TBB POWER

LIBERGRID

MOBILE POWER SOLUTION



AU&NZ

LIBERGRID:
Powering Industry Leaders Now Available to All

POWERING GLOBAL MOBILITY

TBB Power has been building advanced off-grid and mobile power systems since 2007, with nearly two decades of real-world experience. Trusted as the power behind China, Europe, Australia, and America's leading brands for over a decade, TBB has become a world-class on-board power system manufacturer for the global mobile industry, mastering every pain point along the way.

Every year, more than 200,000 TBB products hit the road. Through desert heat, mountain terrain, and snow-covered extremes, TBB has developed products and solutions built to perform in all conditions. Today, TBB systems power RV, commercial, and marine applications in more than 50 countries—supporting every journey, every job, every voyage.

TBB power now brings that same professional-grade reliability to professionals, converters, and individuals through—**LIBERGRID**.



OUR STRENGTHS

19+
Years in Power System

30%+
R&D Workforce

200k+
Products Installed Annually







More Than a Decade of Manufacturing Expertise

- Trusted and professional partner for top global RV brands — mastering every pain point
- Work closely with our clients to develop creative solutions, achieving your goals with less total cost

World-Class Quality

- **200,000+** products installed annually, field-tested worldwide
- **ISO 9001, IATF 16949**
- **CE, CE-RED DA, E-mark, UL**

Global Player, Local Service

- Local operation in Europe and Australia
- Faster delivery, responsive support for the European and Australian market

What is LIBERGRID?

LIBERGRID: Modular, intelligent power for mobile living.

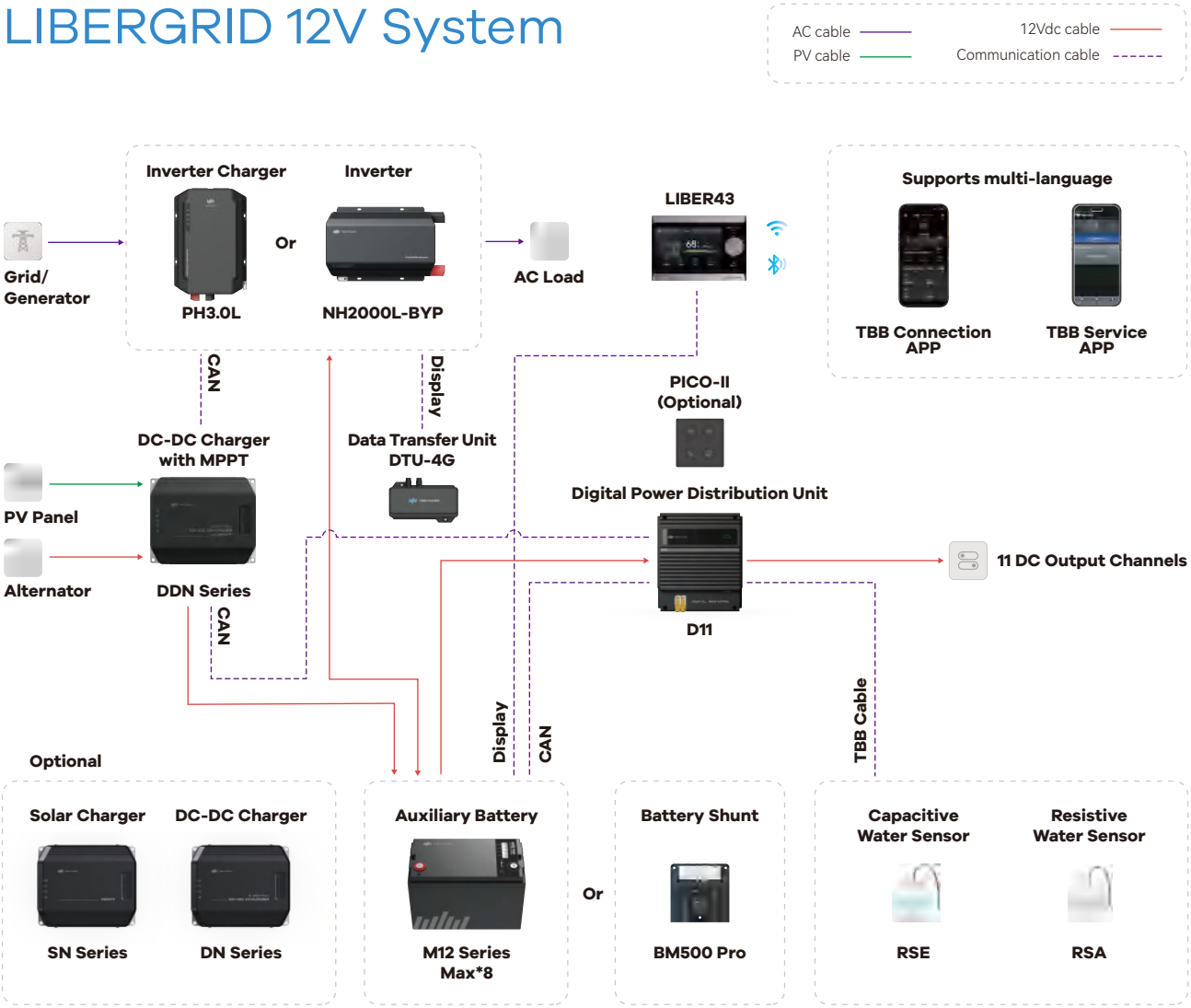
It integrates inverter charger, lithium battery, MPPT controller, and DC-DC charger — all from one brand, seamlessly compatible. Each component performs powerfully on its own, but together they deliver more than the sum of their parts, making LIBERGRID adaptable to a wide range of onboard applications — from RVs and marine vessels to commercial and specialty vehicles. Expand anytime with full compatibility.

