

## KISAE ABSO DC-DC BATTERY CHARGER EURO 6 (SRCS) INSTALLATION GUIDE

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## TABLE OF CONTENTS

TABLE OF CONTENTS .....	2
1. References.....	3
2. Introduction.....	3
3. Warning.....	3
4. Precautions.....	3
5. Installation.....	4
5.1 Pre-Installation Preparation: .....	4
5.2 Mounting the Charger:.....	5
5.3 Plan and lay in cables: .....	5
5.4 Charger Connections:.....	5
5.5 Typical System Layout: .....	6
5.6 Wiring Installation:.....	7
5.7 Pre-Powerup Checks: .....	8
6. Unit Operation.....	8
6.1 Unit On/Off:.....	8
6.2 Understanding the Charging Mechanism:.....	8

## 1. References

Ref No.	Title	Document No.	Rev	Date
1.	Kisae Abso DC to DC Charger Owners' Manual	MU DMT1230	B	N/A

## 2. Introduction.

This document describes the method to install a DC-DC Battery Charger on a vehicle compliant with Euro 6 Emission Standards and fitted with a Smart Regenerative Charging System (SRCS).

## 3. Warning.

The DC-DC Battery Charger is designed for installation by qualified and competent electrical engineers. **Keep away from Children.**

Qualified and competent engineers will be familiar with safe working practices, local health & safety legislation and the proper and safe use of tools and equipment. Therefore, not all obvious practices that may lead to system damage, injury or death are detailed within this installation guide. If you are in any way unsure about any aspect of the installation or use of your DC-DC Charger, contact your Dealer or Merlin Equipment for advice.

## 4. Precautions.

Please ensure that prior to installation you have read and understood the Kisae Abso DC to DC Battery Charger Owners' Manual.

In addition, we would particularly draw your attention to the 'Important Safety Information' section as contained within the Manual.

In addition, we would also draw your attention to the following:

- *This product is designed for use in 12 & 24Volt DC systems only. Use in other than its designed application may result in fire, electric shock or other injury.*
- *DO NOT disassemble, modify or alter. Doing so may result in an accident, fire or electric shock.*
- *DO NOT cover or obstruct any air vent openings or install in a zero-clearance compartment.*
- *USE ONLY in vehicles with a NEGATIVE GROUND. Failure to do so may result in fire, electric shock, damage or other injury.*
- *External fuses (Not supplied with the unit) MUST be installed in each positive feed to the unit. Each fuse must be located as close to the battery terminal as possible (within 30cm).*
- *FUSES: Use the correct ampere rating when replacing fuses. Failure to do so may result in fire, injury, electric shock or damage.*
- *DO NOT install or operate the Charger in an explosive atmosphere.*
- *DO NOT install or expose the Charger to excessive temperatures or humidity.*
- *Install the Charger in a clean, dry environment. DO NOT install or expose the unit to wet or damp areas.*
- *If in any doubt consult a suitably qualified and competent engineer or the supplier.*
- *MAINTENANCE. If you have problems or suspect device failures DO NOT attempt to repair the unit yourself. Return it to your Dealer or Merlin for servicing.*

## 5. Installation.

The Charger should be mounted vertically with the battery terminals at the bottom. The Charger should NOT be mounted upside down.



Vertical Mounting (Terminals at Bottom)

### 5.1 Pre-Installation Preparation:

- Disconnect the main positive and negative from each battery bank to ensure no power is on the vehicle (up to 2 battery banks)
- Remove items (e.g. seats, access panels etc.) to ensure easy installation
- Survey the sites where you wish to locate components.

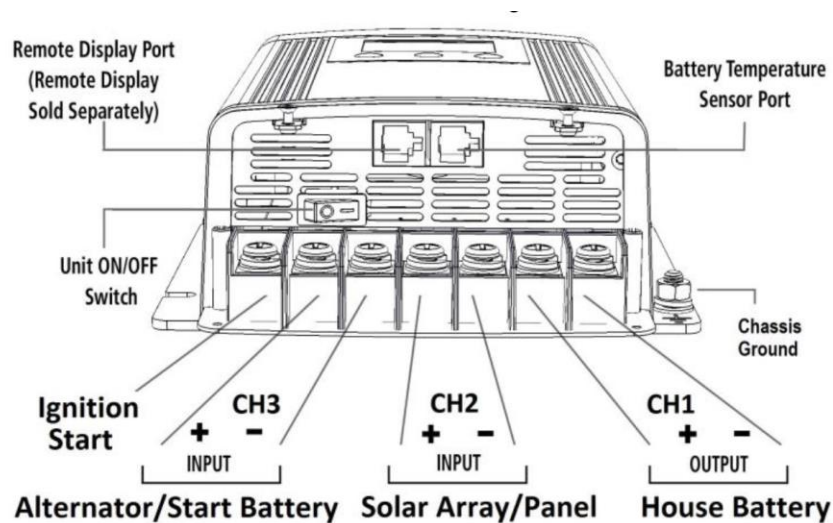
## 5.2 Mounting the Charger:

We recommend installing directly to bulkheads using stainless steel bolts. All nuts should be either of the Nyloc type or protected with a shake proof washer. Appropriately sized washers should be used to mount components to distribute component weight and loadings.

