



101100

LED Street Light

LB1 PREMIUM SERIES STREET LIGHT

Slim type die cast Aluminum Body streetlight, with tool free opening clips for easy maintenance, efficacy up to 140L/W, device is equipped with 10KV surge arrestor, with optional dimming capability through NEMA socket for smart city applications.

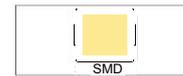
General Information

Lamp family code	AES-LB1
Wattage	70W-100W
Nominal working voltage	202-254V, 50-60Hz
Light color temperature range	2200-6500K
Lumen /Watt for fixture	Up to 140 L/W
LED type	Cree or Lumiled 5050 SMD
Lumen /Watt for LED engine	Up to 166L/W For CT 6500K @CRI 70 140 L/W for CT 2200 @CRI 70



Rendering Index	CRI >70, 80 & 90 as an option
Lifetime	50000h at L70
Lens types	HERCULUX/DARKOO/NATA/LEDIL
Beam angle options	Type II, Type III, Type IV
Driver type	Philips/Tridonic
Control type	Optional Photocell
NEMA socket	Optional
Optical cover	Tempered glass
Mechanical impact	IK >08 according to IEC 62262
Protection class	IP66 according to IEC 60529, IP67 as an option
Ingress Protection class	Standard SPD 10KV/10KA
Surge protection	
Net weight	7.3Kg
Gross weight	8.3Kg
Packing Size	780*370*200mm
Warranty period	5 years





Saudi Standard SASO 2902	Energy Efficiency, functionality & labeling requirements for lighting products -Part2-
Saudi Standard SASO 2927	Energy Efficiency functionality and labeling requirements for lighting products -Part3- street lighting
IECEE certificate	As per IEC60598-2-3:2002+A1:2011 IEC60598-1:2014+A1:2017 IEC 61643-11:2012 Class II
Electrical shock & surge protection	UL/CSA/CE/ENEC/CCB/CCC
Power supply approval marks	As per IEC 61000 IEC 60529:2013
THD test	IEC 62262
Degree of protection provided by enclosures	LM79-08
Mechanical impact Protection	LM82-12
Electrical and photo measurements of solid-state lighting products	ISTMT
Integrated LED lamps for electrical properties as a function of temperature	IEC 62471, IEC 62778 IEC/TR 62778
In-SITU temperature measurements testing	EU RoHS compliant
Photo logical test	
Blue light Hazard	
EU RoHS compliant	

LED Characteristic Curves

Spectral Power Distribution Characteristics

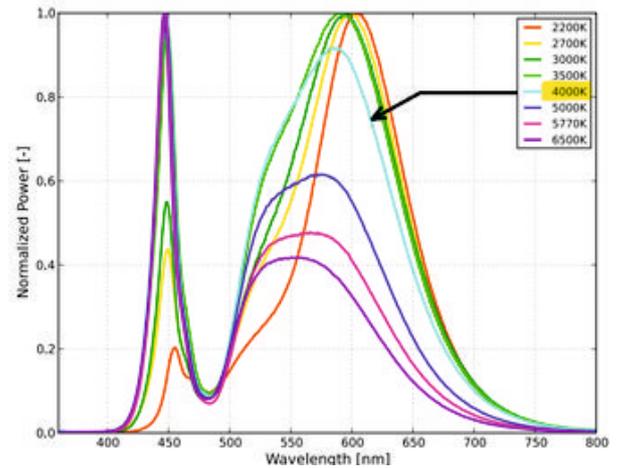


Figure 1: Typical normalized power vs. wavelength for L150-407050xx000x0 at Tj=25°C.

Main Electrical Characteristics

Input Voltage	202 to 254 V
Input Frequency	50-60 Hz
Nominal Power	70W for AES-LB1-70W-Cx-xx-xx-xx 100W for AES-LB1-100W-Cx-xx-xx-xx Philips - Xitanium 100W 0.70A-230V
Power supply type	Philips - Xitanium 100W 0.70A-230V
Input current	0.48A
Inrush current	46A at 230V
Inrush current time	440 μS
Efficiency of power supply	>90%
Power Factor	>0.95 for 100W type and >0.92 for 70W type < 10%
Total Harmonic Distortion THD (I)	< 10%
Power supply output Regulation Method	Constant Current
Power supply nominal output current	700 mA
Dimming Control Method	Optional
Dimming Range	10-100%
Power supply maximum case Temperature	80 C°
Power supply protection class	IP66
Power supply Interior Surge protection	4KV

Color Definitions

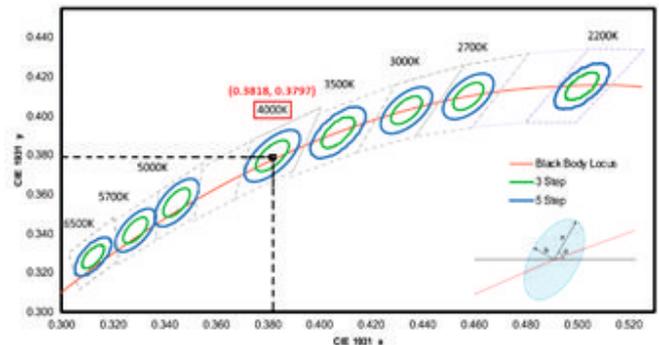


FIGURE 2: THE CIE 1931 CHROMATICITY COORDINATES FOR L150-407050XX000X0 AT Tj=25°C.

Working Conditions

Ambient temperature range	-40 to +50 °C
Test Performance ambient temperature	25.3 °C
Standard tilt angle post top	0° to 15°
Standard tilt angle side entry	-15° to 15°

Controls and Dimming

Dimmable	Optional 0/1-10V through standard NEMA socket
DALI	Optional

Photometric characteristics

Initial luminous flux
(system flux)

14835lm for 100W type

Luminous flux tolerance
Initial LED luminaire
efficacy

10384 for 70W type
+/-5%
141

Corr. Color Temperature
Color Rendering Index

2200k - 6500k
70

Luminaire's Photometric Curves

Intensity Distribution Diagram (Normalized)

For figure 2, 3 & 4

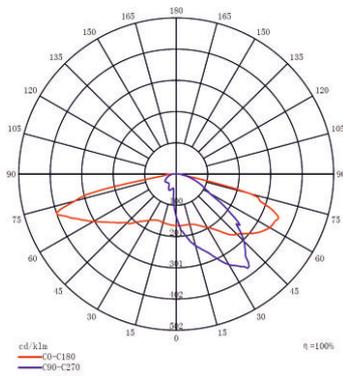


FIGURE 2: LUMINOUS INTENSITY C-DIAGRAM FOR T3-M 6H1 AT T_J=25°C.