At the center is LIBER43 — a 4.3" touchscreen with real-time monitoring and one-touch control. With built-in Bluetooth and Wi-Fi, it connects to the TBB Connection App for local and remote monitoring, and to the TBB Service App for one-tap remote support, enabling faster diagnostics and minimizing downtime.

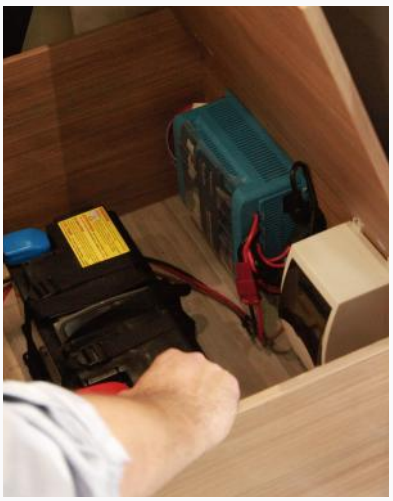
Modular, smart, lightweight, built for every environment. Start simple, scale as you go.

One system. Endless possibilities. Your power, simplified.

LIBERGRID 12V System



Why LIBERGRID?



Modular & Flexible

Start simple, expand anytime — from weekends to full-time off-grid. Seamless compatibility as you grow. Flexible along the whole journey.



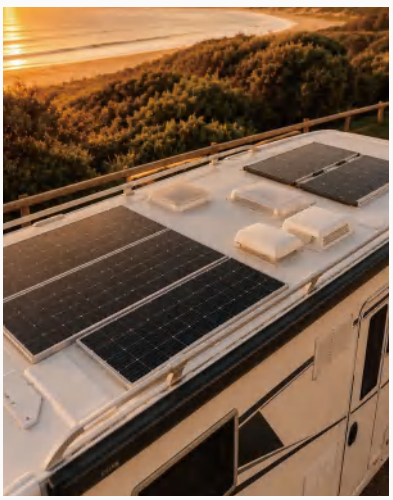
Smart Control on the Go

Components work together seamlessly. One-touch centralized control via LIBER43 screen. Remote monitoring, diagnostics, and one-tap service request via APP, anywhere, anytime.



Built for All Seasons

Battery heating & robust BMS, unwavering in any climate.



All Source, Always Charging

Seamlessly powered by sun, alternator, or shore power — non-stop energy, wherever you go.



Lightweight & Quiet

Plug-and-play design fits any van. Lighter and space-saving, ultra-quiet — no generator noise, just peace.



Home Comforts, Anywhere

2 x peak power, runs A/C, micro-wave, and more at once. Reliable power supply in any season, any location.

TBB CONNECTION & TBB SERVICE

Smart Monitoring. Instant Service

LIBER43

Centralized Monitor



TBB CONNECTION

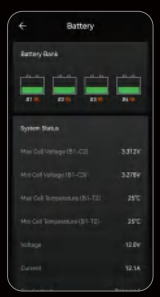
Local and Remote Real-Time Monitoring

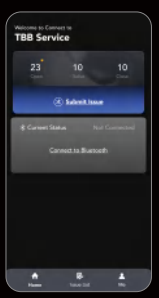


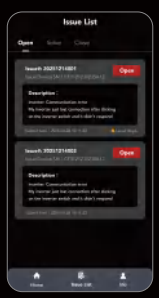
TBB SERVICE

Instant Issue Report + Remote Diagnosis









LIBERGRID

Upgrade Your Power. Expand Your World

Modular **Intelligent** **Compact**



The Power Behind the System

Individually powerful. Together, unmatched.

1*

PH Series

Inverter Charger



Compact & quiet (max. 5.2kg, ≤ 55 dB).
Fast plug-and-play installation.
Full range model with high peak power for all appliances and equipment.

2*

NH Series

Pure Sine Wave Inverter



Only 3kg, delivering 1.5–2kW AC power for everyday appliances.
Built-in bypass for seamless shore power supply.