## 5.3 Plan and lay in cables:

Lay in the cables / wiring to the various components as per the system diagram. Ensure all cables are routed away from vehicle control devices and are suitably fixed and secured. Cables and wiring should not be installed above vehicle access points.

## 5.4 Charger Connections:

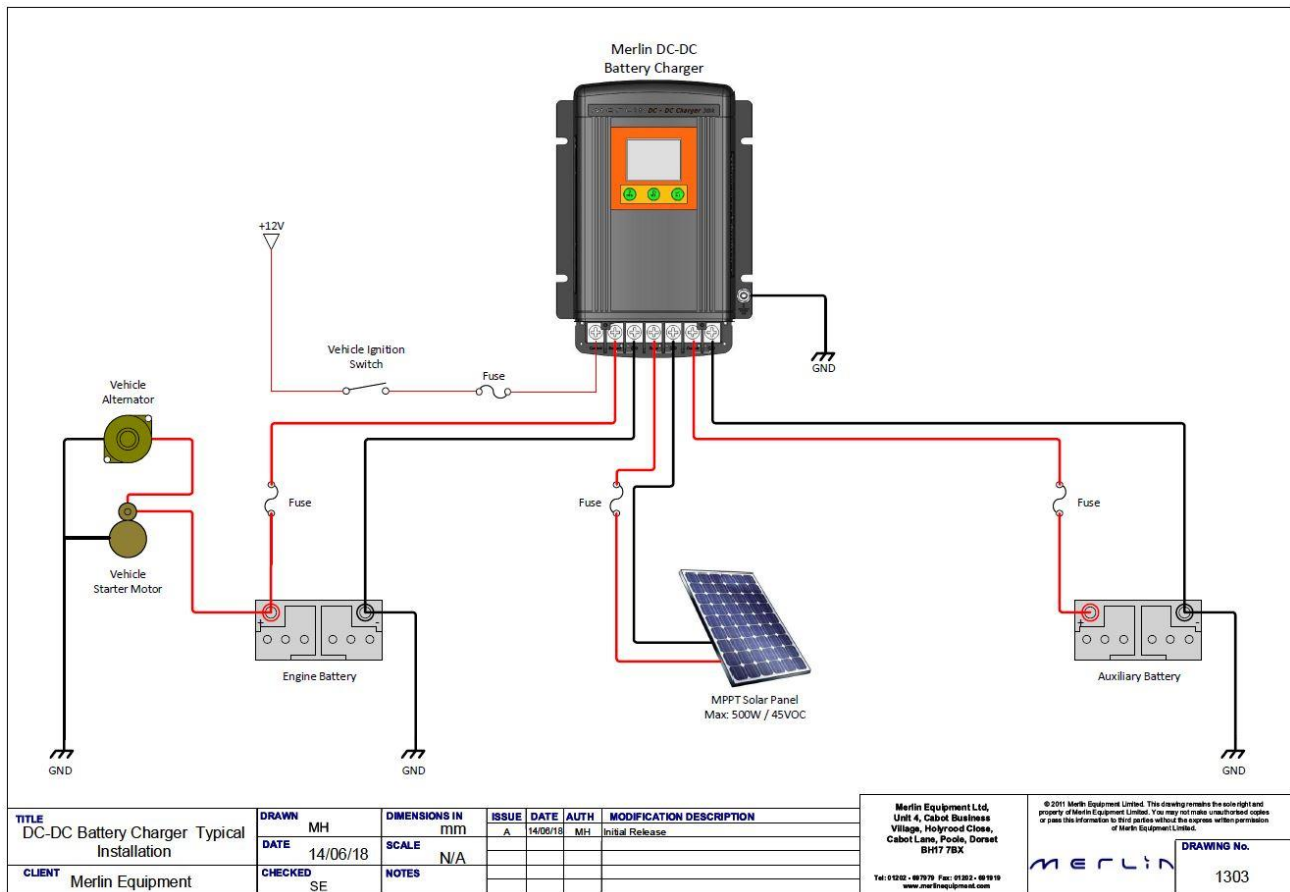


For typical system layout see the installation drawing on page 6 of this manual.

