

# AWILCO

## INTELLIGENT BATTERY CHARGER

### AW019640A

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## USER MANUAL



Please be sure to read and save the entire manual before using the energy system. Misuse may result in damage to the unit and/or cause harm or serious injury.

**PLEASE KEEP THE MANUAL  
FOR FUTURE REFERENCE**

#### SERVICE CONTACT INFORMATION

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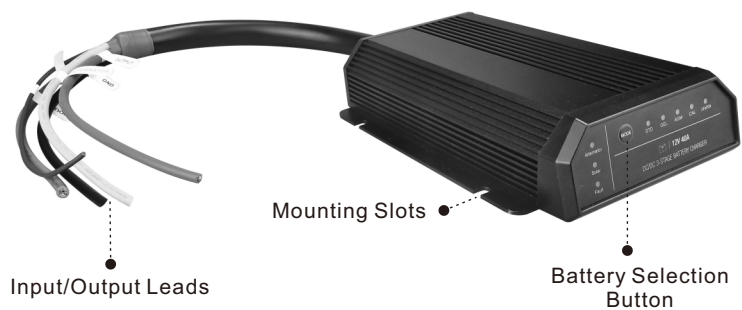
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# 1 SAFETY PRECAUTIONS

**⚠ 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.

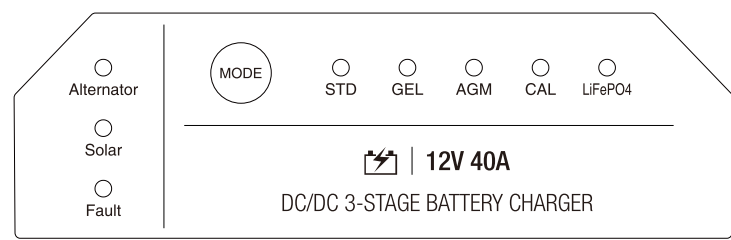
# 2 PRODUCT FUNCTIONS



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 built to work in some harsh environments, which is very common for refitted off-road vehicles and touring cars.

- Compatible for multi battery types such as Standard Lead Acid, Gel, AGM, Calcium content or LiFePO4
- 40A Solar MPPT
- Dual input from both solar and alternator
- Efficiency up to 95%
- Excellent performance in harsh environments
- IP66, resistant to dust, water and shock damage
- Smart alternator compatible
- Smart protections including Low-voltage, Over-voltage, Over-Temperature and reverse polarity

## 2.1 Display Panel



## 2.2 LED Charge Indicator

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

## 2.3 Fault LED Indicators

| 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 |

## 3 THE INSTALLATION

### 3.1 Selection of Installation Location


The DC40A charger is designed for a variety of installation environments, including chassis rail, engine cabin, driver cabin and etc. DC40A charger uses the advanced technology so that the product can work stably 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.

### 3.2 Selection 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.

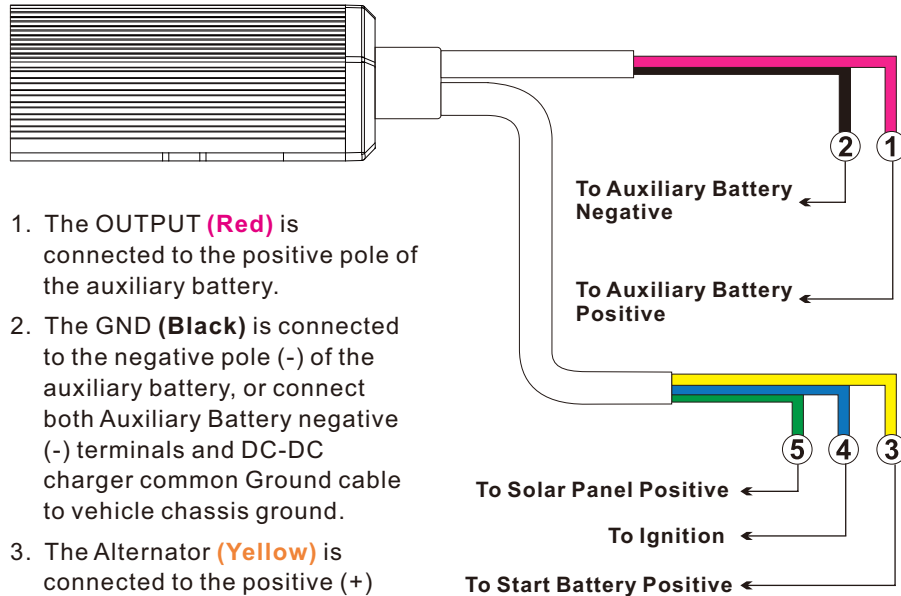
|                     |                            |                            |
|---------------------|----------------------------|----------------------------|
| SOLAR (Green)       | <5m                        | <10m                       |
| ALTERNATOR (Yellow) |                            |                            |
| OUTPUT (Red)        | 13mm <sup>2</sup> (8AWG)   | 20mm <sup>2</sup> (6AWG)   |
| GND (Black)         |                            |                            |
| IGNITION (Blue)     | 0.5mm <sup>2</sup> (20AWG) | 0.5mm <sup>2</sup> (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 |  |
|-----------------------|-----------------|---|