3

M Series

Lithium Battery



High power discharge.
Built-in high precision shunt.
Ultra-low idle current < 0.1mA.

4

DDN Series

DC-DC Charger
with MPPT



Integrated DC-DC + MPPT solar charging.
Charge from alternator and solar, and support starter battery with bi-directional charging.

5

D11

Digital Power
Distribution Unit



Manages circuit with real-time monitoring.
Keeps critical loads running automatically.

6

LIBER43

System Monitor



Your RV's intelligient command center
Real time monitoring and complete system control.

*Select either of these two products as your LIBERGRID system configuration.

LIBERGRID
ONE BRAND, ONE BRAIN

Centralized Display for Full System Monitoring



Professional Power, Simplified

3 kW RV Power Solution

LIBERGRID		Typical Market Reference
LIBER43	=	System Monitor + Battery Switch + Communication Center
M12-230	=	Lithium Battery + BMS + Shunt + Battery Protection
PH3.0L	=	Inverter Charger
DDN1245	=	Bidirectional DC-DC Charger + MPPT
4 Total Components	VS	10 Total Components

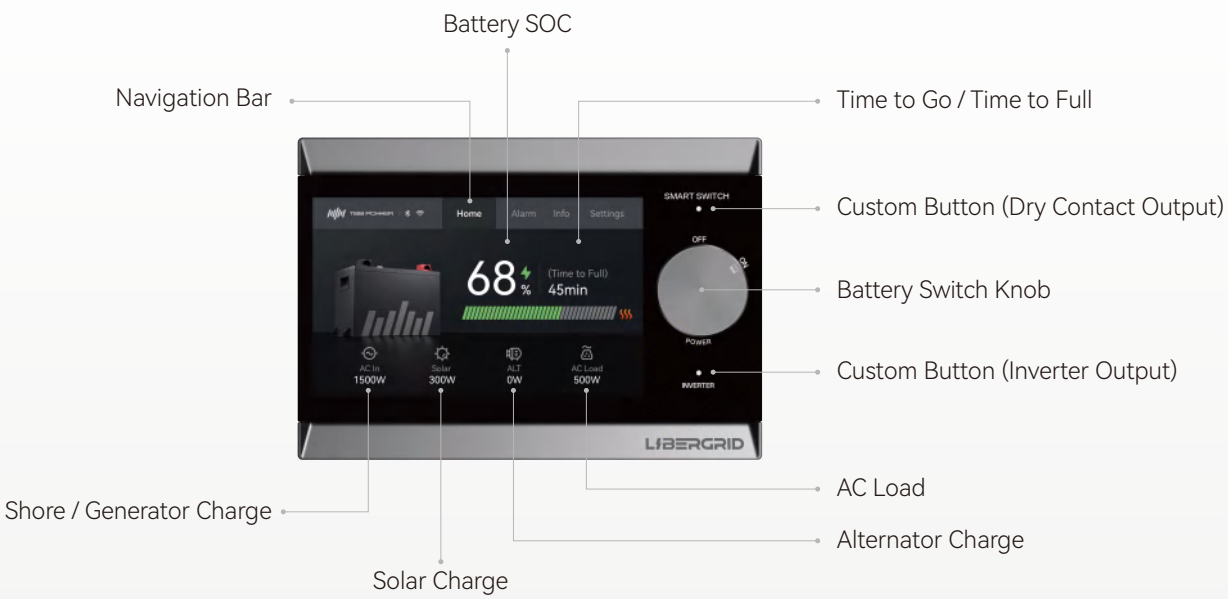
System Monitor LIBER43

Intuitive Display Provides Real-time Readouts

Centralized Monitor for Compatible TBB Products

- 4.3" LCD with one power switch and two touch buttons: one for programmable functions in monitor settings, and one for inverter ON/OFF
- User-friendly touch screen for easy control
- Connects via Bluetooth to TBB Connection APP for local monitoring and TBB Service APP for one-tap remote support and diagnostics.
- Centralized remote monitoring & control
- Supports Wi-Fi and optional external 4G connectivity for data upload and remote device management

LIBER43: One Screen. Centralized Control.



PH SERIES

Inverter Charger

PH3.0L / PH2.0L / PH1.6L / PH1.2L	12VDC 3kW / 2kW / 1.6kW / 1.2kW
PH3.0M / PH2.0M	24VDC 3kW / 2kW

200A Max Charging Current

4.0 / 5.2kg



FEATURES

- High Integration: Combines inverter, AC charger, and transfer switch in one unit
- Supports 200% peak power for 2s (max. 6kW)
- High efficiency up to 94.3%, 92% at full load
- Power control and power assist function to compose the generator hybrid system
- Reverts to bypass mode once grid power stabilizes
- Ultra-quiet operation ≤ 55 dB
- Supports dual charging outputs, delivering up to 200A to the auxiliary battery and 3A to the starter battery
- Activates charging when shore power is connected or via battery voltage signals (compatible with TBB M-series batteries)
- Wide Compatibility: Works with lithium/lead-acid batteries
- Built-in RCD safety switch provides leakage and overcurrent protection for safer AC operation
- Built-in Bluetooth for convenient app monitoring and control

Plug & Play AC Connectors

Quick WAGO connectors ensure fast, reliable installation and prevent mismating.