- **Caution! Ensure always that the correct polarity is observed on the Charger wiring. Serious damage to the Charger will occur if wires are shorted or connected the wrong way around.**
- **Caution! Ensure always that the correct torque setting is applied to the Charger connections and earth stud. Serious damage to the Charger will occur if the fixings are overtightened.**

## 5.5 Typical System Layout:

The diagram below shows a typical layout which will give you an understanding of how the system installs and the component parts required.



Unit Connections CH1 (Auxiliary Battery) & CH3 (Engine Battery) would normally be connected. The Solar Panel would not normally be connected for typical vehicle applications but is shown for information.

Please note that for this unit to operate with SRCS Vehicles, the 'Ignition Start' Terminal MUST be connected to the Vehicle Ignition Switch or KL15 Terminal.

- **Caution & Warning! We recommend that appropriately rated fuses or circuit breakers are inserted between batteries, Solar Panel, Ignition Switch and the Charger to protect against short circuits.**
- Fuses should be located as close as possible to the battery positive terminal of each battery bank
- Cables must have a current rating higher than that of the associated fuse.
- Negative cables must have the same current rating as the associated Positive cabling.
- Consideration will need to be given to voltage drop based upon cable run lengths and cables should be sized accordingly.

Battery connection cables should be sized based upon the following table. The length detailed is based upon the total length from the engine to auxiliary battery banks.

**12V 30A Battery Charger**

Length (m)*	3.0	4.5	6.0	7.5	9.0
Cable Size (mm <sup>2</sup> )	6	8.5	16	20	35
Cable Size (AWG)	10	8	6	4	2

\*Based upon finely stranded extra flexible high current cable

**12V 50A Battery Charger**

Length (m)*	3.0	4.5	6.0	7.5	9.0
Cable Size (mm <sup>2</sup> )	8.5	16	20	35	50
Cable Size (AWG)	8	6	4	2	1

\*Based upon finely stranded extra flexible high current cable

**Recommended Fuse Ratings**

Fuse	Engine battery	Auxiliary Battery	Solar Panel	Ignition Switch
12V 30A Charger	50A	40A	15A Per Panel	1A
12V 50A Charger	70A	60A	15A Per Panel	1A

**5.6 Wiring Installation:**

1. Remove the DC compartment cover by removing the two screws located on the top surface of the unit.
2. Connect one end of the positive wire (red wire) to the CH1 (Auxiliary Battery) charger positive terminal and the other end to battery fuse. Keep the connection between the auxiliary battery and charger as short as possible.
3. Run another positive wire from the fuse to the auxiliary battery positive terminal.
4. Connect the negative (black) wire and between the CH1 charger negative terminal and the auxiliary battery negative terminal.
5. Use the same method to connect to the CH3 (Engine Battery) and CH2 (Solar Array/Panel) if required.
6. For vehicles using Smart Regenerative charging systems (SRCS - Euro 6 Compliant), connect the Ignition Start terminal to the Ignition Switch (KL15) via a 1A fuse.
7. Place the DC Compartment cover back to the original position and secure the cover using the two screws provided.

## **5.7 Pre-Powerup Checks:**

Once cabling is complete. We highly recommend following the checklist below before connecting the main battery cables

- Check security of each component
  - Check that the DC-DC Charger casing is bonded to the chassis
  - Check main battery cables against system diagrams
  - Check main battery cables are correctly sized based upon rated loads
  - Check tightness of all connections
  - Ensure all live terminals are covered with a rubber insulating boot
  - Check all negative connections are secure
- 
- ***Caution! Incorrect and reverse polarity may damage the system.***
  - ***Warning! Reverse polarity connections to batteries may cause them to explode. Check all cabling before powering up the system.***

## **6. Unit Operation.**

### **6.1 Unit On/Off:**

A Charger ON/OFF switch is located at the DC Input / Output panel of the unit. Switch to ON position to activate the charger and switch to OFF position when the unit is not in use.

### **6.2 Understanding the Charging Mechanism:**

The Charger is powered by the battery connected to the Auxiliary battery terminal (CH1). The Auxiliary battery will be charged from the Engine battery (terminal CH3) or the Solar Panel (If fitted).

Normal charger start-up voltage is 13.2V (measured at Engine battery terminal CH3). Connecting the ignition feed (KL15) to the 'Ignition Start' control terminal will reduce charger start-up voltage to 12.3V.

The reduced charger start-up voltage of 12.3V with the ignition feed connected, allows the unit to work with Euro 6 SRCS equipped vehicles.