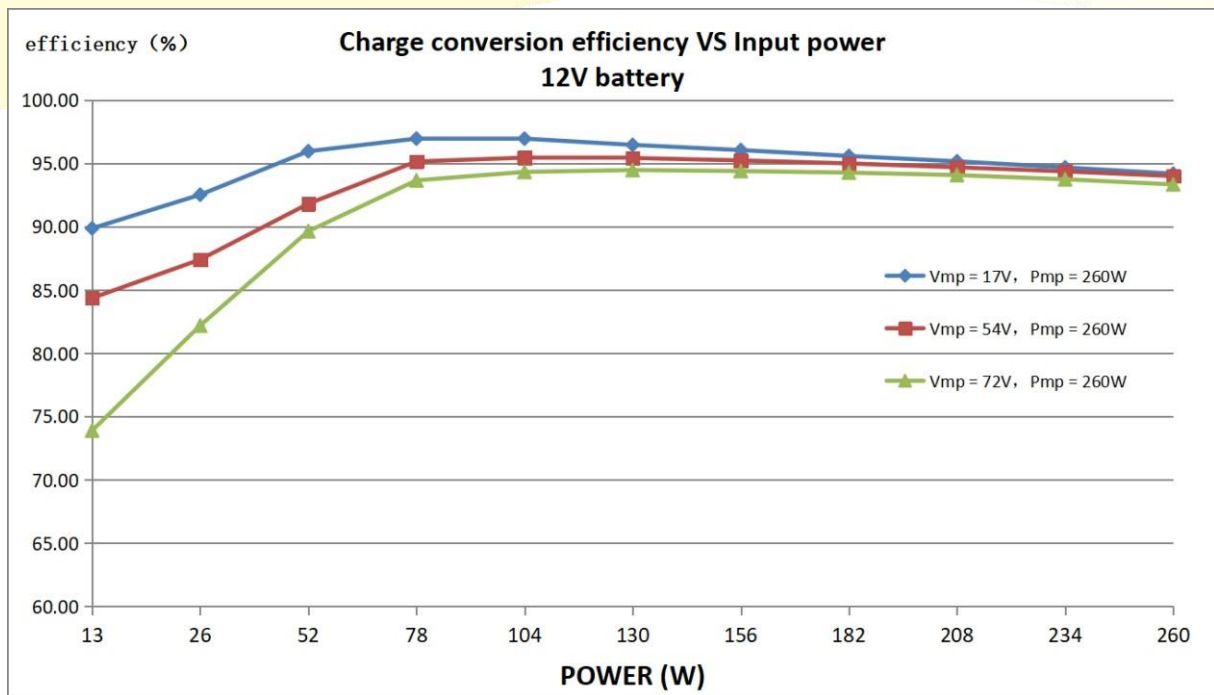
Dm160 dimensions:
Overall dimensions: 142*88.3*24.5mm
Mounting dimensions: 102*82.3mm
Mounting hole diameter: φ3.5mm

