

Electric Vehicle DC-DC Installation and Wiring Guide

Belktronix

Initial Release 111206

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Rev 1.6

Document Revision History

- 1.0 Initial release
- 1.1 Revised 4” fan to 80mm fan, changed text to match labels, fan info & wiring text
- 1.2 Added detailed mounting information and instructions for the DC-DC
- 1.3 Added more clarity for wiring sizes and precharge schematic.
- 1.4 Added pictorial view of DC-DC mounting bracket and restructured detailed install
- 1.5 Added pre-charge jumper illustrations prior to fuse install
- 1.6 Defined Pre/Post contactor connections, softstart options & connection

System Wiring

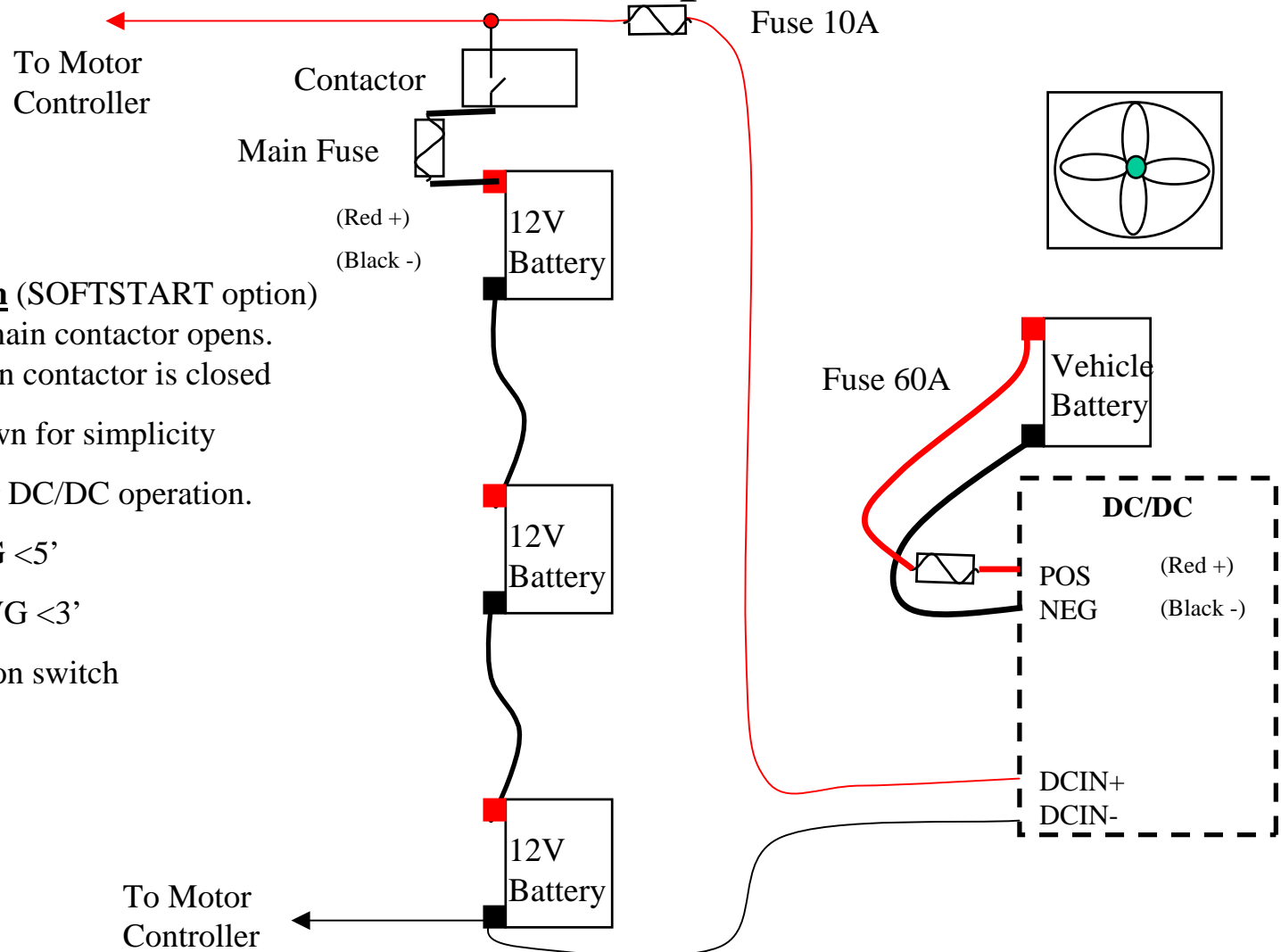
DANGER: Working with HIGH VOLTAGE Systems can be FATAL.