PH3.0L / PH3.0M:

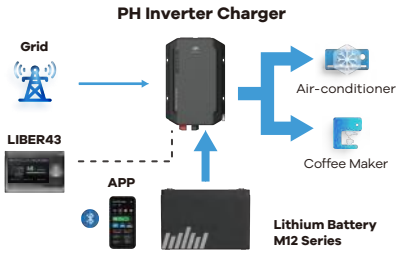


PH2.0L / PH1.6L / PH1.2L / PH2.0M:



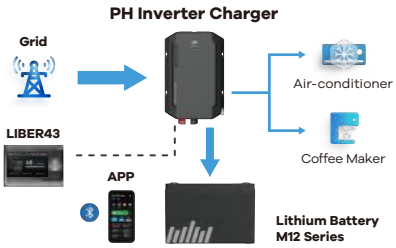
POWER ASSIST

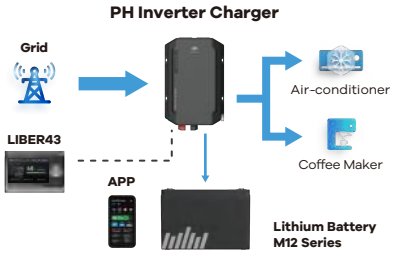
The PH inverter charger automatically supplements limited shore power with battery power to keep high power loads running without interruption.



POWER CONTROL

When shore power is limited, the PH inverter charger automatically reduces the charging current to prevent the circuit breaker from tripping.





Model NO.	PH3.0L PH3.0M	PH2.0L PH2.0M	PH1.6L	PH1.2L
Inverter Mode				
Rated Battery Voltage (V)	12 / 24		12	
Input Voltage Range (± 0.2V)	9 ~ 15 / 18 ~ 30		9 ~ 15	
Zero Load Power (W)	≤ 24 / ≤ 36		≤ 24	
ECO Mode Power (W)	≤ 9.1			
Standby Power (W)	≤ 2.6 / ≤ 10.4		≤ 2.6	
Cont. Output @ 25℃ (kVA / kW)	3.0	2.0	1.6	1.2
Cont. Output @ 40℃ (kW)	2.4	1.6	1.3	1.0
Cont. Output @ 60℃ (kW)	2.0	1.3	1.0	0.8
Peak Power (2s) (kW)	6.0	4.0	3.2	2.4
AC Output (Vac, Hz)	230 / 240 ± 3%, 50 / 60 ± 1%			
Inverter Efficiency (%)	Max: 94.3, Full load: 92			
Output Waveform	Pure sine wave (THD < 3% @ 13V, resistive load)			
RCD Safety Switch	25A / 30mA			
Charger Mode				
AC Input (Vac, Hz)	176 ~ 264, 45 ~ 65			
AC Charging Current (A)	13 @ 230Vac	8.7 @ 230Vac	7 @ 230Vac	5.2 @ 230Vac
Power Factor Correction (PFC)	≥ 0.99			
Default Charging Voltage (V)	14.2 @ LFP / 28.4 @ LFP		14.2V @ LFP	
Aux. Bat Max. Charging Current (A)	200 / 100	133 / 66	105	80
Starter Bat Max. Charging Current (A)	3 / None		3	
Battery Temperature Sensor	Optional			
Others				
Programmable Relay	3A @ 28Vdc, 3A @ 250Vac			
Operating Temperature (℃)	-30 ~ 65			
Cooling Method	Forced air cooling			
Noise (dB)	≤ 55			
Protection Level	IP20			
Dimensions (mm)	430.15 × 277.5 × 79.3	382.35 × 235.5 × 84.8		
Weight (kg)	5.2	4		
Safety Standards	EN IEC62477-1			
EMC Standards	EN61000-6-4 , EN61000-6-2 , ECE R10			

NH SERIES

Pure Sine Wave Inverter

NH1300L / NH1500L / NH2000L / NH1500L-BYP / NH2000L-BYP	12VDC 1.3kW / 1.5kW / 2.0kW
NH1500M / NH2000M	24VDC 1.5kW / 2.0kW