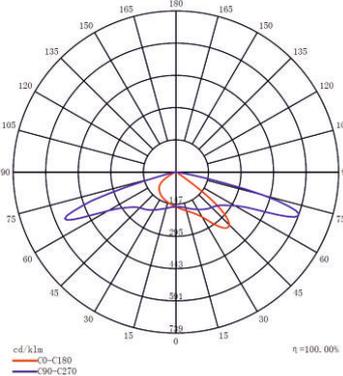


Figure 3: Luminous intensity C-Diagram T2-M 6H1 IN 1 at T_J=25°C.

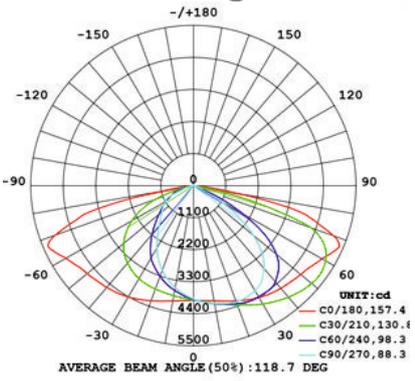


FIGURE 1: LUMINOUS INTENSITY C-DIAGRAM FOR LB2-50 T2-M HK 6 IN 1 AT T_J=25°C.

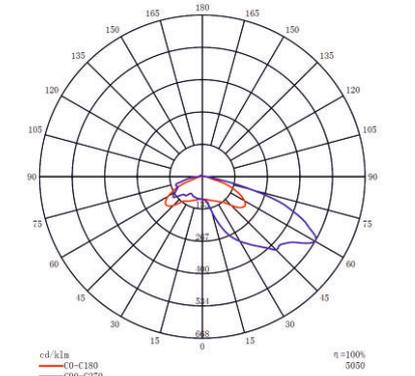


FIGURE 4: LUMINOUS INTENSITY C-DIAGRAM FOR T4-M 4H1 AT T_J=25°C.

Housing & Mechanical Data

Housing Material
Optical & control gear
compartments
LED circuit cover

Die cast Aluminum
Separated with easy
access for maintenance
Clear, Heat resistant,
toughened UV stabilized
Glass cover
Horizontally & Vertically
φ60mm
7.3Kg
8.3Kg
780*370*200mm

Mounting Position
Installation pipe diameter
Net weight
Mounting weight
Packing Size

NOTE: If the external flexible cable or cord of this luminaire is damaged, it shall be exclusively replaced by the manufacturer or his service agent or a similar qualified person in order to avoid a hazard.

NOTE: "The light source contained in this luminaire shall only be replaced by the manufacturer or his service agent or a similar qualified person."

ORDERING INFORMATION

EXAMPLE : AESLB1-100W-C8-30-T2-Ph

Model	Wattage	CRI	CCT	Beam	DriverType
AESLB1	100W	C8	30	T2	Ph
AESLB1	70W	C7 70	22 2200K	T2 Type II	Tr Tridonic
	100W	C8 80	27 2700K	T3 Type III	Ph Philips
			30 3000K	T4 Type IV	
			35 3500K		
			40 4000K		
			50 5000K		
			57 5700K		
			65 6500K		

Dimensions

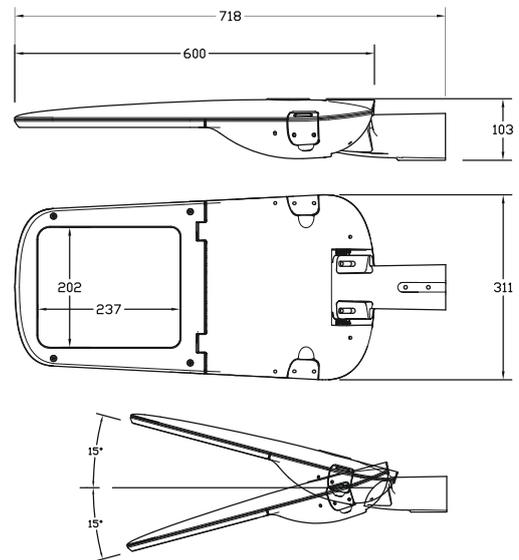


Figure 5: Product Dimensions.





PHILIPS

Xitanium LED Driver



Datasheet

Xitanium 100W 0.7A 230V I175

LED-based light sources are an excellent solution for outdoor environment. They are long-lasting and require low maintenance. However, to get the best out of the LEDs, these light sources require highly reliable and efficient LED Drivers. The new Philips Xitanium Fixed Output and Dimmable (1-10V) LED Outdoor Drivers are specifically designed to deliver reliable performance and protection while meeting the strict performance, approbation and application requirements.

Benefits

Reliability

- Robust design; capable of withstanding harsh outdoor conditions.
- Long lifetime and high survival rate.
- Superior thermal management suitable for outdoor application.
- Backed by 5 year warranty from a company you can trust.
- Consistent waterproof performance through the lifecycle.

Affordable

- Component integration in advanced IC enables cost effective design.
- Proven robustness & reliability secure the lowest luminaire maintenance over time.

Easy to use

- Extreme compact size. fitting with varied luminaires.
- Easy to design-in based on the good thermal management and extra EMI margin

Features

- Proven robustness and reliable electronic driver design.
- Achieving highest efficiencies based on advance technology.
- Long lifetime; 50k hrs @Tc max.
- Extreme compact size, fitting with varied and critical luminaires.
- Suitable for Class I isolated luminaires.
- Authorized certificate: ENEC, CB, CE and CCC.