Follow Guidelines. Maximize Caution. Avoid Distractions.

- The following slides show Pre and Post contactor connections based on option selected (Softstart or Remote Enable)
- Each wiring task is illustrated to make it easy to follow, point to point.
- Route low signal wiring away from high current wires.
- A 3 Traction Battery string is illustrated in the diagrams, your system will have more. For custom voltages, contact factory for voltage limits.
- Quickly make the final positive connections after pre-charging for 30 seconds.
- The external 80mm cooling fan is supplied by the user. Use fan to match battery voltage, supply on/off control. Avoid low CFM fans (super quiet type).
- Enable DC-DC converter only after DCIN is powered (Remote Enable option).
- For battery pack maintenance, use a on/off switch and series 10K resistor to re-establish pre-charge prior to closing main connection (Remote Enable option).

DC-DC Power & Signal Wiring

Soft Start Auto-On Option



To Motor
Controller

Contactor

Main Fuse

(Red +)
(Black -)

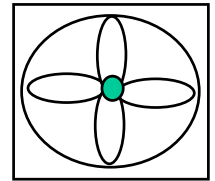
12V
Battery

12V
Battery

12V
Battery

To Motor
Controller

Fuse 10A



Fuse 60A

Vehicle
Battery

DC/DC

POS (Red +)
NEG (Black -)

DCIN+
DCIN-

Post Contactor Connection (SOFTSTART option)

Completely isolated when main contactor opens.
Automatically starts up when contactor is closed

Traction Pack String, 3 shown for simplicity

Vehicle Battery required for DC/DC operation.

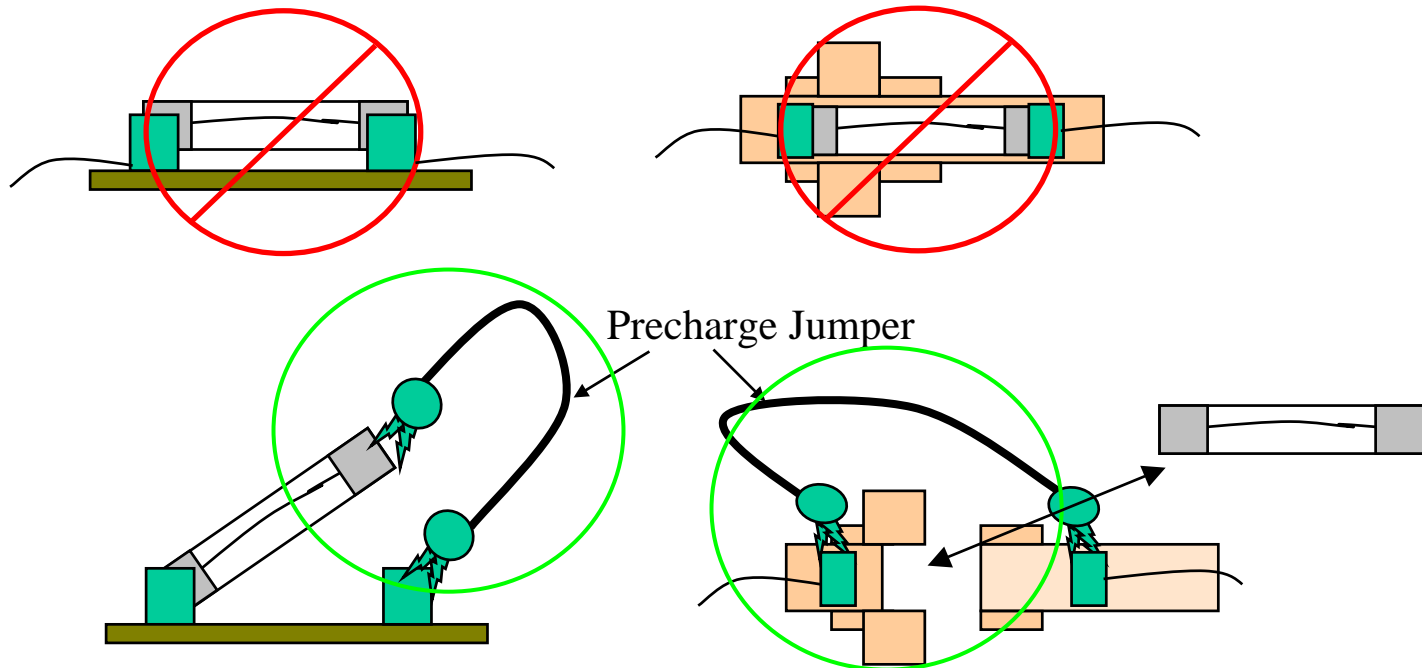
DC Input wire size 18 AWG <5'

