DURITE®

TECHNICAL SPECIFICATIONS

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UK CA | CE

0-852-30 - DC to DC Battery Charger 12/24V 40A

Durite DC-DC Charger 12/24VDC (9-32VDC). 40A. Dual Input Solar and Multiple Battery Types: STD, AGM, GEL, CAL and LiFePo4. IP66. Over Heat, Over Voltage, Under Voltage and Reverse Polarity Protection. Smart Alternator Compatible. E Mark R10 EMC, UKCA, CE Approved.

The DC40A charger suits for 12V lead acid batteries and 12V LiFePO4 batteries. It is workable for both 12V alternators and 24V 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. It's robust design is built to work in some harsh environments.

QUALITY ASSURED

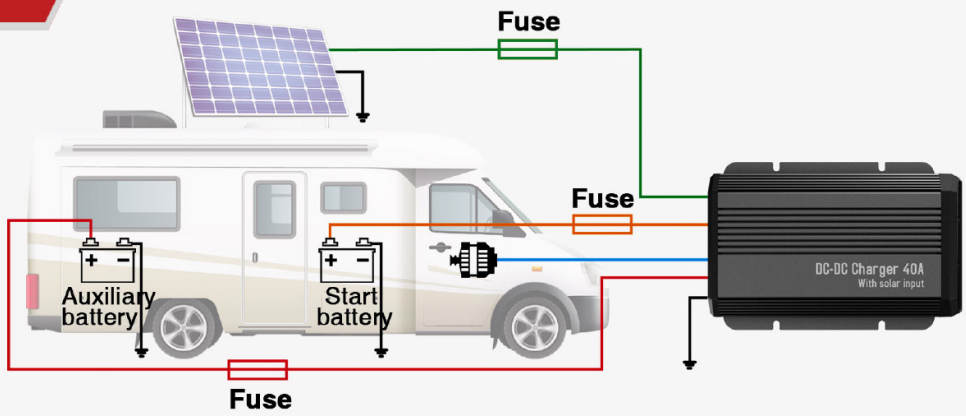
WARNINGS

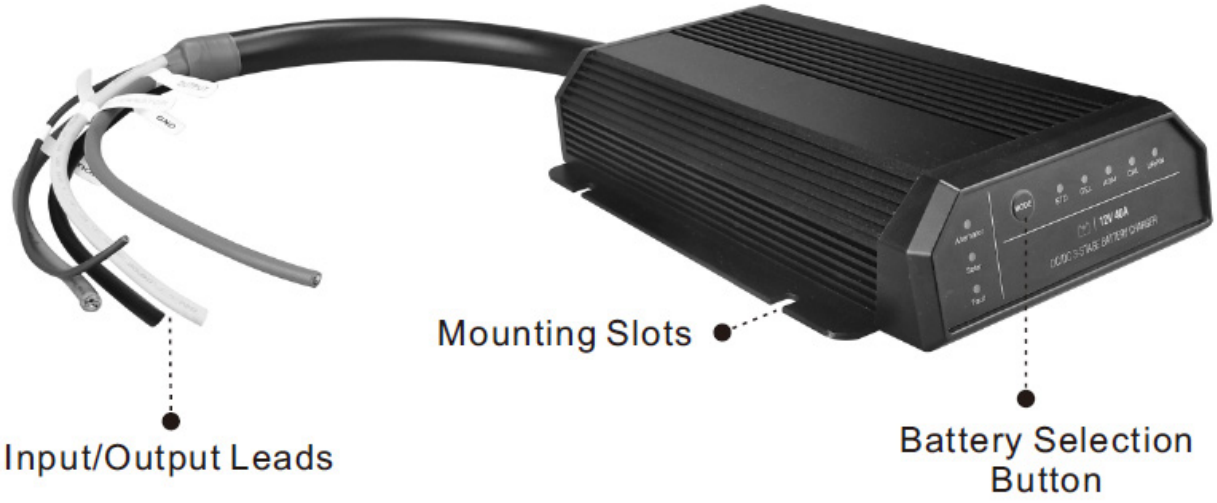
1. Use charger for charging AGM, GEL, STD, CAL and LiFePO4 batteries only.
2. Do not use battery charger for other types of batteries, these may burst and cause injury to persons and damage to property.
3. Use only attachments recommended or sold by manufacturer. Use of non-recommended attachments may result in fire, electric shock, or injury.
4.. Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way. Take it to a qualified professional for inspection and repair.
5. Do not disassemble charger. Take it to a qualified professional when service or repair is required. Incorrect reassembly may result in electric shock or fire.
6. To reduce risk of electric shock, disconnect charger from circuit before attempting any maintenance or cleaning.
7. Always charge battery in a well-ventilated area. NEVER operate in a closed-in or restricted area without ad-equate ventilation. WARNING: Risk of explosive gas.
8. Locate charger as far away from battery as DC charger cable's permit.
9. Do not expose charger to rain or snow.
10. NEVER charge a frozen battery. If battery fluid (electrolyte) is frozen, bring into a warm area to thaw before charging.
11. NEVER allow battery acid to drip on charger when reading specific gravity or filling battery.
12. NEVER set a battery on top of charger.
13. NEVER place charger directly above battery being charged. Gases from battery will corrode and damage charger.
14. NEVER touch the battery clips together when the charger is energized.
15. WARNING: Wear complete eye protection and clothing protection, when working with lead-acid batteries.
17. Make sure someone is within range of your voice or close enough to come to your aid when you work with or near a lead-acid battery.
18. Have plenty of fresh water and soap nearby for use if battery acid contacts skin, clothing, or eyes. If battery acid contacts skin or clothing, wash immediately with soap and water.
19. Avoid touching your eyes while working with a battery. Acid particles (corrosion) may get into your eyes! If acid enters your eye, immediately flood eye with running cold water for at least 10 minutes. Get medical attention immediately.
20. Remove all personal metal items such as rings, bracelets, neck laces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring.
21. Take care not to drop a metal tool or other metal onto the battery. Metal may cause sparking or short circuit the battery or another electrical devise. Sparking may cause an explosion.
22. Always operate battery charger in an open well-ventilated area.
23. NEVER smoke or allow a spark or flame in the vicinity of the battery or engine. Batteries generate explosive gases!