Applications

- Road and street lighting
- Area and flood lighting
- Tunnel lighting
- High-bay lighting

Electrical Input Data

Specification item	Value	Unit	Condition
Nominal Input Voltage	220...240	Vac	
Input Voltage AC	202...254	Vac	Performance range
Operation Voltage AC	110...305	Vac	Safety operation
Nominal Input Frequency	50...60	Hz	
Input Frequency AC	47...63	Hz	Maximum permissible range
Nominal Input Current	0.52...0.48	A	220V...240V at full load
Maximum Input Current	0.55	A	At 202V
Nominal Input Power	115	W	At 230V at full load
Power Factor	≥0.95		At 230V at full load
Total Harmonic Distortion	≤10	%	At 230V at full load
Efficiency	90	%	At 230V at full load

Electrical Output Data

Specification item	Value	Unit	Condition
Regulation Method	Constant Current		
Output Voltage	64...143	Vdc	
Output Voltage Max	220	Vdc	Peak voltage at open circuit
Output Current	700	mA	Performance range
Output Current Tolerance	±5	%	At max. output current, Ta=25°C
Output Current Ripple LF	5	%	Ripple = peak / average, at<1kHz
Output Power	100	W	At full load
Galvanic Isolation	Yes		Basic; 2U+1000V

Electrical Data Control Input

Specification item	Value	Unit	Condition
Control Method	N/A	V	
Digital Interface	N/A		According 2.0 specifications
Mains Control	N/A		Can be configured via MultiOne
Time-based Integrated Control	N/A		Can be configured via MultiOne
Dimming Range	N/A	%	

Wiring & Connections

Specification item	Value	Unit	Condition
Input Wire Size	1.0	mm ²	3-wire cable; 300V/500V rating or higher
Output Wire Size	1.0	mm ²	2-wire cable; 300V/500V rating or higher
Input & Output Wire Length	450 ±30	mm	Out of enclosure
Control Wire Size	N/A	mm	N/A
Control Wire Length	N/A	mm	

CE Isolation

Basic Isolation: 2U+1000 V	Input Wires	Output Wires	Chassis
Input Wires	N/A	Basic	Basic
Output Wires	Basic	N/A	Basic
Chassis	Basic	Basic	N/A

Operational Temperature and Humidity

Specification item	Value	Unit	Condition
Ambient Temperature	-40...+55	°C	
Tcase Maximum	80	°C	Measured at Tc-point
Tcase Life	70	°C	Measured at Tc-point
Tcase Cut-Off	85	°C	Power to LEDs is reduced

Storage Temperature and Humidity

Specification item	Value	Unit	Condition
Ambient Temperature	-40...+55	°C	

Lifetime

Specification item	Value	Unit	Condition
Lifetime	100,000	Hours	At Tcase Life; Survival rate = 90%

Programmable Features

Specification item	Value	Remark	Condition
Adjustable Output Current (AOC)	N/A		See Design-In Guide
LED Module Temperature Derating (MTP)	N/A		
Constant Lumen Output (CLO)	N/A		
DC Emergency Dimming (DCEmDIM)	N/A		
Corridor Mode	N/A		
Energy Metering	N/A		
Diagnostics	N/A		

Features

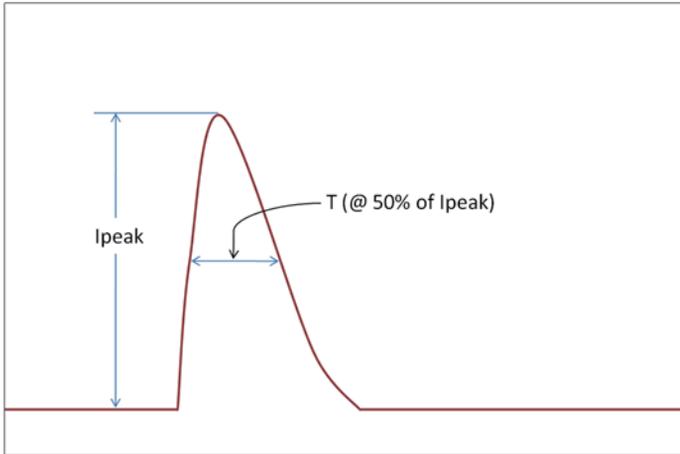
Specification item	Value	Remark	Condition
Over Temperature Protection	Yes	Dim Down	Automatic Recovery
Open Circuit Protection	Yes		Automatic Recovery
Short Circuit Protection	Yes		Automatic Recovery
Over Power Protection	Yes		
Hot Wiring	N/A		
Suitable for fixtures with Protection Class	Class I		
Input Over-voltage	Yes		320Vac@48hrs 350Vac@2hrs

Certificates and Standards

Specification item	Value
Approval Marks	CE / CCC / ENEC / CB
Ingress Protection Rating	IP67

Inrush Current

Specification item	Value	Unit	Condition
Inrush Current Ipeak	46	A	At 230Vac
Inrush Current Twidth	440	μs	At 230Vac, measured at 50% Ipeak
Drivers per MCB 16A Type B	≤6	pcs	



Earth Leakage Current

Specification item	Value	Unit	Condition
Typical Touch Current	≤0.7	mApc	Meets IEC60598; LED module not included

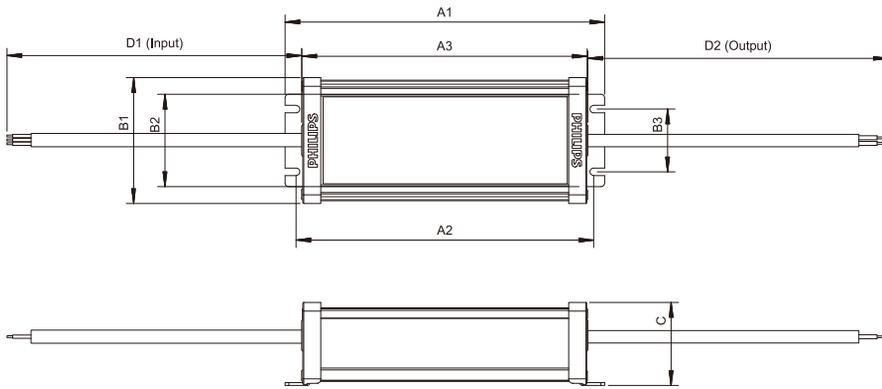
Surge Capability

Specification item	Value	Unit	Condition
Mains Surge Capability Differential Mode	4	KV	L-N, 20hm
Mains Surge Capability Common Mode	4	KV	L/N-GND, 20hm

Dimensions

Specification item	Value	Unit	Condition
Length overall	175	mm	
Width overall	68	mm	
Height overall	45	mm	
Mounting Holes Distance	162	mm	
Mounting Holes Width	34	mm	
Mounting Holes Size	5	mm	For M4 with max head diameter of 10mm
Weight	730	g	

