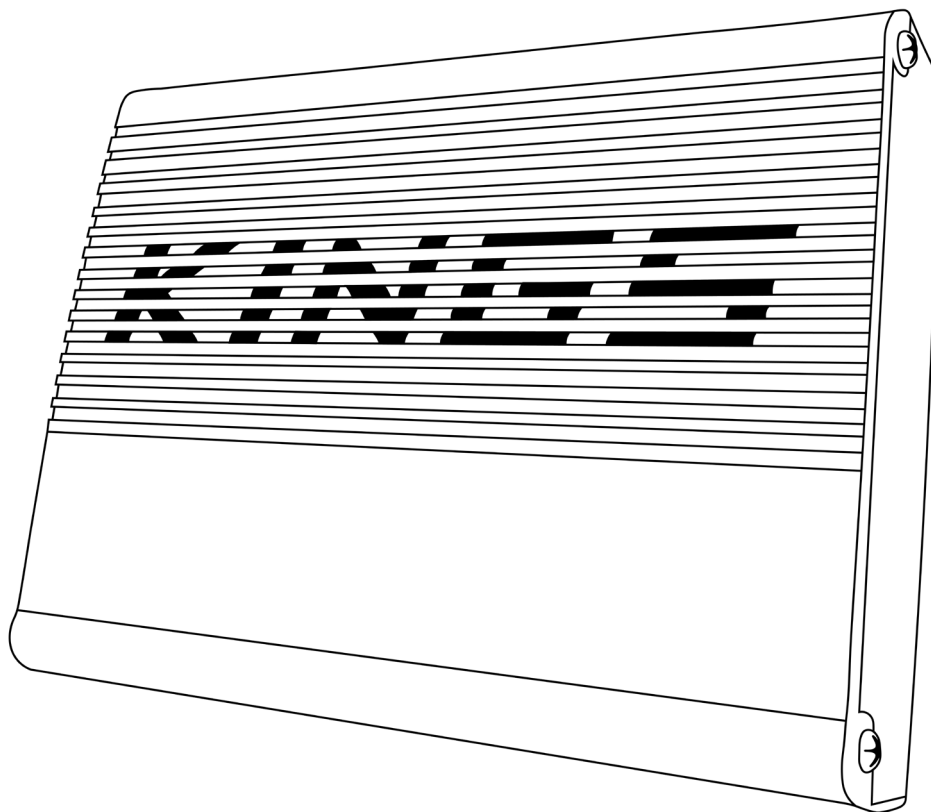




12V DC-DC BATTERY CHARGER USER MANUAL

AKEP-DC20A_01 - 20A DC-DC Charger &
AKEP-DC25A_01 - 25A DC-DC/MPPT Charger



V1.6

**PLEASE READ AND UNDERSTAND THIS MANUAL
COMPLETELY BEFORE USING THIS PRODUCT.**

SAFETY INFORMATION

Please read the user manual and safety instructions carefully before using the appliance.

- For 12V Deep Cycle Lead Acid based Batteries only 80-300Ahr
- For unregulated 12V nominal Solar Panels only: Voc <25V (25A DC-DC/MPPT model only)
- NOT for under bonnet installation
- Install AWAY from flammable fumes, external heat sources, liquids and protected from oil, grease, dust & weather
- Ensure good VENTILATION around the unit
- Disconnect the BATTERY supply and take care when installing power cables
- Do NOT cut the Aux Battery Temperature Sensor wire. Unit will be inoperable if it is damaged
- Ensure the unit is well secured to the chassis of the vehicle
- Fuses are NOT supplied.
- Attach the Aux Battery Temp Sensor to the negative - Terminal.
- Multi-Chemistry Battery Selection Wires – only fit 1 wire to Aux Battery positive + terminal. Tape up the other 2 wires.

TECHNICAL DATA

Max. Charging Current	20A / 25A
Solar Input Voltage Range (25A DC-DC/MPPT model)	9 - 25V
Min. Input start-up Voltage - Solar (25A DC-DC/MPPT model)	14.5V
Ideal 12V Nominal Solar Panel Size (25A DC-DC/MPPT model) Voc <25V	360W
Vehicle Input Voltage Range	11.9 - 25V
Min. Input start-up Voltage - Vehicle	12.2V
Vehicle Input Voltage Range (Ign wire NOT fitted)	12.8 - 25V
Min. Input start-up Voltage - Vehicle (Ign Wire NOT fitted)	13.8V
Min. Aux Battery Voltage	5V
Idle Current Draw	20-30mA
Operation Temperature - Aux Battery	-10 °C - 50 °C
Dimensions	142mm x 125.6mm x 33.5mm
Weight	~750g
Temperature Compensation	Yes

LEDs & FAULTS INDICATIONS



25A DC-DC/MPPT model shown

“BATTERY”, “CAR” & “SOLAR” (25A DC-DC/MPPT model only)
 LED = Green = Terminals connected correctly
 LED = Red = Terminals REVERSE connected (Check connections)

“CALCIUM”, “AGM”, & “LEAD ACID”
 LED = Green = indicates Battery Selection wire connected