PRODUCT FUNCTIONS

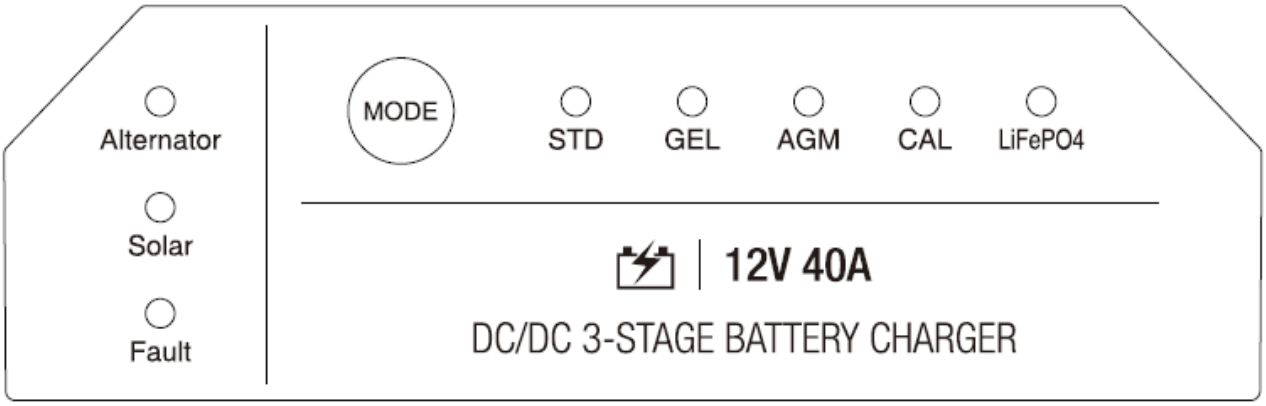
DUAL INPUT OPERATION

- Dual battery charging from both solar and alternator（12V/24V) inputs.
- Solar panel regulator with Maximum Power Point Tracking (MPPT).





