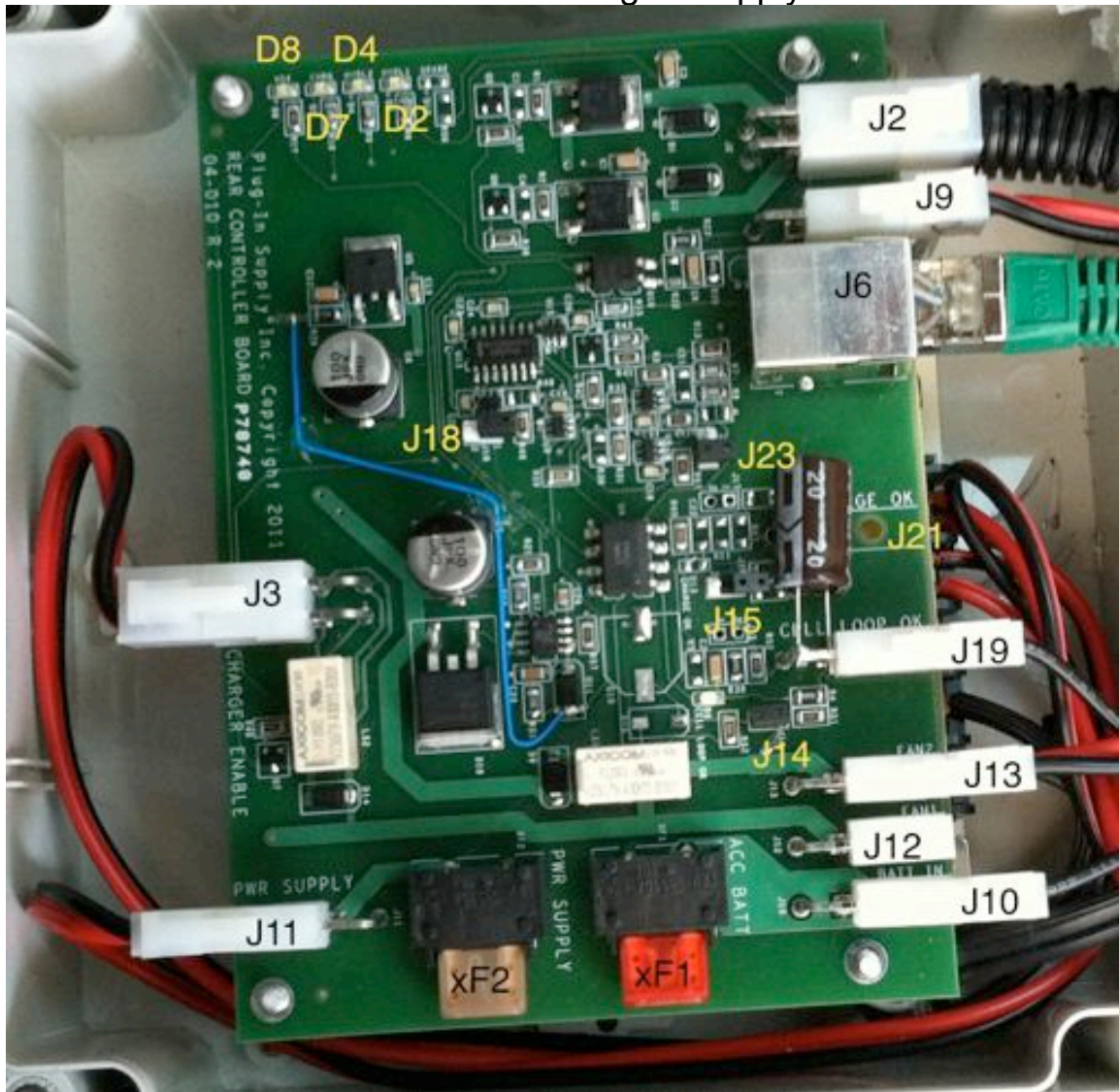


## Rear Controller Board 04-010 R2 Plug-In Supply Inc.



## Description of Inputs and Outputs

## Orientation

The fuses are at the bottom of the Rear Controller Board.

## Connectors

RJ45.

Mini-Fit Jr. headers. Mating connectors are two or four circuit receptacle housings. Molex #'s 39-01-2020, 39-01-2040, 39-00-0039.

Starting in the top right corner of the board:

#### J2 HVRL1 & HVRL2

This connector outputs 12vdc to drive the contactor relay coils. Pins 1 & 3 are HVRL1 (High Voltage ReLay 1), the B+ contactor. Pins 2 & 4 are HVRL2, the B- contactor. For regen feature to function contactors must be connected in this order.

