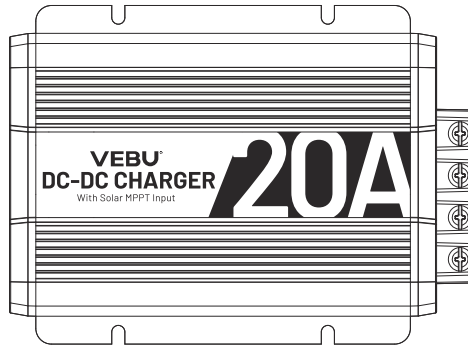
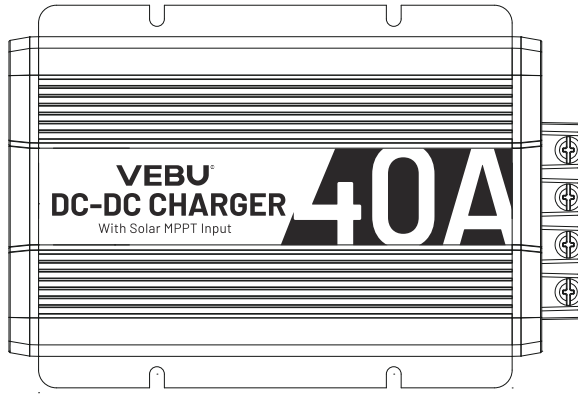
VEBU®

DC-DC INTELLIGENT BATTERY CHARGER 20A/40A





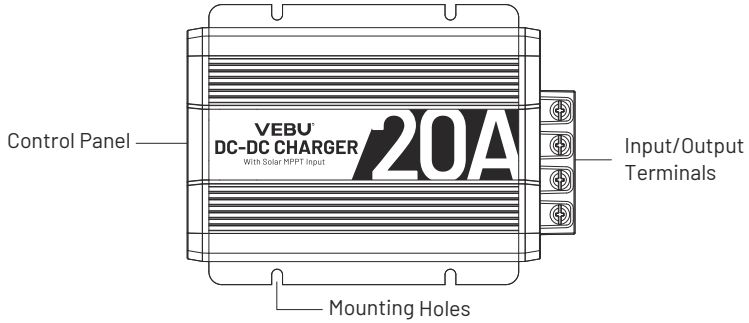
VB-DCDC20-01 / VB-DCDC40-01

SAFETY PRECAUTIONS

WARNING! To avoid any personal injury, please read the safety instructions below.

- It is best to have professional guidance when installing and using the charger. People with physical disabilities, visual impairments and olfactory impairments (including children) should not use this device. Children should be supervised to ensure they do not play with battery chargers.
- Do not disassemble or modify the charger, otherwise it will cause a safety accident.
- This charger is only suitable for battery types listed in the manual. Do not use it for other purposes.
- When charging, please select the charging procedure applicable to the auxiliary battery. If you choose the wrong charging procedure, it may cause certain damage to your auxiliary battery, and even cause safety accidents in serious cases. If you are not sure what kind of charging procedure you should choose, please consult relevant professionals.
- Please use the fuses and wires recommended in the instruction manual, otherwise it may damage the product and cause serious safety accidents.
- NEVER smoke or allow a spark or flame in vicinity of battery or engine. This may cause the battery to explode.
- Make sure battery is disconnected from the product each time before cleaning or changing
- Do not use the product if it is physically damaged or has visibly cracked cables. To prevent safety hazards, please contact the manufacturer or customer service.
- Charger repairs should only be performed by authorized professionals, as inadequate servicing may cause severe harm.
- Do not operate in salty, wet, or damp environments; in the vicinity of corrosive fumes; in the vicinity of combustible material; in areas with risks of explosions
- Certain components within this device may retain residual voltage even following power disconnection or fuse tripping. Exercise appropriate caution during handling.

PRODUCT FUNCTIONS

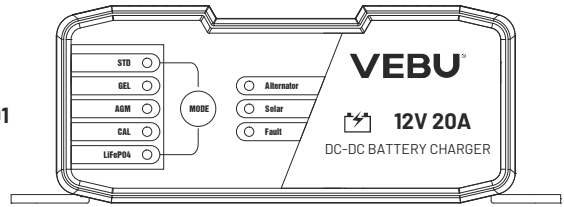


The DC-DC charger suits for 12V lead acid batteries and 12V LiFePO4 batteries. It is workable for 12V alternators. The unit also supports solar panel input and has MPPT strategy. The MPPT strategy allows solar panels to work at the maximum power point. The high power density design concept ensures the charger has excellent efficiency, and the ultra-thin size is suitable for limited installation space.