FEATURES



- Rated power 12V 1.3kW / 1.5kW / 2.0kW, 24V 1.5kW / 2.0kW
- Powers demanding RV AC appliances with ease
- CI-BUS compatible
- Compact, lightweight, and easy to install
- High efficiency up to 93%, 90% at full load
- Ultra-low consumption: < 1.5W in Standby mode, ≤ 3.6W in ECO mode
- Smart stepless fan speed control minimizes operating noise
- Supports remote control via LIBER43 system monitor, VS28-LS system monitor, or RNH remote switch
- Built-in Bluetooth for convenient app monitoring and control
- Bypass output for convenient campsite operation (NH1500L-BYP / NH2000L-BYP)



RNH

- A switch to turn NH series inverter ON/OFF remotely
- Connected with NH series inverter by communication cable
- Could be installed at any location with easy access



VS28-LS

- 2.8" system monitor for displaying real-time data
- Built-in power switch
- Built-in Bluetooth to support mobile APP
- CAN compatible

Model NO.	NH1300L	NH1500L NH1500M	NH2000L NH2000M	NH1500L-BYP	NH2000L-BYP
DC Input					
Nominal Battery Voltage (V)	12	12 24		12	12
Input Voltage Range (V)	10 ~ 16.0	10 ~ 16.0 21.0 ~32.0		10 ~ 16.0	10 ~ 16.0
Zero Load Current (A)	≤ 1.2 @12V	≤ 1.2 @12V ≤ 0.6 @24V		≤ 1.2 @12V	≤ 1.2 @12V
ECO Mode Current (A)	≤ 0.3				
Standby Consumption (W)	< 1.5	< 1.5 < 1.1		< 1.5	< 1.5
AC Output					
Cont. Output Power @25℃ (kVA / kW)	1.3	1.5	2.0	1.5	2.0
Cont. Output Power @40℃ (kW)	1.17	1.35	1.8	1.35	1.8
Cont. Output Power @60℃ (kW)	1.04	1.2	1.6	1.2	1.6
Peak Power (2s) (kW)	2.6	3.0	4.0	3.0	4.0
Power Factor cosΦ	1				
Output Voltage (Vac)	230 / 240 ± 3% (Dip switch selectable)				
Output Frequency (Hz)	50 / 60 ± 0.5% (Dip switch selectable)				
Output Waveform	Pure sine wave (THD < 3% @ 13V, resistive load)				
Inverter Efficiency (%)	Max: 93, Full load: 90				
AC Output Connector 1	EU / UK / AU / FR sockets			WAGO 770-703	
AC Output Connector 2	EU / UK / AU / FR sockets			N/A	
Ground Relay	N/A			Yes	
Bypass Output					
Transfer Time (ms)	N/A			< 25	
Bypass Current (A)	N/A			16	
AC Input Connector	N/A			WAGO 770-713	
External Interface					
Power Switch	Latching switch				
Remote Interface	D+, REMOTE				
Display Interface	RJ45 (CAN / RS485), RJ12 (LIN)				
Bluetooth	Yes				
Grounding	Yes				
Others					
Protection	Output short circuit / overload, input overvoltage / undervoltage, over-temperature protection				
Cooling Method	Forced air cooling				
Noise Level (dB)	≤ 55				
IP Rating	IP20				
Dimensions (mm)	382.35 × 235.5 × 84.8				
Weight (kg)	3.0				
Operating Temperature (℃)	-30 ~ 65 (Derating above 30)				
Storage Temperature (℃)	-40 ~ 70				
Humidity (%)	5 ~ 95 RH				
Safety Standards	EN IEC62477-1				
EMC Standards	EN61000-6-4, EN61000-6-2, ECE R10				

M SERIES

Lithium Battery Module

M12-150 / M12-230 12VDC 150Ah / 230Ah





TBB's M Series lithium iron phosphate battery delivers a high continuous discharge current, making it one of the most capable solutions on the market for powering heavy-duty onboard appliances such as air conditioners, coffee makers, and microwave ovens.

Despite its high discharge capability, the battery maintains a lightweight and compact design. It also supports parallel connection of up to 8 units, offering exceptional versatility for a wide range of applications and flexible installation options.

Equipped with a built-in BMS, the M Series battery provides comprehensive protection against overcharging, over-discharging, and over-temperature conditions by monitoring each cell's status. This ensures enhanced safety and extends the battery's service life.

The integrated heating element automatically warms the battery cells when external charging is detected, enabling reliable charging even in extremely low ambient temperatures.

An elegantly designed monitor displays key battery information such as voltage, current, and SoC. It allows users to remotely disconnect the battery power if needed. In addition, the monitor supports mobile APP control via built-in Bluetooth connectivity, offering convenient access to battery status and functions.