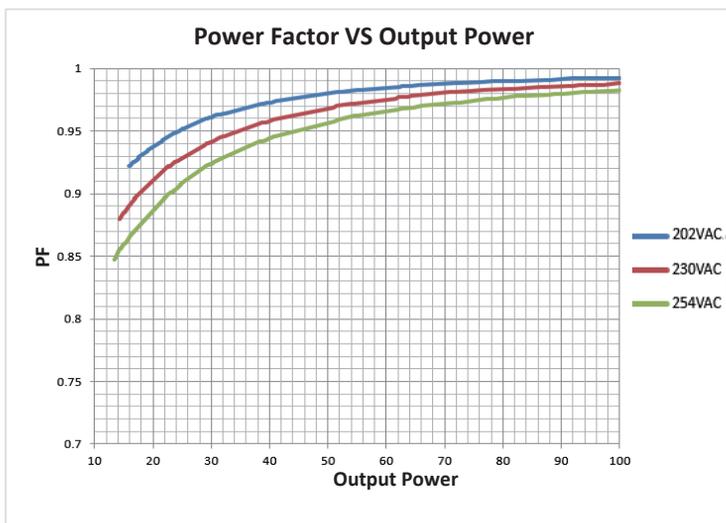
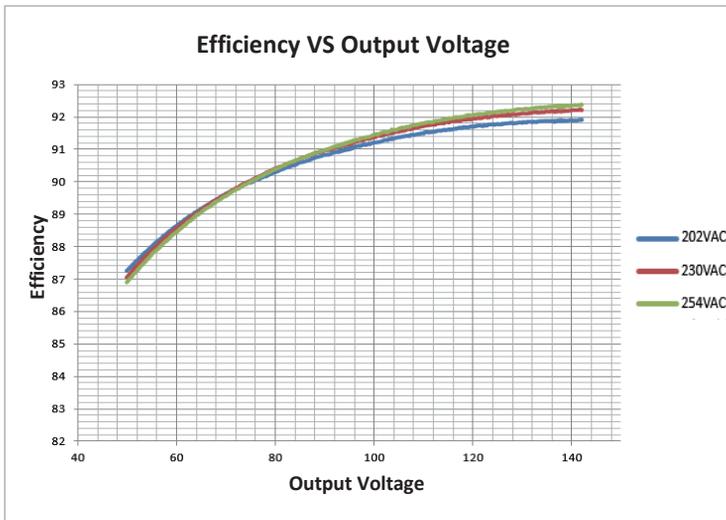
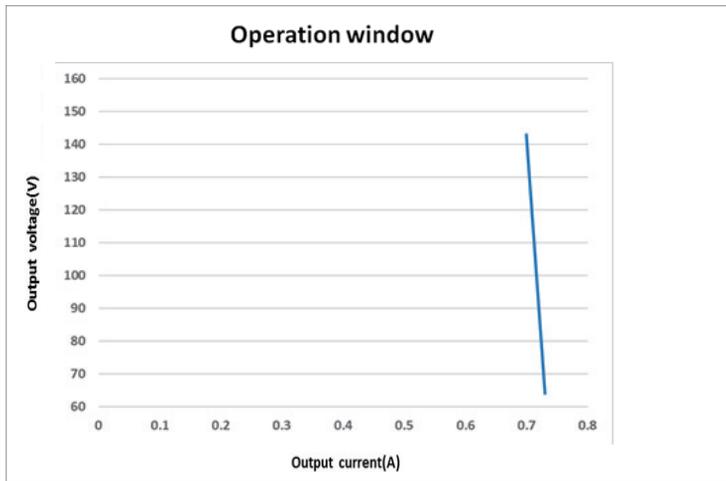
Dimensions (in mm unless, otherwise specified)

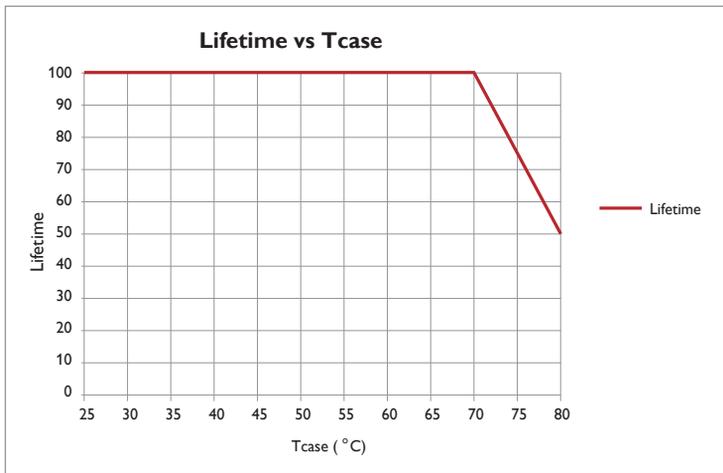
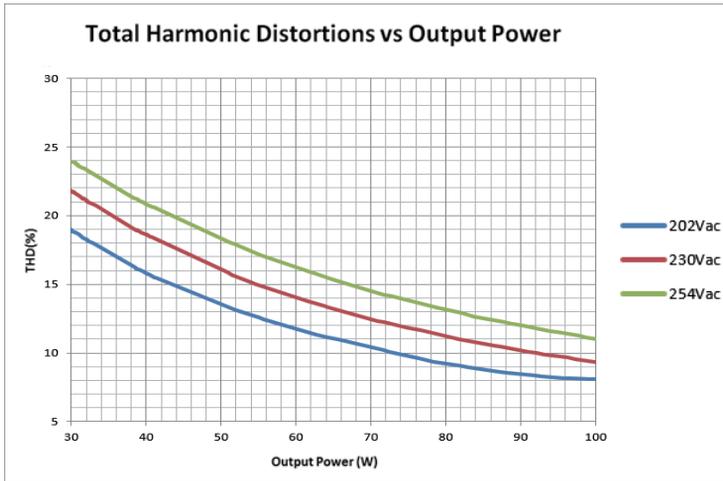


Data Sheet	
Item	Dimensions
A1	175 +0/-2.5
A2	162 +0.5/-2
A3	155 +0.5/-2
B1	68.2 +0.5/-0.5
B2	50 +0.3/-0.3
B3	34 +0.3/-0.3
C	45 +0.5/-0.5
D1	450 +30/-30
D2	450 +30/-30