DISPLAY PANEL



LED CHARGE INDICATOR

Alternator /Solar LED	Battery Type LED	Charging Stage
Short flash	Solid GREEN	Bulk or Absorption
Long flash	Solid GREEN	Float

FAULT LED INDICATOR

Alternator LED	Solar LED	Battery Type LED	Fault LED	Trouble	Solution
Solid GREEN		Solid GREEN		Low voltage detected at Alternator input	Check battery voltage
	Solid GREEN	Solid GREEN		Low voltage detected at Solar input	Check Solar voltage
Solid GREEN	Solid GREEN	Solid GREEN		Low voltage detect at Alternator or Solar input	Check voltage of both Alternator and Solar panel
		GREEN Flashing	Solid RED	Overvoltage detected at output	Check auxiliary battery voltage & cable connections
GREEN Flashing			Solid RED	High voltage detected at Alternator input	Check battery voltage
	GREEN Flashing		Solid RED	High voltage detected at Solar input	Check Solar voltage
			Solid RED	Over temperature	Let the unit cool down for some time or get better ventilation

INSTALLATION

Selection of Installation Location

The DC40A charger is designed for a variety of installation environments, including chassis rail, engine cabin, driver cabin etc. DC40A charger uses the advanced technology so that the product can work stabely in the shaking, wet, dusty and muddy environment. The DC40A charger is as thin as 39mm and it can work up to 80˚C, 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. When installing, the charger should be put closely to the auxiliary battery and please select the proper charging mode. After selecting the installation position, please fix the charger with screws.

Selectioin of Cable Size

The DC40A charger wire may be not long enough for installation. So if you need to extend the wire, please check the below table with suggested wire sizes. You can choose wires that are equal to or larger than this size.

SOLAR (Green) ALTERNATOR (Yellow) OUTPUT (Red) GND (Black)	<5m	<10m
	13mm² (8AWG)	20mm² (6AWG)
IGNITION (Blue)	0.5mm² (20AWG)	0.5mm² (20AWG)

It is very important that the extension wire and the reserved wire are well connected, and the low conduction impedance can ensure the stable and reliable operation of the product. It is recommended to use Butt Splice Connectors. After completion, heat shrinkable tubing must be used for insulation to prevent short circuits.

Butt Splice Connector	BN8 for 10-8AWG	

WIRING

In order to prevent accidental short circuit during installation, it is recommended to turn off the vehicle 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.