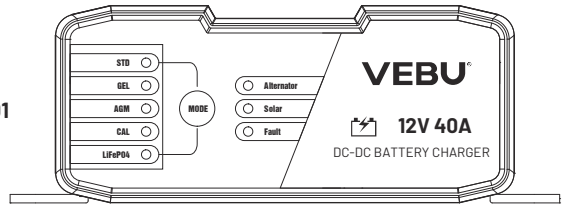
- Compatible for multi battery types
- 20A/40A Solar MPPT
- Dual input from both solar and alternator
- Efficiency up to 94%
- Standard & Smart Alternator Compatible
- Smart protections including Low-voltage , Over-voltage , Over- Temperature and Reverse Polarity

1. Display Panel

VB-DCDC20-01



VB-DCDC40-01



2. LED Indicators

Charging LED Indicator

Alternator (Green LED)	Solar (Green LED)	Battery Type (Green LED)	Fault (Red LED)	Charging Stage
Short Flash	Solid	Solid	Off	Bulk or Absorption
Long Flash	Solid	Solid	Off	Float
Solid	Short Flash	Solid	Off	Bulk or Absorption
Solid	Long Flash	Solid	Off	Float

Fault Indicator

Alternator (GreenLED)	Solar (GreenLED)	Battery Type (GreenLED)	Fault (RedLED)	Status	Solutions
Quick Flash	Off	Quick Flash	Off	Low Voltage Detected at alternator input or output battery	Check alternator input voltage or output battery
Off	Quick Flash	Quick Flash	Off	Low Voltage Detected at Solar input or output battery	Check solar input voltage or output battery
Quick Flash	Off	Off	Quick Flash	High Voltage Detected at alternator input	Check alternator input voltage
Off	Quick Flash	Off	Quick Flash	High Voltage Detected at Solar input	Check solar input voltage
Off	Off	Quick Flash	Quick Flash	High Voltage Detected at output battery	Check output battery voltage
Off	Off	Off	Quick Flash	Over Temperature	Let the unit cool down for some time or get better ventilation
Off	Off	Solid	Quick Flash	Output Short Circuit	Check Output

THE INSTALLATION

1. Selection of Installation Location

The DC-DC charger is as thin as 1.81 inch and it can work up to 140°F, so it can be installed in the engine cabin. But please note that if you want to get a higher charging efficiency, you should try to get it stay away from the high-temperature parts of the engine cabin. This model without silicon potting, so please keep away from shaking, wet, dusty and muddy enviroments. When installing, the charger should be put closely to the auxiliary battery and please select the proper charging mode. After selecting the installation location, please install the charger with screws.

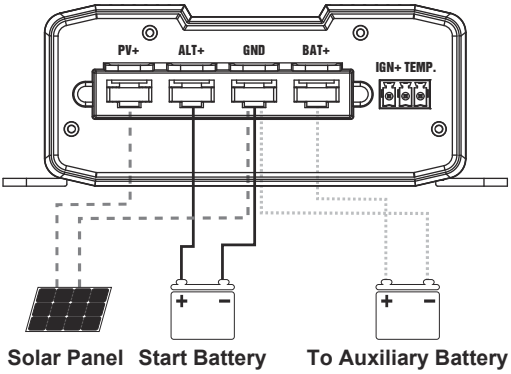
2. Selection of Cables

The DC-DC charger comes with no wire as standard. So if you need to connect the wire, please check the below table with suggested wire sizes. You can choose wires that are equal to or larger than this size.

PV+, ALT+	<5m	<10m
BAT+, GND	10AWG	8AWG
IGN+TEMP	20AWG	20AWG

3. Wiring Steps

In order to prevent accidental short circuit during installation, it is recommended to turn off the car during the installation and the negative pole of the starter battery should be disconnected. Please note that vehicle power down may result in loss of memory data. If the installation is powered on, please proceed with caution.



1.The **BAT+** is connected to the positive pole of the auxiliary battery.

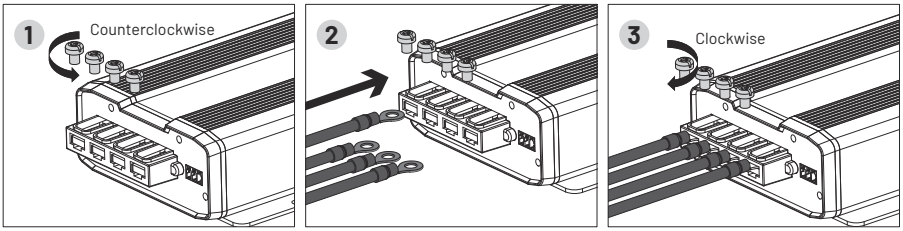
2.The **GND** is connected to the negative pole (-) of the auxiliary battery, or connect both Auxiliary Battery negative (-) terminals and DC-DC charger common Ground cable to vehicle chassis ground.

3.The **ALT+** is connected to the positive (+) pole of start battery.