FEATURES

- Long cycle life: > 4,000 cycles (0.5C charge/discharge, 80% DoD, @25°C)
- Supports max discharge current: 200A for M12-150, and 300A for M12-230
- Supports up to 8 batteries in parallel
- Built-in BMS with automatic balancing and complete protection
- Built-in high precision shunt for accurate SOC monitoring
- Built-in heating element: automatically warms the battery during low-temperature charging
- Battery BMS idle consumption drops by over 90% (to <0.1mA) from standby mode to shutdown mode
- Intelligent voltage and current control with terminal adaptive charging to ensure the well balancing among cells for optimal cyclelife
- Supports CAN and RS485 communication
- Remote control: mobile APP & Bluetooth connectivity



Battery Remote Switch

- Connects to the battery via RJ45 cable
- Installable in any easily accessible location

Model NO.	M12-150	M12-230
Electrical		
Cell type	LiFePO4	
Rated capacity (Ah)	150	230
Rated power (kWh)	1.932	2.944
Rated voltage (V)	12.88	12.8
Charging voltage (V)	14.2	
Recommended charging current (A)	75	115
Maximum charging current (A)	150	230
Continuous discharge current (A)	150	230
Maximum discharge current (A)	200 - 15 min	300 - 30 min
Cell operating temperature (charging) (℃)	2 ~ 63	
Cell operating temperature (discharging) (℃)	-30 ~ 63	
Storage temperature range (<1 month) (℃)	-20 ~ 45, 20% ~ 50% SOC, < 65% RH	
Storage temperature range (<6 months) (℃)	0 ~ 35, 20% ~ 50% SOC, < 65% RH	
Operating humidity range (%)	10 ~ 90 RH	
Dimensions (W x D x H) (mm)	333 x 175.5 x 224	340 × 190 × 328
Weight (kg)	14.7	24
IP rating	IP20	
Certifications	CE, UN38.3, E-mark	CE, UN38.3, E-mark, RCM, CB
Shipping class	UN3480	
Cycle life	> 4000 (0.5C charge and discharge, 80% DoD, at 25℃)	
Heating element	YES	
Maximum number of parallel	8	
Display unit (optional)	VS28-LS, DTU-BLE	

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

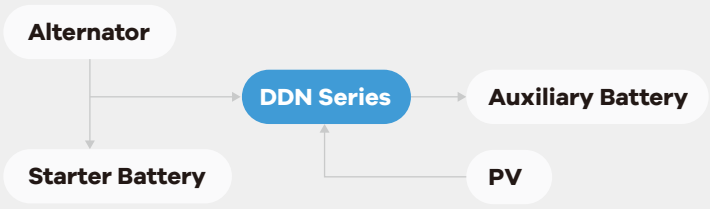


- Combines MPPT solar charging and bidirectional DC-DC charging in one compact solution
- Charges auxiliary batteries while driving and maintains starter batteries when parked, with full-rated current in both directions
- Maximizes solar energy to charge both starter and auxiliary batteries
- Compatible 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					

DN SERIES

Bidirectional DC-DC Charger

DN1220 / DN1230 / DN1245 / DN1260	12VDC aux. bat 20A / 30A / 45A / 60A
DN2430 / DN2460	24VDC aux. bat 30A / 60A

FEATURES



- Charges auxiliary batteries while driving and maintains starter batteries when parked, with full-rated current in both directions
- All DN models are compatible with smart alternators. DN12 models support 12V alternators while DN24 models support both 12V and 24V alternators
- High efficiency up to 96%
- Automatic temperature compensation
- Built-in Bluetooth for TBB mobile app monitoring and OTA firmware upgrade
- 2 communication interfaces: 1 × CAN and 1 × Display
- One programmable dry contact output
- IP40 rated for demanding vehicle environments
- Fanless natural cooling design for completely silent operation

WORKING MODES

- **Mode 1: Alternator Charging**

  Compatible with Euro 6 smart alternators, the DN 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 2: 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.	DN1220	DN1230	DN1245	DN1260	DN2430	DN2460
Electrical						
ALT Input Voltage (V)	10.5 ~16 @ 12V ALT				10.5 ~16 @ 12V ALT 21 ~ 32 @ 24V ALT	
Max ALT Input Current (A)	20	30	45	60	30 @ 12V ALT 30 @ 24V ALT	60 @ 12V ALT 60 @ 24V ALT
Auxiliary Battery Nominal Voltage (V)	12				24	
Auxiliary Battery Max. Charge / Discharge Current (A)	20	30	45	60	15 @ 12V ALT 30 @ 24V ALT	30 @ 12V ALT 60 @ 24V ALT
Efficiency (%)	Max. 96					
Temperature Compensation (mV / °C / 12V)	Default: -18					
Static Power (mA)	< 2					
Others						
Protection	Output short-circuit, output over-voltage, over temperature, etc.					
Operating Temperature Range (°C)	-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	4 LED					
Certificate	CE, E-mark, SAA, FCC Part 15B					

SN SERIES

MPPT Solar Charge Controller

SN100-30 / SN100-60	12 / 24VDC	**SN150-35**	12 / 24 / 36 / 48VDC

The LIBERGRID SN Series MPPT Solar Charge Controller is designed for mobile off-grid power applications such as RVs, utility vehicles, and marine systems. It maximizes solar energy harvest by continuously tracking the maximum power point (MPP) of the PV array, delivering maximum charging current to the battery in real time.