1. The OUTPUT (Red) is connected to the positive pole of the auxiliary battery.

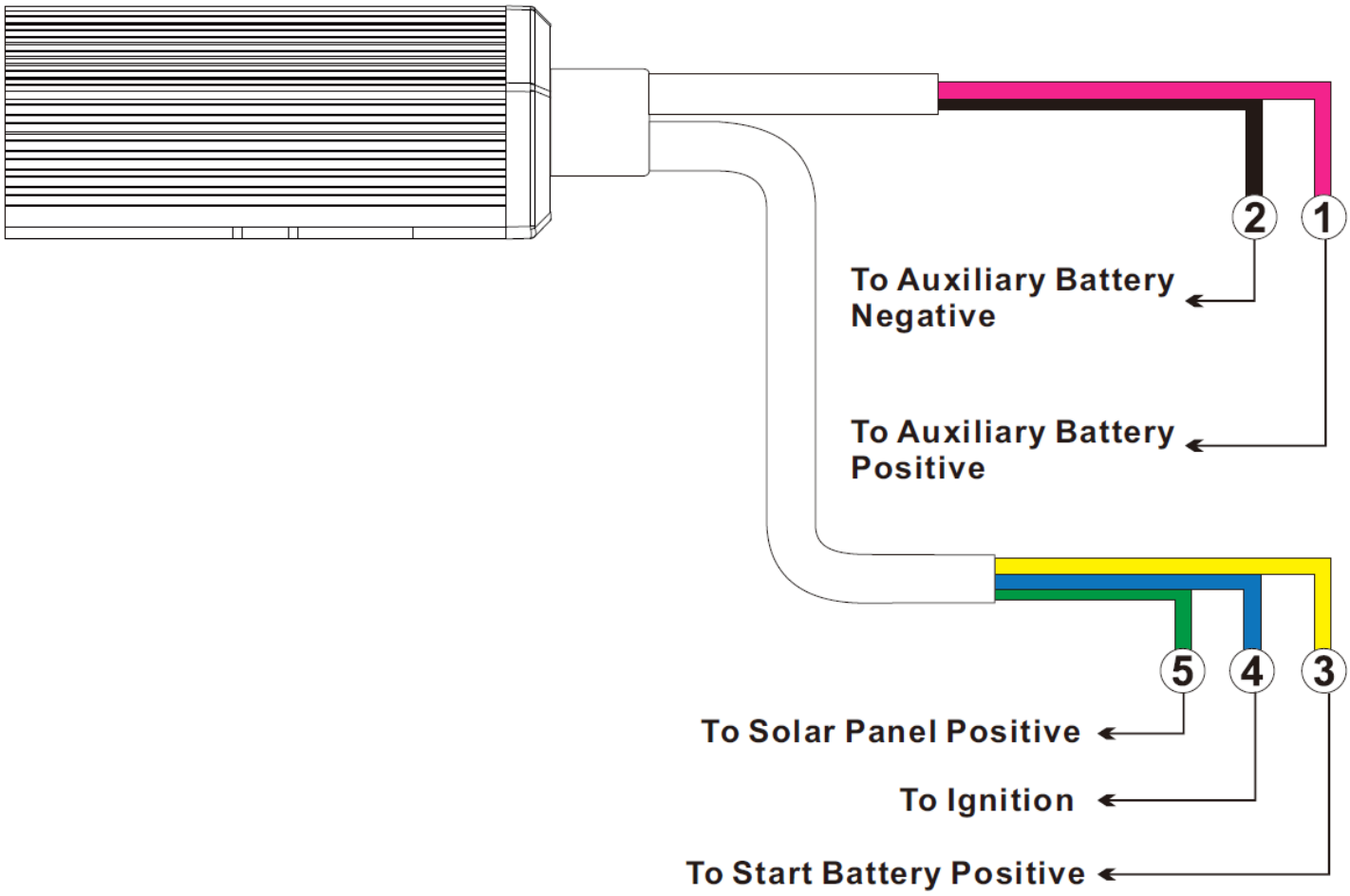
2. The GND (Black) is connected to the negative pole (-) of the auxiliary battery, or connect both Auxiliary Battery negative (-) terminals and DC-DC charger common Ground cable to vehicle chassis ground.

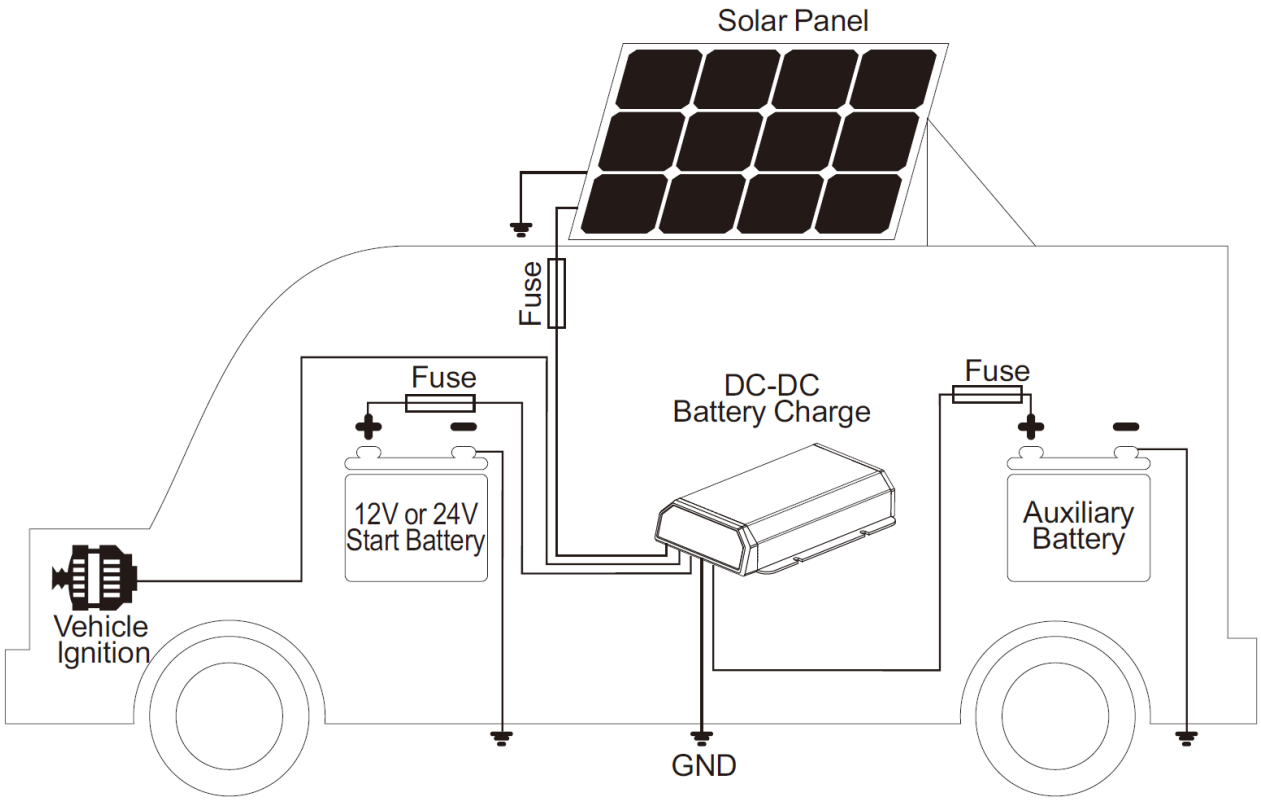
3. The Alternator (Yellow) is connected to the positive (+) pole of start battery.

