DDN SERIES

Bidirectional DC-DC Charger with MPPT

DDN1220 / DDN1230 / DDN1245 / DDN1260	12VDC aux. bat 20A / 30A / 45A / 60A
DDN2430 / DDN2460	24VDC aux. bat 30A / 60A

FEATURES

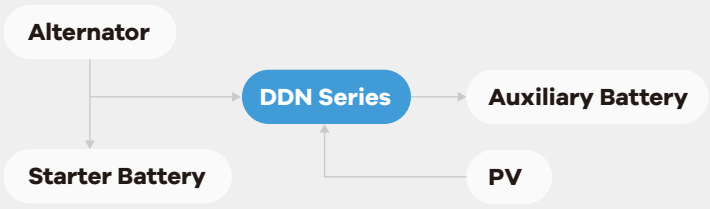


- Combines MPPT solar charging and bidirectional DC-DC charging in one compact solution
- Charges auxiliary batteries while driving and maintains starter batteries when parked, with full-rated current in both directions
- Maximizes solar energy to charge both starter and auxiliary batteries
- Compatible with both 12V and 24V alternators, including smart alternator systems
- Up to 96% DC-DC efficiency and 99.5% MPPT efficiency, maximizing power conversion and solar harvest
- Automatic temperature compensation
- One programmable dry contact output
- Built-in Bluetooth for TBB mobile app monitoring and OTA firmware updates
- Isolated communication interfaces: 1 × CAN and 1 × Display
- IP40 rated for demanding vehicle environments
- Fanless natural cooling design for completely silent operation

WORKING MODES

- **Mode 1 : PV & Alternator Charging**

  When both PV and alternator inputs are available, the DDN Series charges the auxiliary battery simultaneously from both sources at the rated charging current.



- **Mode 2: Alternator Charging**

  Compatible with Euro 6 smart alternators, the DDN Series charges the auxiliary battery at the rated current from the vehicle alternator. Charging current is adjustable via the mobile app to match alternator performance.



- **Mode 3: PV Charging**

  Supports 18–60V PV input and delivers solar charging at the rated current for efficient battery charging.



- **Mode 4: Simultaneous Charging of Starter & Auxiliary Batteries**

  When PV input is available, the alternator is inactive, and the starter battery voltage is low, the DDN Series can simultaneously charge both the starter battery and the auxiliary battery from the PV source.



- **Mode 5: Engine Start Assist**

  When the starter battery is low, the auxiliary battery can provide full-rated reverse charging to the starter battery to assist engine starting, triggered via the mobile app. The engine can be started after approximately 10 minutes of charging.



Model NO.	DDN1220	DDN1230	DDN1245	DDN1260	DDN2430	DDN2460
Electrical						
PV Input Voltage Range (V)	PV panels Voc: 10 ~ 60 @ 25℃					
Max Power of PV Panels (W)	340	500	750	1000	1000	2000
Max PV Short Circuit Current (A)	20	30	45	60	30	60
Max MPPT Charging Current (A)	20	30	45	60	30	60
ALT Input Voltage (V)	10.5 ~ 16 @ 12V ALT, 21 ~ 32 @ 24V ALT					
Max ALT Input Current (A)	20 @ 12V ALT 10 @ 24V ALT	30 @ 12V ALT 15 @ 24V ALT	45 @ 12V ALT 22.5 @ 24V ALT	60 @ 12V ALT 30 @ 24V ALT	30 @ 12V ALT 30 @ 24V ALT	60 @ 12V ALT 60 @ 24V ALT
Auxiliary Battery Nominal Voltage (V)	12	12	12	12	24	24
Auxiliary Battery Max. Charge / Discharge Current (A)	20 @ 12V ALT 20 @ 24V ALT	30 @ 12V ALT 30 @ 24V ALT	45 @ 12V ALT 45 @ 24V ALT	60 @ 12V ALT 60 @ 24V ALT	15 @ 12V ALT 30 @ 24V ALT	30 @ 12V ALT 60 @ 24V ALT
Efficiency (%)	Max. 96					
MPPT Efficiency (%)	99.5					
Temperature Compensation (mV / ℃ / 12V)	Default setting: -18					
Static Power (mA)	< 2					
Others						
Protection	Output short-circuit, output over-voltage, over temperature etc.					
Operating Temperature Range (℃)	-40 ~ 70 (Derating when > 30)					
Dimensions (mm)	181 × 148 × 52			181 × 148 × 67	181 × 148 × 52	181 × 148 × 67
Weight (kg)	1.5					
IP Rating	IP40					
Cooling	Natural cooling					
Communication	Bluetooth, CAN					
Dry Contact	30V / 1A Relay × 1					
Display	5 LED					
Certificate	CE, E-mark, SAA, FCC Part 15B					