“STATUS” LED CHARGING INFORMATION

1 Green flash	Charger Idle	Normal - no action required
2 Green flash	Charger testing mode	Normal - no action required
3 Green flash	Bulk charging	Normal - no action required
4 Green flash	Absorption stage	Normal - no action required
5 Green flash	Float Stage	Normal - no action required
Solid Green	Charging Complete	Normal - no action required

“STATUS” LED FAULT CODES INFORMATION

1 Red flash	Aux Battery Temperature error	Temperature sensor may be damaged
2 Red flash	Aux Battery outside Operational Temp range: -10oC - 50oC	Charging will recommence after Aux Battery returns to operational temperature
3 Red flash	Bulk & Absorption Charging stages timed out (>10hrs)	Aux Battery may be old or high output load attached
4 Red flash	Battery under Voltage	Aux Battery voltage is too low to charge
Solid Red	Internal System Fault	Internal electronics damaged - unit inoperable
1 Green/1 Red flash	Charger over Temperature	Self-protection shutdown, will re-start when cooled
1 Green/2 Red flash	Aux Battery over Voltage	Charging stopped to prevent damage to Aux Battery
1 Green/3 Red flash	Aux Battery low Voltage warning	Aux Battery Voltage at ~50%. Recharge ASAP to prevent damaging the Aux Battery
1 Green/4 Red flash	Charging Input over Voltage	Charging stopped to prevent damage to Aux Battery

CHARGING VOLTAGE LIMITS

BATTERY TYPE	CHARGING VOLTAGE AT 25°C	FLOAT VOLTAGE AT 25°C
Wet Lead Acid/GEL	14.2 V	13.3 V
AGM	14.6 V	13.3 V
Calcium	15.3 V	13.3 V

RECOMMENDED FUSES

Vehicle Starter Battery – 50A Fuse

Auxiliary Battery – 50A Fuse

Solar – 50A Fuse

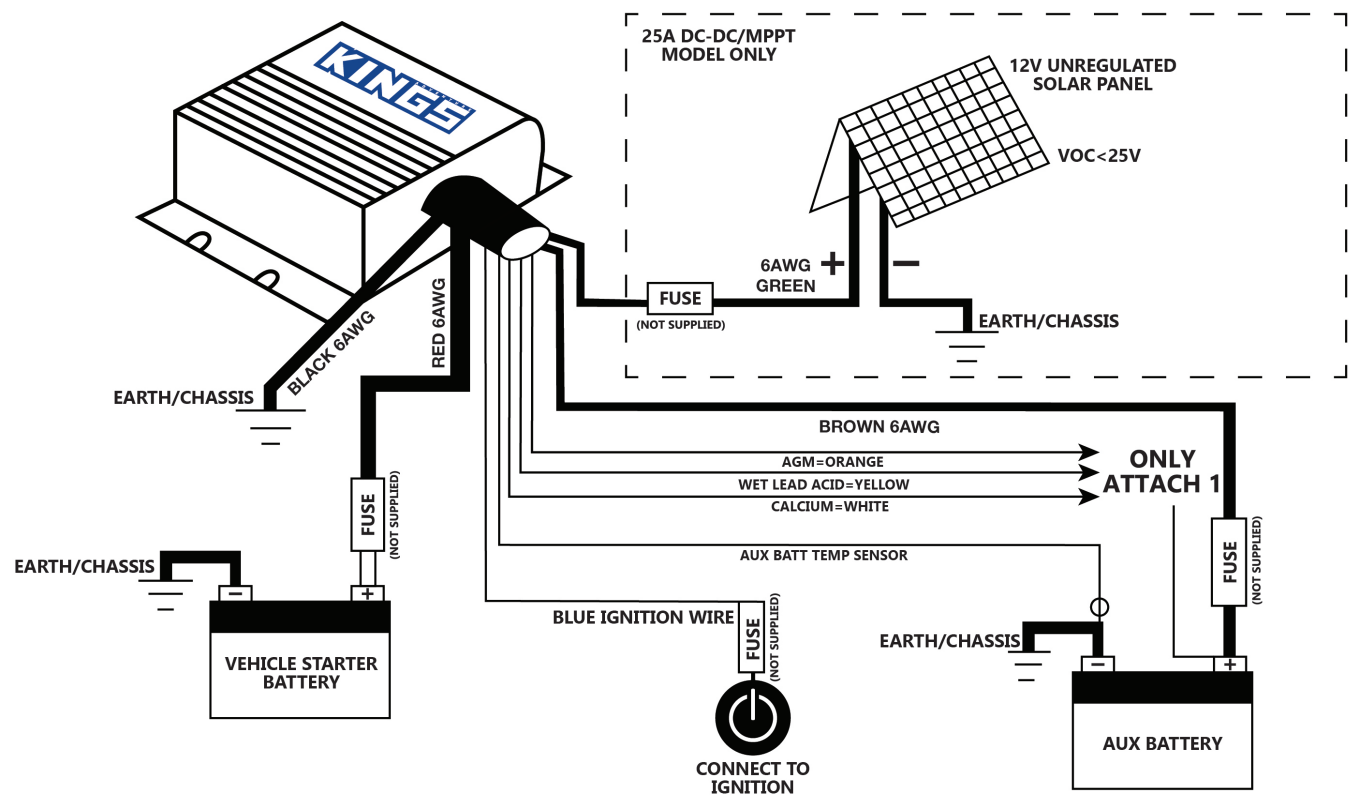
Ignition Wire – 2A Fuse

Note – Fit the fuse as close as possible to the item it is protecting!