DC Output wire size 10 AWG <3'

Use 12V fan wired to Ignition switch

Pre-Charging Internal Capacitors

PRECHARGE FIRST, then install fuses!



Do Not use on DCIN side using soft-start option!

Mechanical Information

DANGER – USE CAUTION WORKING WITH HIGH VOLTAGE AND CURRENT!

Extra hands may be needed for this installation, if mounting holes are out of reach.

Use safe wiring practices and recommended fuse ratings.

Items included with DC-DC:

- (2) ¼-20 Bolts
- (2) ¼-20 Serrated shoulder nuts
- (1) 8.7” Mounting Bracket, fin mount
- (2-4) 0.250 Female insulated Fast-on terminals

Items Required:

10Ga Wire

18Ga Wire

Fuse Holders

(2) ¼ Ring Lugs, 12-10Ga.

Fuses (1) 10A 250V. (1) 60A Automotive

Proper crimping tool required for Crimp lugs and Fast-on Terminals. Available at automotive stores.

Detailed Mechanical Installation

- The 8.7" rectangular aluminum mounting bracket slides over the centermost fin of the DC-DC with the 2 fan mounting holes facing up. The ends are ¼ through holes for mounting the threaded rods to the mounting surface.
- Locate a flat area in engine compartment which is away from direct exposure to outside elements (i.e. front grill).
- Use aluminum mounting bracket as a template and mark holes to be drilled on vehicle chassis.
- Align DC-DC with fins facing you vertically if no external fan is used. Horizontal OK with fan.
- Drill through with ¼ drill (blind holes require proper drill/tap to use with ¼-20 thread).
- Run bolts through mounting holes and secure on backside with serrated shoulder nuts.
- Secure rubber mat to mounting surface with tape, place DC-DC onto rubber mat and hold in place.
- Insert topside bracket (bracket slot facing heatsink) onto centermost heatsink fin, sliding over threaded rods.
- Tighten bolts onto bracket. Be sure DC-DC is secure. External Fan is needed if high output power or high ambient temperatures are required.
- Wire up battery ground paths to DC-DC first. Hold ring lugs securely while tightening to DC-DC high current posts.
- Use correct connection method of wiring Pre or Post contactor for DCIN wiring.
- Ready-up positive wires to DC-DC but do not install yet. Cover exposed terminals.
- For POS output post, Pre-charge with resistor lead for 30 seconds, then connect ring terminal and secure tight.
- Wire up remote enable to switched 12V (if equipped). You can use this to power the fan as well.
- Unit is ready to run when power is at DCIN terminals on the DC-DC and remote switch is enabled (if equipped).
- Softstart option will automatically enable the DC-DC internally after approximately 20 seconds.

Mounting Diagrams

(Fan shown optional)