Technical parameters

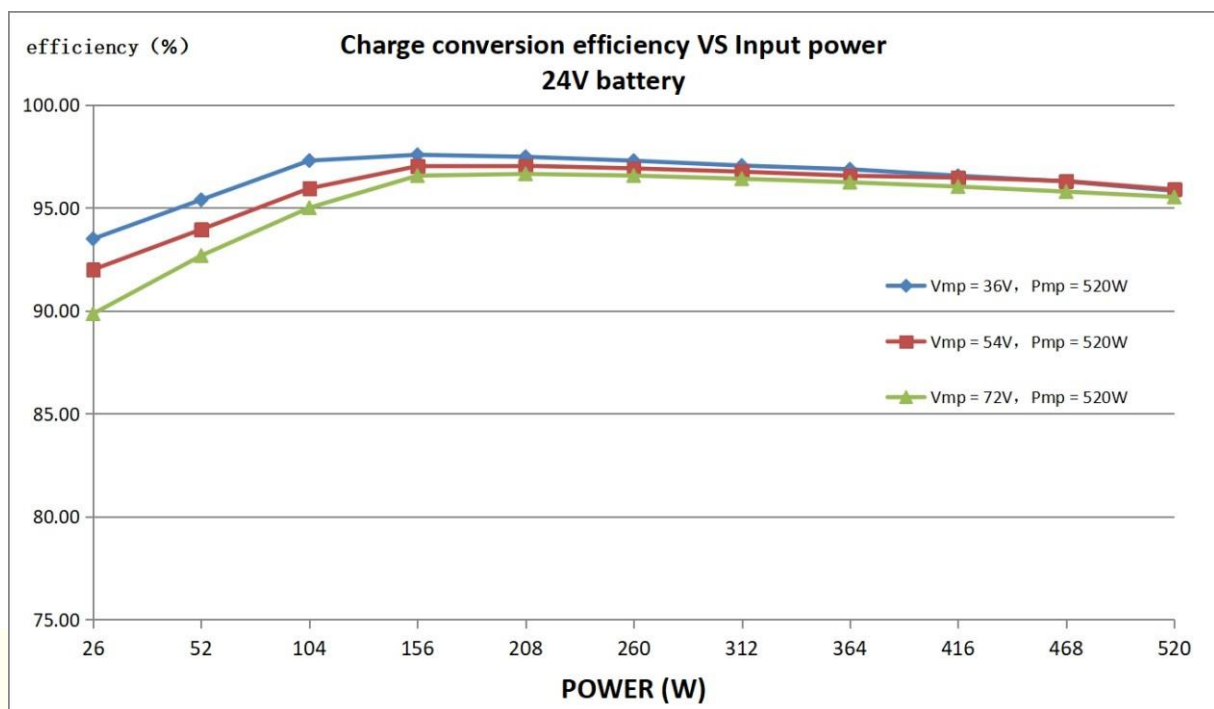
Items	Values	Adjustable	Default
Model	DM160		
Controller type	-R: infrared remote control; -W: 2.4G wireless remote control;		
System voltage	12V/24V		Lead-acid
Static power consumption	-R type: 6mA/12V; 4mA/24V -W type: 18mA/12V;13mA/24V		
Sleep power consumption	≤1 mA		
Load current	50mA ~ 5600mA	√	330mA
Load voltage	15V ~ 60V		
Maximum load power	80W/12V; 160W/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	200W/12V; 400W/24V		
Maximum charge current	15A		
Maximum solar input voltage	≤60V		
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	30 days		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	510g		
Controller dimensions (mm)	142*82.3*24.5		
Controller mounting dimensions (mm)	82.3*102		
Mounting hole diameter (mm)	Φ3.5		