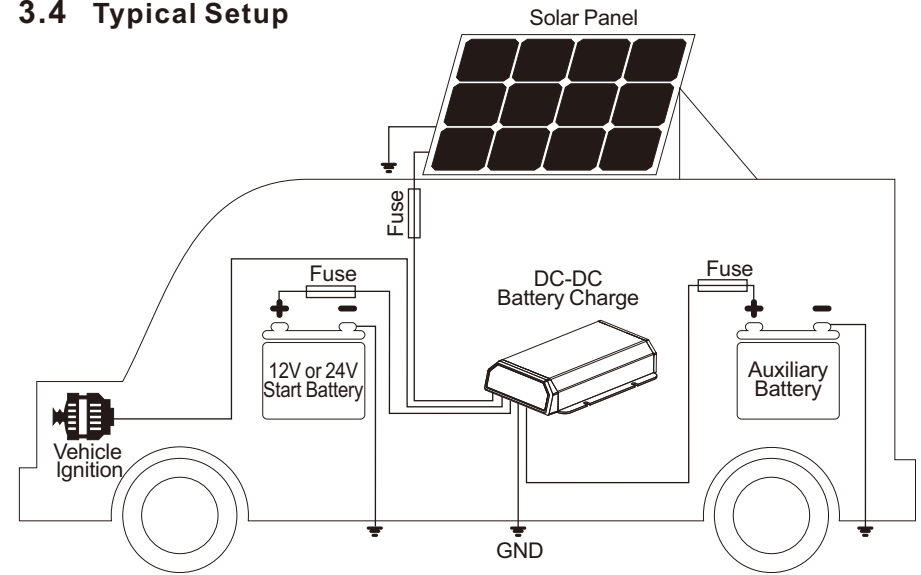
### 3.3 Wiring Steps

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.



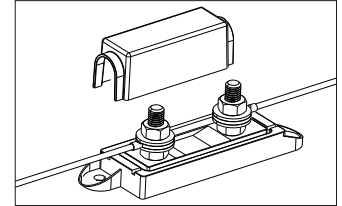
1. The OUTPUT (Red) is connected to the positive pole of the auxiliary battery.
2. The GND (Black) is connected to the negative pole (-) of the auxiliary battery, or connect both Auxiliary Battery negative (-) terminals and DC-DC charger common Ground cable to vehicle chassis ground.
3. The Alternator (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, 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.
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 are ready, the charger will start to work.

### 3.4 Typical Setup



### 3.5 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.



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

## 4 SPECIFICATION

| Operating Conditions                               |                                  |       |                  |         |         |
|--|----------------------------------|-------|------------------|---------|---------|
| Vehicle Input Voltage                              | 9 -32V                           |       |                  |         |         |
| Solar Input Voltage                                | 9 -32V                           |       |                  |         |         |
| Max Input Current                                  | 45A                              |       |                  |         |         |
| Input Fuse Rating                                  | 60A                              |       |                  |         |         |
| Continuous Output Current                          | 40A                              |       |                  |         |         |
| Output Fuse Rating                                 | 60A                              |       |                  |         |         |
| Minimum Start Voltage                              | 4VDC or 0.0V for LiFePO4         |       |                  |         |         |
| Standby Current                                    | <15 mA                           |       |                  |         |         |
| Battery Type                                       | STD, GEL, AGM, CALCIUM & LiFePO4 |       |                  |         |         |
| Operating Temperature                              | -20°C to +80°C                   |       |                  |         |         |
| IP Rating  | IP66                             |       |                  |         |         |
| Weight   | 950g                             |       |                  |         |         |
| Dimensions   | 188x127x39 mm                    |       |                  |         |         |
| 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<br>24V Standard Alternator | >13.1V<br>>26.2V                 |       | <12.8V<br><25.6V |         |         |
| 12V Smart Alternator<br>24V Smart Alternator       | >12.0V<br>>24.0V                 |       | <11.8V<br><23.6V |         |         |



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FLEXIBLE POWER SOLUTIONS