Featuring an advanced MPPT algorithm and a built-in multi-stage charging profile, the controller supports a wide PV input voltage range and is compatible with multiple battery chemistries and nominal battery voltages, including GEL, AGM, LFP, and WET batteries, enabling fast and efficient solar charging.



FEATURES

- With up to 99.5% MPPT tracking efficiency
- Supports 12V, 24V, 36V, and 48V battery systems (selected models only)
- Supports 5A trickle charging for 12V starter batteries (selected models only)
- Automatic temperature compensation
- One programmable dry contact output
- Built-in Bluetooth for App monitoring and OTA firmware updates
- Isolated communication interfaces: 1 × CAN and 1 × Display
- IP40 rated for demanding vehicle environments
- Fanless natural cooling for completely silent operation
- Supports 365 days of charging records and event recording



Model NO.		SN100-30	SN100-60	SN150-35
Electrical				
Nominal Battery Voltage (V)		12 / 24		12 / 24 / 36 / 48
Max. Battery Current (A)		30	60	35
Starter Battery Charge Current (A)		3 Max		/
Nominal PV Power (W)	12V	440	880	500
	24V	880	1760	1000
	36V	/	/	1500
	48V	/	/	2000
Max. PV Short Circuit Current (A)		30	60	35
Max. PV Open Circuit Voltage (V)		100		150
Max. Efficiency (%)		98		
Self-Consumption (mA)		20 (12V), 15 (24V), 10 (48V)		
Absorption Voltage (V)		Default setting: 14.1 / 28.2 / 42.3 / 56.4 (adjustable)		
Float Voltage (V)		Default setting: 13.5 / 27 / 40.5 / 54 (adjustable)		
Charge Algorithm		GEL/OpzV, AGM, LFP, WET/Flooded or user defined algorithm		
Temperature Compensation (mV/℃)		-18 (12V), -36 (24V), -54 (36V), -72 (48V)		
Protection		PV short circuit/reverse polarity, output short circuit, over-temperature		
Operating Temperature (℃)		-30 to 60 (full rated output up to 40)		
Humidity (%)		95, non-condensing		
Maximum Altitude (m)		5000 (full rated output up to 2000)		
Environmental Condition		Indoor type 1, unconditioned		
Pollution Degree		PD2		
Data Communication		CAN / RV-C / Bluetooth / WiFi		
Dry Contact Output Triggers		High PV voltage, low/high battery voltage, high/low temperature, float active, solar charger error, day detection		
Enclosure				
Colour		Black		
Power Terminals		16 mm² / AWG 6		
IP Rating		IP40 (electronic components), IP20 (connection area)		
Weight (kg)		1.2	1.5	
Dimensions (mm)		181 x 148 x 52	181 x 148 x 67	
Standards				
Safety Standards		EN/IEC 62109-1/2 / UL 1741 / CSA C22.2 NO.107.1-16		



D11 Digital Power Distribution Unit

FEATURES



- Rated input current at 70A
- Maintenance-free design with centralized control of lighting, awning, water pump, tank monitoring and switch inputs in a single enclosure
  - 11 x DC outputs:
    - 2 x 20A MOSFET-controlled outputs
    - 2 x 10A MOSFET-controlled dimmable outputs
    - 6 x 15A MOSFET-controlled dimmable outputs
    - 1 x 15A MOSFET-controlled footstep outputs
- Built-in current sensing for real-time monitoring of each load's power consumption
  - 2 dry contact outputs
  - 5 signal inputs
  - Supports 2 x resistive water tank sensors (RSA/RSD)
  - Supports 4 x capacitive water tank sensors (RSE-A)
- Comprehensive protection includes input/output overcurrent, input undervoltage, input reverse polarity, short-circuit, and internal overtemperature protection
- Supports Bluetooth communication
- Supports wireless switch via RF and Bluetooth smart sensors



PICO II

- Wireless switch panel with RF technology
- Customizable button icons
- Available in black and white
- Built-in lithium cell battery
- Surface mounting
- Dimensions: 72 x 72 x 11.5 mm

RSE-A

- Capacitive water tank sensor
- Precise measurement with 5% as one step



RSA / RSD

- Resistive water tank sensor
- Measurement level 0, 25%, 50%, 75% and 100%



BM500 Pro

Battery Shunt

FEATURES

- Monitors auxiliary battery voltage, current, SoC, and remaining runtime for accurate system management
- Up to 600A current measurement for 12V ~ 48V lead-acid & lithium battery systems, supporting system voltages up to 70V
- 3-channel battery voltage monitoring (1 × auxiliary + 2 × starter)
- Programmable dry-contact outputs: 2A @30Vdc or 0.5A @125Vac, for controlling external devices
- CAN and RS485 communication
- High measurement accuracy (± 0.4% Current, ± 0.3% Voltage)
- Versatile applications: ideal for marine, RVs and utility vehicles