4. The IGNITION (Blue) is connected or not depends on the type of vehicle alternator. For standard alternators do not use but 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 vehicle fuse box. When the vehicle is started, the terminal is powered on. When the vehicle is turned off, the terminal is power off.

5. The Solar (Green) 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.

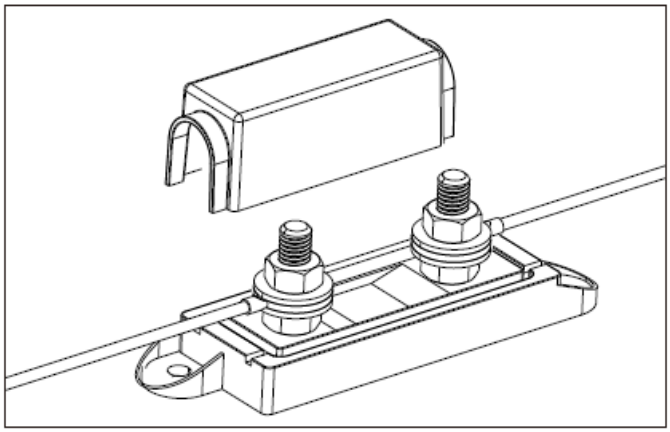
6. Restore the negative connection of the battery. If all connections are complete, the charger will start to work.





Fuse Specification:

All recommended fuses should be connected in series in circuit. Bolt down fuses are prefered 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.



SOLAR (Green)	60A~70A 400W 30A~40A 200W
ALTERNATOR (Yellow) OUTPUT (Red)	60A~70A
IGNITION (Blue)	3A

SPECIFICATIONS

Charge Control					
Charge Type	3 Stage				
Charging Profile	STD	GEL	AGM	Calcium	LiFePO4
Maximum Voltage	14.4V	14.1V	14.7V	15.3V	14.5V
Float Voltage	13.4V	13.5V	13.4V	13.6V	
Operating Mode					
Input	Turn On		Turn Off		
12V Standard Alternator 24V Standard Alternator	>13.1V >26.2V		<12.8V <25.6V		
12V Smart Alternator 24V Smart Alternator	>12.0V >24.0V		<11.8V <23.6V		

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Type	DC-DC Battery Charger
Input Voltage	9-32VDC
Solar Input Voltage	9-32VDC
Max Input Current	45A
Input Fuse Rating	60A
Continuos Output Current	40A
Output Fuse Rating	60A
Minimum Start Voltage	4.0VDC or 0.0V for LiFePo4
Standby Current	<15mA
Battery Types	STD, AGM, GEL, CAL LiFePo4
Efficiency	95%
Ingress Protection	IP66
Material Construction	Aluminium Housing
Weight	0.950Kg
Dimensions	L 188mm x W 127mm x H 39 mm
Operating Temperature	-20˚C to +80˚C
Storage Temperature	-20˚C to +80˚C
Certificate	E Mark R10, UKCA, CE, RoHS

TECHNICAL DRAWING