Logistical Data

Specification item	Value
Product Name	Xitanium 100W 0.7A 230V I175
Logistics Code 12NC	9290 014 00680
Pieces per Box	10





- Failure rate information based upon MTTF modeling: 90% survival at end of life @ Tcase <=80°C
- Failure rate information based upon field call rate data: <0.01% per 1K hour @ Tcase <=80°C



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Date of release: April 30, 2015

150W Solar Panel Datasheet (For Solar Street Light AES-SSL-I-100W)

Maximum power (Wp)	150wp
Maximum power voltage (V)	18
Maximum power current (A)	8.33
Open circuit voltage (V)	21.9
Short circuit current (A)	8.83
Number of cells (Pcs)	36
Size of module (mm)	1120*670*35mm(156x117mm cell)
Brand Name of Solar Cells	
Maximum system voltage (V)	1000
Temperature coefficients of Isc (%)	0.065+/-0.015%/°C
Temperature coefficients of Voc (%)	- (2.23+/-0.1) mv/ °C
Temperature coefficients of Pm (%)	- (0.5+/-0.05) / °C
Temperature coefficients of Im (%)	+0.1/ °C
Temperature coefficients of Vm (%)	-0.38/ °C
Temperature Range	-40°C~+85°C
Tolerance Wattage (e.g. +/-5%)	+/-3%
Surface Maximum Load Capacity	30m/s(200kg/sq.m)
Allowable Hail Load	steel ball fall down from 1m height
Weight per piece (kg)	9.5
Junction Box Type	Pv0130
Length of Cables (mm)	900
Cell Efficiency (%)	>19.25%
Module Efficiency (%)	>18.4 %
Output tolerance (%)	+/-3%
Frame (Material, Corners, etc.)	Aluminum
Standard Test Conditions	AM1.5 100mW/C m ² 25°C
Warranty	10years product warranty and 25 years 80% of power
FF (%)	75%
Packing	31PCS/carton

BATTERY SPECIFICATION

1. Summary

This specification specifies and describes the characteristics and performance of rechargeable lithium iron phosphate batteries. All testing, application and handling must be carried out in accordance with specifications, conditions and guidelines.

2. Standard reference

GB/T18287-2013, UL1642, UL2054 and CE61960.

This specification conforms to standards including GB/T18287-2013, UL1642, UL2054 and CE61960

Specification:

Character	Parameter	Conditions
1. Rated Capacity	63Ah	
2. Rated Voltage	12.8V	
3. Max Charging Voltage	14.5V ± 0.2	
4. Discharge End Voltage	8-9.2V	
5. Standard Charge Current	10.8A	
6. Standard Discharge Current	10.8A	
7. Max Continue charging current	15A	
8. Max Continue discharge current	15A	
9. Max instantaneous discharge current		
10. cycle life	>2000 times	80%DOD@ 0.2C
12. Weight	≤5.5Kg	
13. Working Temperature	Charge, 0°C ~ 45°C	
	Discharge, -10°C ~ 60°C	
14. Storage Temperature	-20 ~ 45°C	≤1 months
	-20 ~ 35°C	≤ 3 months
	-20 ~ 25°C	≤ 12 months
	25°C	>12 months

6. Mechanical performance test

Testing	Condition and Method	Test Tool	Results and performance
1. Fall	At 25±5°C, after standard charging, the battery drops from a height of 75cm to the hardwood, and the battery drops once on surfaces X, Y and Z		No fire, no explosion
2. vibration	<p>At 25±5°C, after standard charging, it vibrates according to the following conditions.</p> <p>After vibration, the battery is charged to standard and discharged to standard</p> <p>Vibration wave: sine wave</p> <p>Vibration frequency: 16.7Hz</p> <p>Vibration time: 1 hour</p> <p>Vibration direction: arbitrary</p> <p>Amplitude: 1 mm</p>	Secondary battery testing equipment, vibration table	<p>No deformation, rupture and ignition;</p> <p>Can continue to charge and discharge</p>

Safety performance test

	Condition Testing Test Tool	and Method	Results and performance
1. overcurrent protection	After standard charging, the current exceeds the protective current value	Secondary battery testing equipment	Battery pack discharge current reaches the overload protection current value. Should cut off the circuit alarm. The battery pack should not leak, smoke, catch fire or explode. After troubleshooting, it should be able to resume work automatically
2. overcharge protection	After standard charging, discharge at 1C current to record the protection operating voltage, and discharge the battery pack until the termination voltage	Secondary battery testing equipment	When the battery pack is in the state of overcharging, the charging circuit should be cut off and the alarm should be given. The battery pack should not leak liquid, smoke, catch fire or explode.
3. Over discharge protection	After standard charging, discharge with 2A current for 10H and set discharge voltage to 0V.	Secondary battery testing equipment	Discharge circuit should be cut off and alarm, the battery pack should not leak, smoke, fire or explosion.
temperature protection	When the temperature reaches the protection point range, the battery pack should cut off the circuit and alarm	Secondary battery testing equipment thermometer	In addition to the high temperature protection of the internal BMS components of the battery pack, the battery pack shall automatically resume work when the temperature reaches the recovery point range; The battery pack should not leak, smoke, catch fire or explode

Safety precautions and prohibitions

To avoid battery leakage, overheating, fire, loss of function or life, the battery must be tested or used in accordance with the prescribed battery guidelines.

Storage

Must be handled according to the specified battery storage temperature. Keep the battery away from hot and humid places to avoid overheating and fire.

Warranty Time

The battery has a warranty of 3 years. Any non-manufacturing reasons, such as handling, storage, application and other non-compliance, the warranty will be invalid.