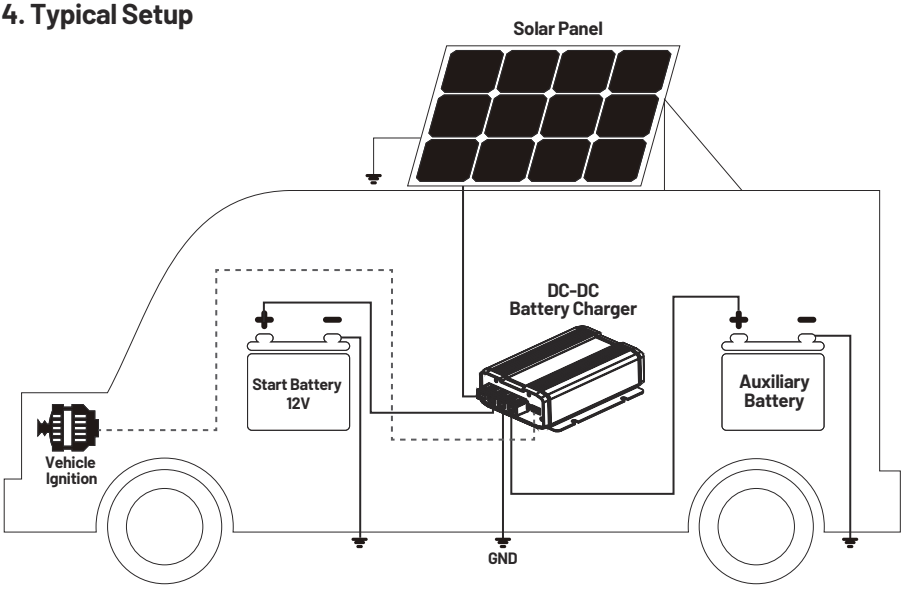
4.The **PV+** is connected to the positive pole (+) of the solar panel if necessary. If the solar panel is not needed, just leave it unconnected. Pay attention to insulation protection. Connect the negative pole of solar panel to common Ground cable or to vehicle chassis ground.

5.The **IGN+TEMP** are connected or not, depends on the type of vehicle alternator. For standard alternators, just leave it alone. Pay attention to insulation protection. For smart alternators, please connect to the ignition terminal of the vehicle. You can usually find such a connection point in the car fuse box.When the car is started, the terminal is power on. When the car is turned off, the terminal is power off.
External temperature sensor is applied for detecting temperature of battery when being charged. To avoid life span shortening of battery caused by charging at high or low temperature, the charger compensates temperature for the highest charging voltage.The standard of compensation is based on charging voltage at normal temperature ±18mV /°C. At high temperature, charging voltage will be lower than that at normal temperature. Charging voltage at low temperature is higher than that at normal temperature.

6.If all are ready, the charger will start to work.



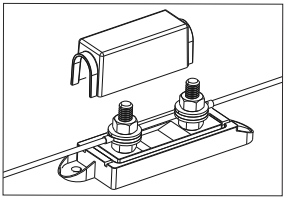
4. Typical Setup



Start Battery 12V

5. Fuse Specification

All recommended fuses should be connected in series in circuit. Bolt down fuses are preferred because they ensure a low resistance connection. Blade type fuses are not recommended as they can result in a high resistance connection which causes excess heat and may damage the fuse holder and/or the wiring. Self-resetting circuit breakers are not recommended as they may trip prematurely due to the heat generated by the current flowing through the wires.



Model:	VB-DCDC20-01	VB-DCDC40-01
BAT+, GND+, ALT+,PV+	40A	60A
IGN+TEMP	3A	3A

SPECIFICATION

Model:	VB-DCDC20-01			VB-DCDC40-01	
Operating Conditions					
Alternator Input Voltage	12V Alternator 11.6 -18V				
Solar Input Voltage	12-28V				
Max Input Current	20A			40A	
Max Continuous Output Current	20A			40A	
Max Output Power	250W			500W	
No Load Current	<10 mA				
Typical Efficiency	>94%@full load(On board efficiency)				
Battery Type	12V STD, GEL, AGM CAL & LiFePO4				
Min O/P Battery Voltage	4V for STD, GEL,AGM,CAL 0V for LiFePO4				
Charging Battery Capacity	40-250Ah			80-500Ah	
Working Temperature	-4°F to 140°F				
Dimensions	7.05 × 5.08 × 1.81 in			7.72 × 5.08 × 1.81 in	
Charge Control					
Charge Type	3stage				
Charging Profile	STD	GEL	AGM	Calcium	LiFepO4
Bulk	Constant 20A at 12.5V			Constant 40A at 12.5V	
Absorption	14.4V	14.1V	14.7V	15.3V	14.5V
	Constant voltage until current drop to 1A				
Float	13.4V	13.5V	13.4V	13.6V	13.6V
Operating Mode					
Input	Turn on			Turn off	
12V Standard Alternator	>13.1V			<12.6V	
12V Smart Alternator	>12.0V			<11.6V	

VEBU SUPPORT

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