Model NO.	BM500 Pro
Electrical	
Supply Voltage Range (V)	9 ~ 70
Auxiliary battery voltage range (+B1) (V)	9 ~ 70 (Single voltage monitoring)
Starter battery voltage (+V2, +V3) (V)	1 ~ 70 (Dual voltage monitoring)
Current sensing range (A)	± 600
Continuous current (A)	± 500
Battery capacity range (Ah)	10 ~ 10000
Battery types	AGM, GEL, Flooded, LFP
Voltage accuracy (%)	± 0.3
Current accuracy (%)	± 0.4
General	
Operating Temperature (℃)	-20 ~ 50
Storage temperature (℃)	-30 ~ 70
Supported Expansion Modules	Display / Battery Temperature Sensor / Dry Contact Output
External Display Power Supply	+ 12V / 2.5W
Communication	CAN / RS485
Temperature Monitoring	1 channel (Expansion supported)
IP protection	IP20
Dimensions (mm)	105 × 105 × 63

BS SERIES

Smart Battery Charger

BS1225-3 / BS1240-3 12VDC 25A / 40A **BS2420-3** 24VDC 20A

FEATURES



- Designed for mobile and marine onboard battery charging applications
- Active PFC design with compact size and high efficiency up to 88%
- TBB Premium II multi-stage charging algorithm for lead-acid batteries
- Compatible with lithium batteries
- Managed charging with built-in battery protection features to help extend battery life
- Automatic temperature compensation for optimized charging performance
- Optional remote switch
- Silent design for low-noise operation
- Three isolated charging outputs, supporting two auxiliary batteries and one slave charger for the starter battery

Model NO.	BS1225-3	BS1240-3	BS2420-3
Electrical			
Output Voltage in PS Mode (V)	13.5 ± 0.27		27.0 ± 0.5
Max Output Current (A)	25	40	20
Nominal AC Input (Vac, Hz)	165 ~ 265, 50 / 60		
Charging Algorithm	5 steps: soft start, bulk, absorption, float, recycle		
Absorption Voltage (V)	AGM: 14.4; GEL: 14.1; LFP: 14.4; WET: 14.7		AGM: 28.8; GEL: 28.2; LFP: 28.8; WET: 29.4
Float Voltage (V)	AGM: 13.5; GEL: 13.5; LFP: 13.5; WET: 13.7		AGM: 27.0; GEL: 27.0; LFP: 27.0; WET: 27.4
Charging Current (A)	25	40	20
Min Battery Voltage (V)	2		4
Efficiency (%)	88		
Input / Output Connector	IEC socket / M4 screw (16mm²)		
Output	2+1		
Ripple Noise (mV p-p)	≤ 200		
Regulation Accuracy (%)	≤ 2		
Cooling	Fan cooling		
Operating Temperature (°C)	-20 ~ 60 (40 ~ 60 reduce the current)		
Protection			
Short Circuit	Output shutdown; automatically restarts after the short circuit is removed		
Reverse Polarity	Charging disabled		
Charger Overtemperature	Shut down the charger		
Battery Overtemperature	Shut down the charger		
Structure			
Housing	Aluminum + plastic		
Dimensions (mm)	249 × 165 × 74		
Weight (kg)	1.6		
IP Rating	IP22		

ETA USB Charger

Type C: 60W

FEATURES



- Dual USB-A and USB-C outputs for fast charging and broad device compatibility
- Smart protocol detection for Android and iOS devices
- Compatible with 12V and 24V vehicle systems
- High efficiency up to 94% with low output ripple
- Comprehensive protection against overcurrent, overtemperature, short circuit, and more
- Wide operating temperature range from -10℃ to 60℃
- UL 94 V-0 flame-retardant rating

Model NO.	**ETA**
Electrical	
Input Voltage Range (V)	9 ~ 31
Output (USB Type-A)	Max 24W: 5V / 3A, 9V / 2.67A, 12V / 2A Charging protocol: AFC, SCP, FCP, QC, BC1.2 (Apple 2.4A)
Output (USB Type-C)	Max 60W: 5V / 3A, 9V / 3A, 12V / 3A, 15V / 3A, 20V / 3A Charging protocol: PPS, PD, AFC, SCP, FCP, QC
Dual Outputs (USB Type-A + USB Type-C)	Max 24W: 5V / 4.8A (Double outputs: USB Type-A + USB Type-C)
Efficiency (%)	94
Others	
Operating Temperature (℃)	-10 ~ 60
Flame-Retardant Rating	UL 94 V-0
Input Terminal	6.3mm push-in flat blade terminal
Dimensions (mm)	39.40 × 35.75; Hole 30

TBB POWER

TBB INSIDE

POWER YOUR ENDLESS RIDE

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