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

Waterproof All-in-one Constant Current MPPT Charge Controller



SR-DM60-R/W



SR-DM80/120-R/W



SR-DM160-R/W



SR-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: wireless remote control)
DM-UL	With IoT remote control (built-in Lorawan module)
DM-NB	With IoT remote control (built-in NB-Iot module)
DM-GP	With IoT remote control (built-in GPRS module)
DM-BT	With Bluetooth remote control (built-in Bluetooth 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

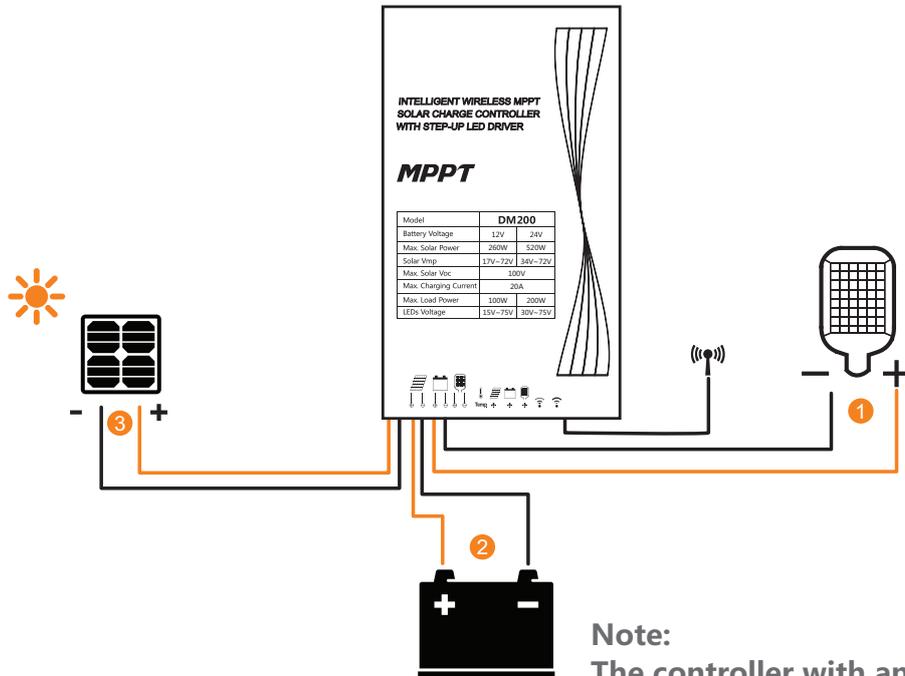
Three red indicators:

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

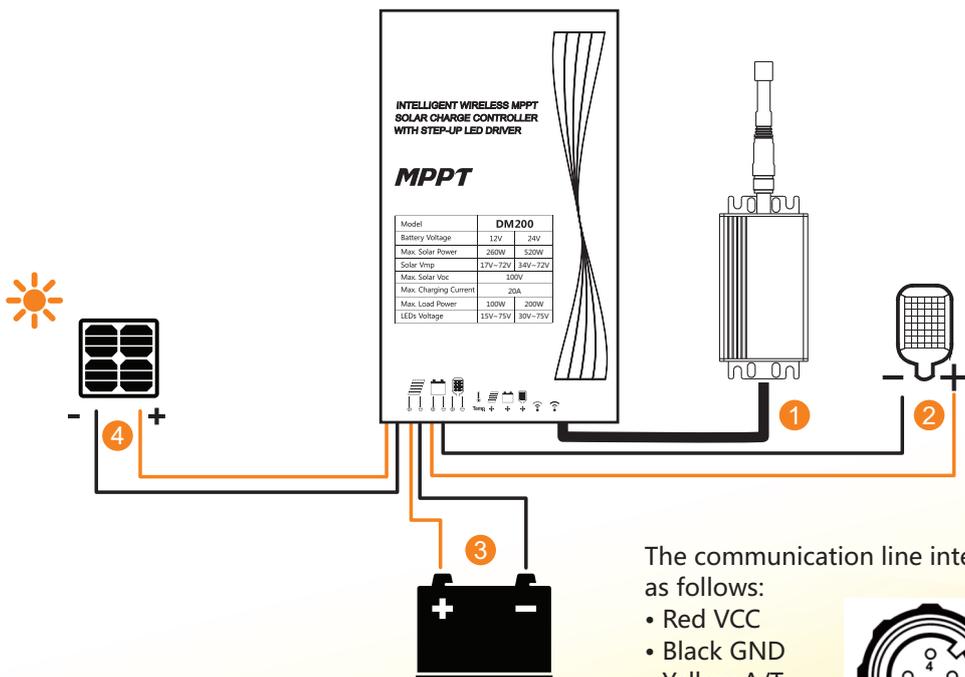
Wiring sequence: Firstly connect the load, then the battery and finally the solar panel.



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.

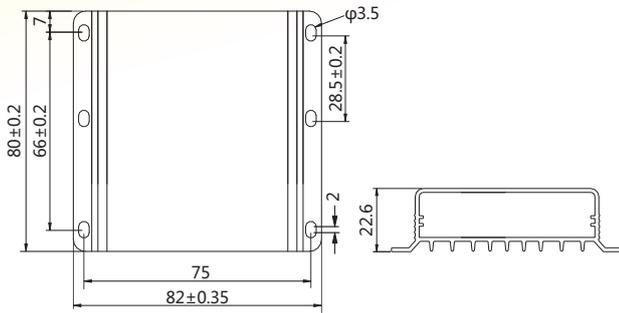


The communication line interfaces are defined as follows:

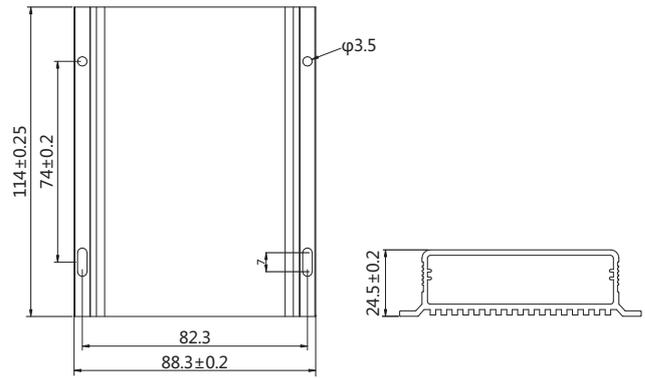
- Red VCC
- Black GND
- Yellow A/T
- White B/R



