

### Overview

DuoRacer MPPT charge controller is made for charging two batteries (shown as BATT1 and BATT2 below) at the same time in a solar system. This controller supports multiple life battery (BATT1) types, including Sealed, Gel, Flooded, LiFePO4, and Li-NiCoMn, which is suitable for RV, Camper, Boat, and so on. The device recognizes the start battery (BATT2) system voltage automatically, and trickle charges the battery when the conditions are satisfied.

The controller adopts the advanced MPPT control algorithm, which will minimize the maximum power point loss rate and loss time, also fast track the maximum power point (MPP) of the PV array, and obtain the maximum energy from solar array under any conditions. The energy utilization in the MPPT solar system is increased by 20-30% compared with PWM charging method. When there is no manual operation for a long time, and the charging conditions cannot be reached, the controller will turn to low-power mode, which reduces the loss and battery power waste to enhance the products life. The system parameters are shown and set by LED/LCD or the MT11 remote meter (Accessory).

The AES control signal of the car refrigerator is built in the controller, which will supply the surplus solar power to the refrigerator to avoid energy waste. The controller comes with IP33 protection level, which is waterproof and dustproof. Multiple protection features, including battery overcharge protection, over discharge protection, and reverse connection protection of the PV and battery, which effectively ensure the solar system safety, stability, and lifetime.



### Features

- Maximum Power Point Tracking technology with ultra-fast tracking speed and the tracking efficiency is no less than 99.5% guaranteed
- Advanced MPPT control algorithm to minimize the MPPT loss rate and lost time
- The wider range of the MPP operation voltage to improve the PV module utilization
- Auto control function of charging power & charging current limitation (BATT1)
- High quality and low failure rate components of ST, TI and Infineon to ensure the product life
- Digital circuit control of adaptive three-stage charging mode to enhance BATT1 life.
- BATT1 type can be set via LED/LCD.
- Product runs into the low-power mode when there is no manual operation for a long time, and charging conditions are not satisfied (PV < 5V).
- 100% charging and discharging in operation environmental temperature range.
- LED and LCD display units selectable.
- AES control signal for car refrigerator to avoid energy waste.
- Standard Modbus protocol, and RS485 (5V/200mA) communication port for the customer to expand the application area.

① Life battery (BATT1) is the energy storage battery for powering the household loads in the off-grid system, which supports Sealed, Gel, Flooded, LiFePO4, and Li-NiCoMn batteries (the controller can NOT recognize the system voltage automatically).

② Start battery (BATT2) is the energy storage battery which usually built in the vehicle for powering the system such as RV and Boat, and only supports lead-acid battery (the controller will recognize the system voltage automatically).

NOTE: the BATT1 and BATT2 must be at the same voltage level.



## Technical specifications

Item	DR1106N-DDB/DDS	DR2106N-DDB/DDS	DR3106N-DDB/DDS	DR1206N-DDB/DDS	DR2206N-DDB/DDS	DR3206N-DDB/DDS	DR2210N-DDB/DDS	DR3210N-DDB/DDS
BATT1 rated voltage	12VDC			12/24VDC				
BATT2 rated voltage	12VDC			12/24VDC Auto				
Rated Charge Current	10A	20A	30A	10A	20A	30A	20A	30A
Battery Input Voltage Range	8.5~16V			8.5~32V <sup>①</sup>				
Max. PV Open Circuit Voltage	60V <sup>②</sup>			100V <sup>②</sup>				
	46V <sup>③</sup>			92V <sup>③</sup>				
MPP Voltage Range	(Battery Voltage+2V)~36V						(Battery Voltage+2V)~72V	
Rated Charge Power	130W/12V	260W/12V	390W/12V	130W/12V 260W/24V	260W/12V 520W/24V	390W/12V 780W/24V	260W/12V 520W/24V	390W/12V 780W/24V
Max. conversion efficiency	96.30%	96.90%	97.40%	97.40%	97.50%	98%	97.50%	98%
Full load efficiency	95.50%	94.60%	94.20%	97%	96%	96%	96%	96%
Self-consumption	12mA/12V;6mA/12V (Low-power mode)			12mA/12V;8mA/24V 4mA/12V;3mA/24V(Low-power mode)			26mA/12V;15mA/24V 19mA/12V;10mA/24V (Low-power mode)	
Temperature compensate coefficient <sup>④</sup>	-3mV/°C/2V(default)							
Grounding	Common negative							
BATT2 Full voltage	13.8V/12V			13.8V/12V; 27.6V/24V(default)				
BATT2 Charge return voltage	13V/12V			13V/12V; 26V/24V(default)				
AES signal port <sup>⑤</sup>	12VDC/Max.200mA(3.81-4P)			5VDC/Max.200mA(2*(3.81-4P))				
RS485 com. port <sup>⑤</sup>	5VDC/Max.200mA(3.81-4P)							
<b>Environmental Parameters</b>								
Item	DR1106/2106/3106/1206/2206/2210N-DDB/DDS					DR3206/3210N-DDB/DDS		
Working environment temperature	-20 °C~+50°C(DDS) -30°C~+50°C(DDB)					-20 °C~+45°C(DDS) -30°C~+45°C(DDB)		
Enclosure	IP33							
<b>Mechanical Parameters</b>								
Item	DR1106/1206N-DDB/DDS		DR2106/2206/2210N-DDB/DDS			DR3106/3206/3210N-DDB/DDS		
Dimension	227.2×143×58.1mm		243.7×158×63mm			247.2×165×68.5mm		
Weight	0.8kg		1.1kg			1.4kg		

①Warning:When the lithium battery of 12V is used and the BMS is protected, the lithium battery voltage may increase up to 17V(DR\*106N) or 35V(DR\*206N、DR\*210N) which may damage the load, so please consider the load's voltage.

②At minimum operating environment temperature.

③At 25 °C environment temperature.

④The Temperature compensate coefficient is zero and not changeable when the main battery type is lithium battery.

⑤AES port which output is 12V/200mA and RS485 Port which output is 5V/200mA are independent of DR1106/2106/3106N models, the AES port output voltage is the battery voltage. The above two ports of DR1206/2206/3206/2210/3210N models share the power of 5VDC/Max. 200mA

## Accessories



Remote Meter  
MT11



Remote Temperature Sensor  
RTS300R47K3.81A



WiFi Adapter  
eBox-WIFI-01



Bluetooth Adapter  
eBox-BLE-01