A typical curve

Charge Conversion Efficiency VS Input Power - 12V battery

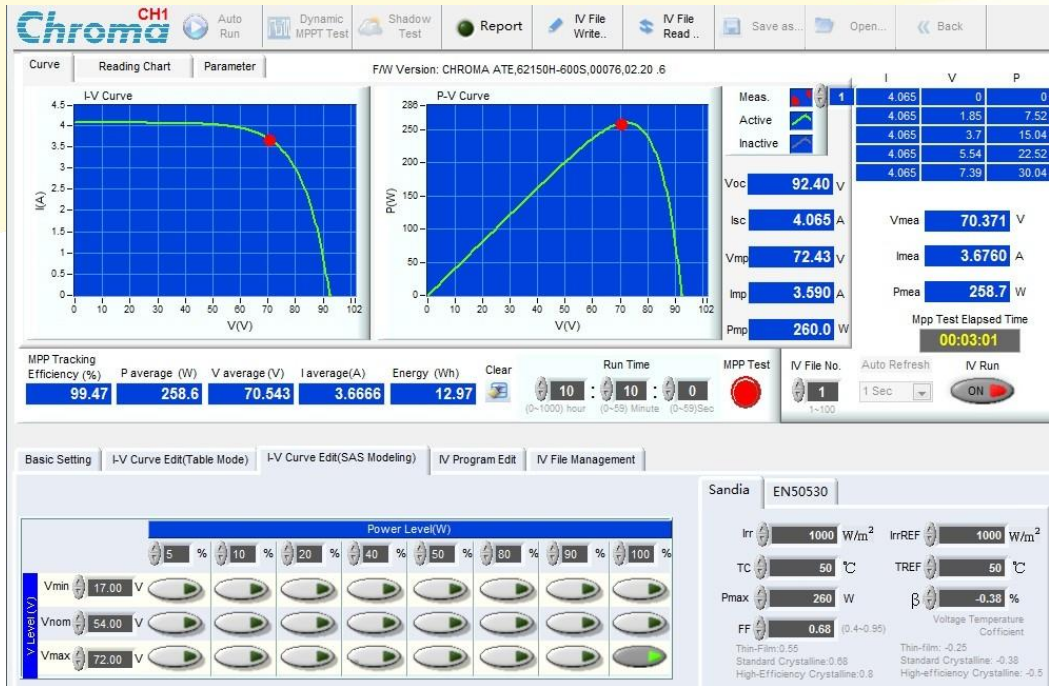


Charge Conversion Efficiency VS Input Power - 24V battery



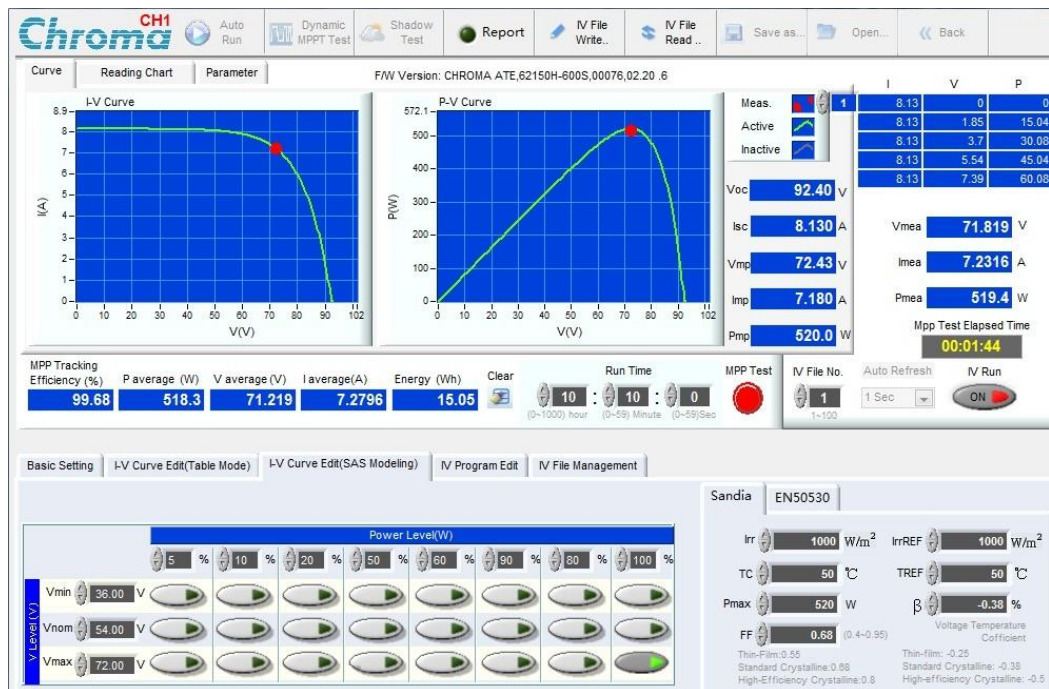
MPPT Tracking Efficiency -12V Battery 260W

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



MPPT Tracking Efficiency -24V Battery 520W

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



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