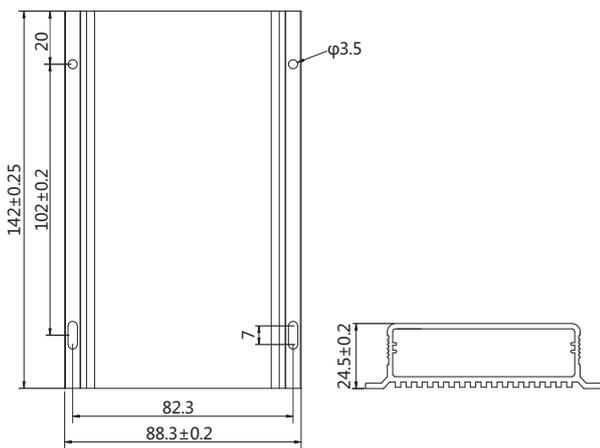
Installation method



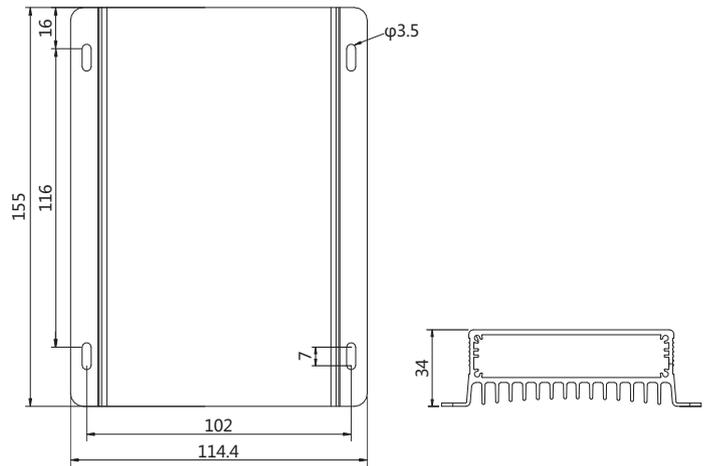
DM60 dimensions:
 Overall dimensions: $80 \times 82 \times 22.6$ mm
 Mounting dimensions: 66×75 mm
 Mounting hole diameter: $\phi 3.5$ mm



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



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



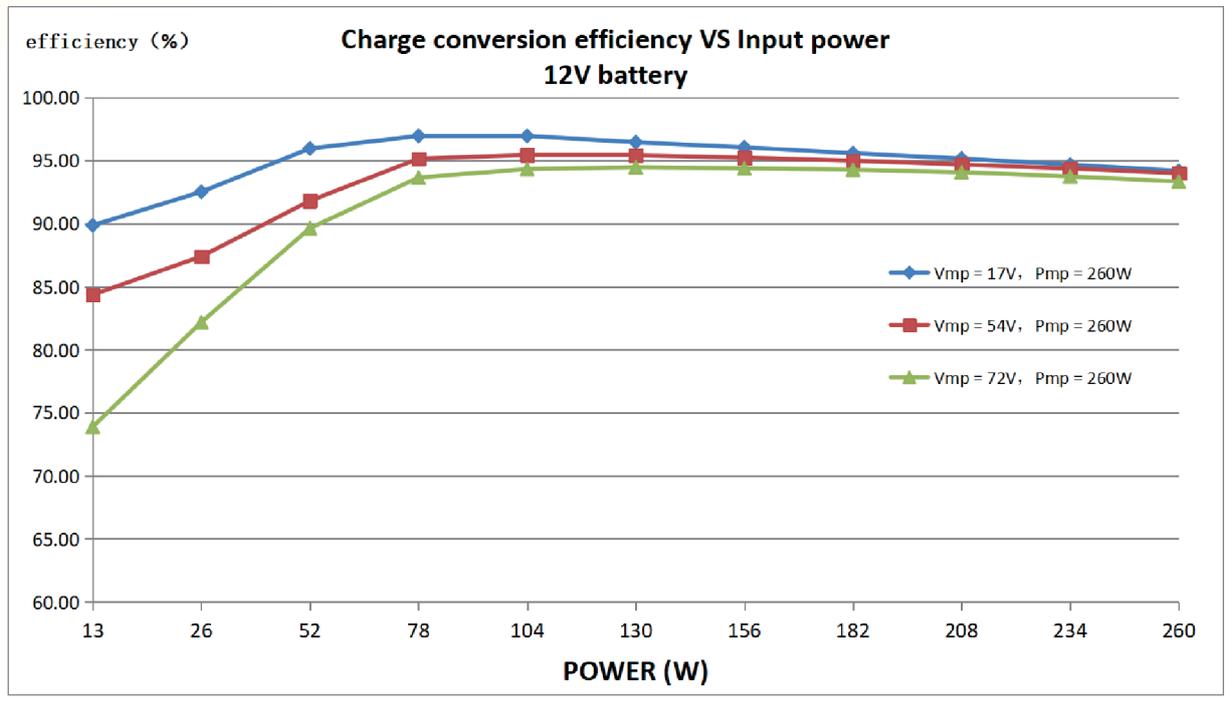
DM200 dimensions:
 Overall dimensions: $155 \times 114.4 \times 34$ mm
 Mounting dimensions: 116×102 mm
 Mounting hole diameter: $\phi 3.5$ mm