CABLE IDENTIFICATIONS

MULTI-CHEMISTRY BATTERY SELECTION	POWER CABLES
WHITE = Calcium	BLUE = Ignition Wire
YELLOW = Wet, Lead Acid/GEL	BROWN = OUTPUT to Aux Battery
ORANGE = AGM	BLACK = Common Ground
BLACK with Ring Terminal = Aux Battery Temperature Sensor	RED = Vehicle INPUT
	GREEN = Solar INPUT (25A DC-DC/MPPT model)

WIRING GUIDE



Cable Length to Vehicle Battery

Vehicle Type	up to 8m		8m - 15m	
	Smart or Eco type Alternator (or equivalent)	Blue Ign. Wire MUST be fitted	Blue Ign. Wire MUST be fitted	
All other "Traditional" alternators	AWG 6	Blue Ign. Wire recommend be fitted**	AWG 4	Blue Ign. Wire MUST be fitted

** The unit can operate without the Blue Ignition Wire fitted - refer Vehicle Manufacturer's Manual & Technical Data table (page 3) for "Ign Wire NOT fitted" input voltage range.

INSTALLATION ADVICE

1. Ensure all cable connections are made with lugs that have been crimped (and if possible soldered) and protected with appropriately sized heat shrink (or plastic sleeves).
2. Locate and securely attach the DC-DC Charger as close as possible to the Auxiliary Battery.
3. Disconnect the Vehicle Starter Battery's negative (-) terminal cable.
4. Connect the Brown cable to the Auxiliary Battery positive (+) terminal.

Note - Fit a 50A Fuse (not supplied) to the cable as close as possible to the Auxiliary Battery.

5. Connect the Black (Common Ground) cable to the Auxiliary Battery negative (-) terminal and to the Vehicle chassis (ground).

Note - The Black cable, Vehicle Starter Battery negative (-) terminal & Auxiliary Battery negative (-) terminal MUST be connected via the common ground.

6. Connect the Red cable to the Vehicle Starter Battery's positive (+) terminal.

Note - Fit a 50A Fuse (not supplied) to the cable as close as possible to the Vehicle Starter Battery.

7. Connect the Auxiliary Battery Temperature Sensor to the Auxiliary Battery negative (-) terminal.

Note - DO NOT cut this Temperature Sensor as the unit will be inoperable if it is damaged.

8. Connect the Blue Ignition Wire to a fused positive 12V ignition source.

Note - Fit a 2A Fuse (not supplied) to the wire as close as possible to the ignition source.

9. Connect the preferred coloured Battery Selection Wire to the Auxiliary Battery positive (+) terminal. Tape up (or use heat shrink) to insulate the other 2 wires and secure.

Note - Orange wire for AGM, Yellow wire for Wet Lead Acid/GEL, and White for Calcium batteries.

10. For 25A DC-DC/MPPT Chargers - Connect the Green cable to the Solar Panel positive (+) terminal. Must be 12V nominal Solar Panel ($V_{oc} < 25V$), and with any existing regulator or controller removed.

Note - Fit a 50A Fuse (not supplied) to the cable as close as possible to the Solar Panel.

11. Connect the Solar Panel negative (-) terminal to the Black (common ground) cable/Vehicle Chassis ground (refer 5. above).

12. Re-attach the Vehicle Starter Battery's negative (-) terminal cable.

12 MONTH LIMITED WARRANTY

WARRANTY PERIOD:

Full 12 month warranty from date of purchase against all manufacturing defects.

WHAT DOES THE WARRANTY COVER?

Under normal usage conditions, this warranty covers:

- a. Any defect in design or manufacture which results in the product failing to perform substantially as described in authorised advertising or literature.
- b. We will either repair or replace the product at our discretion providing that the fault is found to have been caused by a design or manufacturing defect and not misuse or tampering.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. The benefits provided to you as the consumer by this warranty are in addition to other rights and remedies available to you under the law.

THE WARRANTY DOES NOT COVER:

- a. Any damage resulting from improper use
 - b. Faulty installation or modification made during installation
 - c. The cost of removing and reinstalling the product
 - d. Travel and /or other expenses due to customer's remote location
 - e. Transport charges and damage in transit. It is your responsibility to deliver and pick up your product, including any costs associated with the postage of your repair or replacement product. If you do freight your product we recommend that you insure against loss or damage.
 - f. Any loss directly or indirectly associated with the product failing to operate.
 - g. Damage caused by mould, insects, animals, misuse, incorrect operation, adverse weather, accidents and fair wear and tear
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TO MAKE A CLAIM, PLEASE ENSURE YOU RETAIN YOUR SALES RECEIPT OF PURCHASE

1800 88 39 64



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