#### J9 IGN/RDY IN

This connector input is from the 12v safety circuit that runs through the car. Pin 1 is energized with +12v after the car successfully completes its diagnostic checks after pushing start button. Pin 2 is chassis ground. This circuit is called the "Ready In" circuit after the green "Ready" light that is illuminated when the car is operating. Pin 1 must have +12v present to enable discharge (energize contactors).

#### J6 FRONT BD

This connector receives commands from the Front Controller. There is no feed back loop between the Front and Rear Controllers. The Front Controller issues commands and expects the Rear Controller to execute them. Pin assignment is described in a separate document. Mating connector is a CAT6 STP straight through patch cable to connect to the Front Controller Board. Do not use a cross over cable or improper operation will result.

#### J21 CHARGE OK

Not used. Not populated. This is used in a different application.

#### J19 CELL LOOP OK

This input connects to the bms cell loop. The bms cell loop typically consists of a series arrangement of cell boards, mounted one per cell, on top of each cell in the battery pack. Pin 1 is not used. Pin 2 is from either the B+ or B- end of the bms cell loop. The CELL LOOP OK LED D6 is lite when the cell loop is a closed circuit (less than 2k ohms). This input can also be from a bms controller with a normally closed discharge enable circuit. The other end of the cell loop circuit connects to chassis ground. Typically FAN2 J13 pin 2 is used for this ground.

### J13 FAN2

This output drives a 12vdc fan for cooling. 300mA max current. Pin 1 is +12vdc. Pin 2 is ground. Fan is on during Ready state.

### J12 FAN1

This output drives a 12vdc fan for cooling. 300mA max current. Pin 1 is +12vdc. Pin 2 is ground. Fan is on during Ready state and Charge state.

### J10 BATT IN

This input is from the car's 12vdc accessory battery. J10 must be powered all the time. Pin 1 is +12vdc, pin 2 if ground.

### xF1 10A Fuse

Mini blade 10A fuse powers the board when car is in Ready state and powered by the car accessory battery.

### xF2 5A Fuse

Miniblade 5A fuse powers the rear board when the car is in Charge state and powered by the power supply.

### J11 PWR SUPPLY

+12vdc power input from power supply. Power supply is universal input, 85 to 240vac, 50 to 60 hz. Pin 1 is +12v, pin 2 is ground.

### J3 CHARGER ENABLE

This is a set of DPDT relay contacts to control the charger. Pin 1 and pin 3 are normally closed (NC). Pin 2 and pin 4 are normally open (NO). Typically pins 1 & 3 are used to short the charger control wires (black and red wires on Elcon charger).

### Status LEDs

There are 5 status LEDs on the Rear Controller that indicate what is happening.

### RDY LED D8

This green LED is illuminated when car is in Ready state. Ready In voltage must be present at J9 and CELL LOOP OK, J19 is grounded (NC), enabling discharge function.

**CHRG LED D7**

This green LED is illuminated when car is in charge mode. Rear board must have received ignition pulse (key on) to enable this state. If car does not enter charge mode when plugged into shore power, cycle ignition on-off to enable charge mode.

**HVRL1 LED D4**

This LED is illuminated whenever B+ contactor (HVRL1) is energized.

**HVRL2 LED D2**

This LED is illuminated whenever B- contactor (HVRL2) is energized.

**CELL LOOP OK D6**

This LED is illuminated whenever the cell loop is shorted closed (less than 2k ohms) or jumpers J14 and J15 are installed.

**SPARE LED D12**

Not used. Not populated. For future use.

**BYPASS JUMPERS****J18 Charge Latch Disable Jumper**

When a jumper is installed on J18 the charger will not latch off when a High Voltage Cutoff (HVC) event occurs. Normally J18 is not installed. Jumper is useful for debugging.

**J23 Discharge Latch Disable Jumper**

When a jumper is installed on J23 the contactors will not latch off when a Low Voltage Cutoff (LVC) event occurs. Normally J23 is not installed. Jumper is useful for debugging.

**J14 and J15 Cell Loop Bypass Jumper**

When jumpers are installed on J14 and J15 the bms cell loop is bypassed, discharge is enabled and cell loop LED D6 is illuminated. Normally J14 is installed and J15 is not installed. When CELL LOOP OK LED D6 is not illuminated when it is supposed to be, use jumpers to determine if fault is in cell loop or on rear board.