Technical parameters

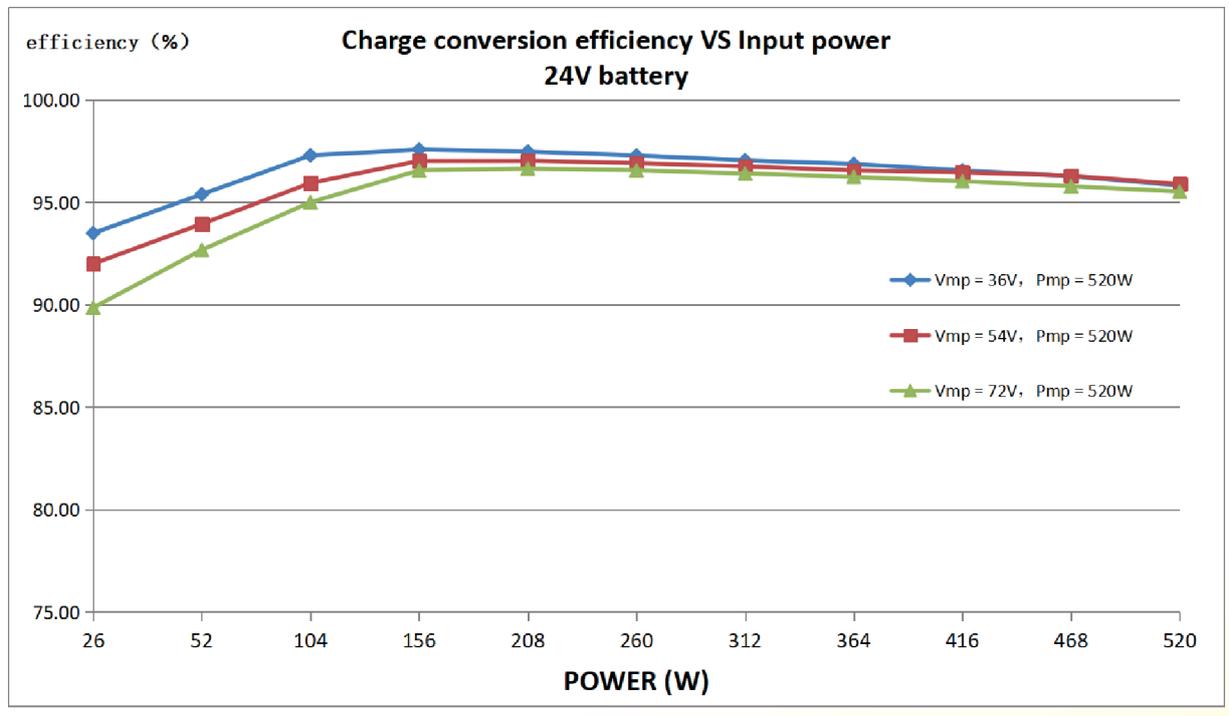
Items	Values					Adjustable	Default
	DM60	DM80	DM120	DM160	DM200		
Model	DM60	DM80	DM120	DM160	DM200		
Controller type	-R: infrared remote control ; -W: 2.4G wireless remote control ; -C: with 485 communication interface						
System voltage	12V		12V/24V				Lead-acid
Static power consumption	-R type: ≤5mA -W type: ≤20mA	-R type: ≤6mA -W type: ≤20mA	-R type: 6mA/12V; 4mA/24V -W type: 18mA/12V;13mA/24V		-R type: ≤10mA -W type: ≤20mA		
Sleep power consumption	≤1mA				≤2mA		
Load current	50mA ~ 3000mA	50mA ~ 5600mA	50mA ~ 4200mA	50mA ~ 5600mA		√	330mA
Load voltage	15V ~ 50V	15V ~ 40V	15V ~ 60V				
Maximum load power	60W/12V	80W/12V	60W/12V;120W/24V	80W/12V;160W/24V	100W/12V;200W/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		
Maximum charge current	10A	15A	10A	15A	20A		
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		
Controller dimensions (mm)	80*82*22.6	114*88.3*24.5		142*88.3*24.5	155*114.4*34		
Controller mounting dimensions (mm)	66*75	74*82.3		102*82.3	116*102		
Mounting hole diameter (mm)	Φ3.5						

A typical curve

Charge Conversion Efficiency VS Input Power -12V battery

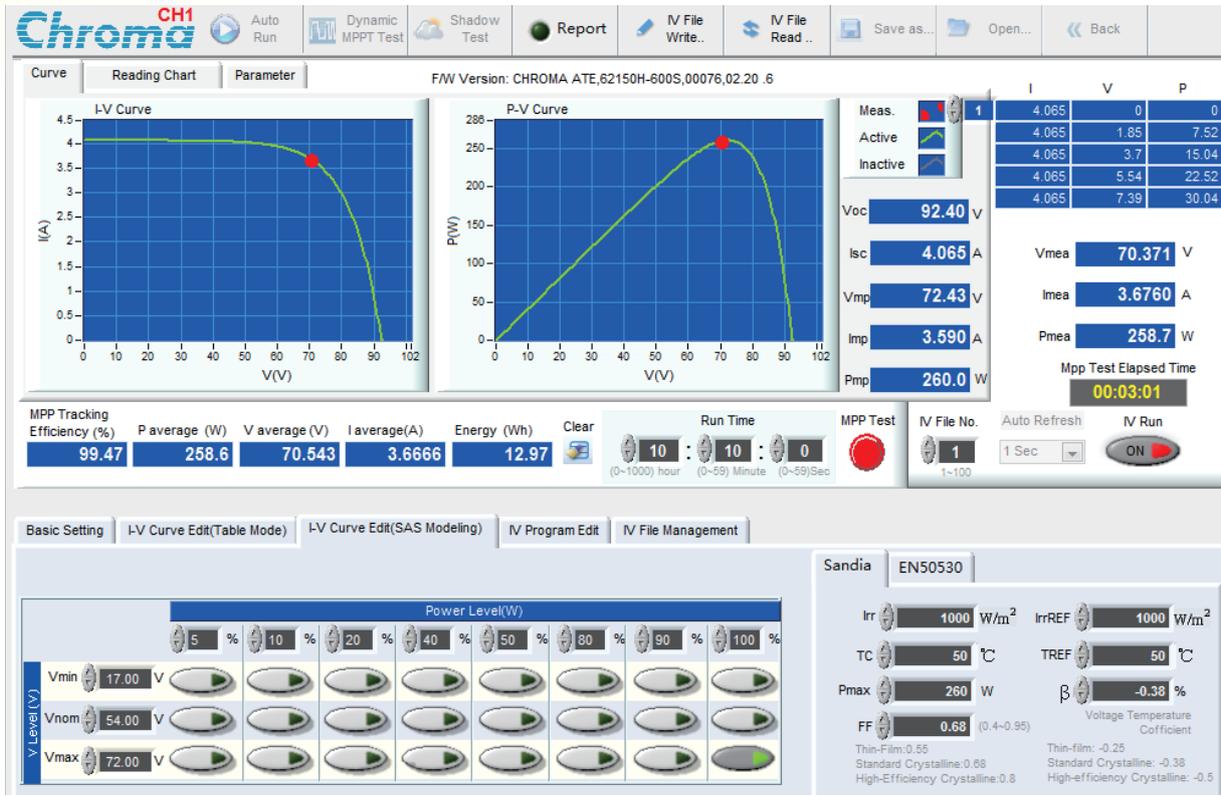


Charge Conversion Efficiency VS Input Power -24V battery



MPPT Tracking Efficiency -12V Battery 260W

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



MPPT Tracking Efficiency -24V Battery 520W

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

