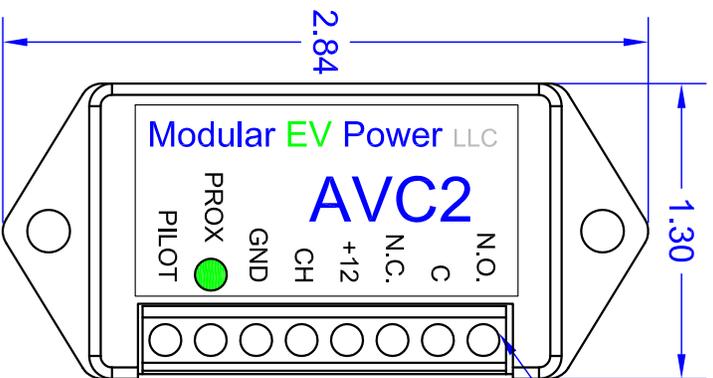


# J1772 AVC2 Board



Screw Terminals

- Normally Open Relay
- Relay Common
- Normally Closed Relay
- Battery Positive
- Vehicle Chassis & Battery negative
- J1772 Green Ground & Chassis
- J1772 Proximity pin
- J1772 Pilot Pin

The AVC1 and AVC2 are functionally identical. The AVC1 is a bare board and the AVC2 is in a plastic box.

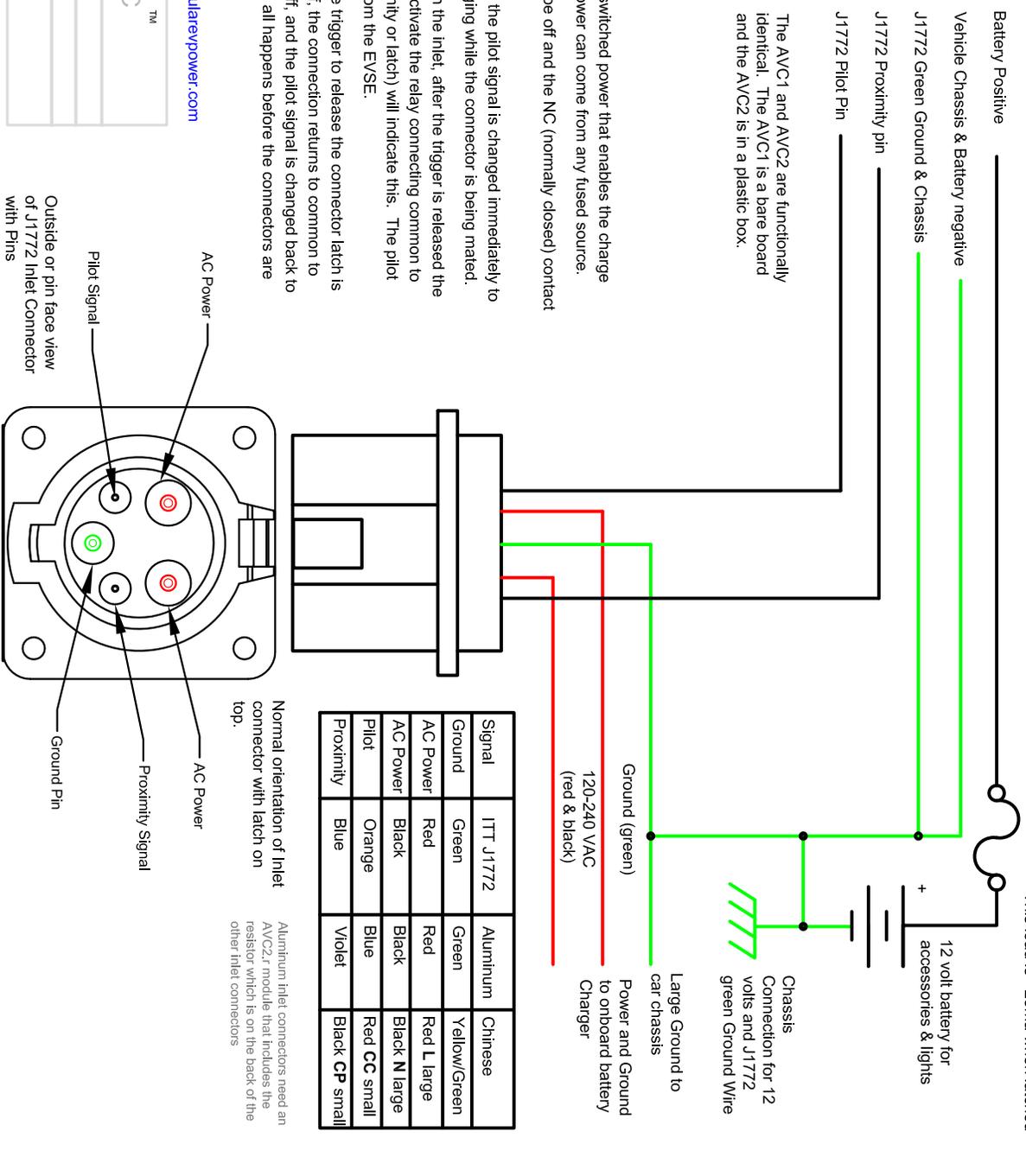
## Operation:

Apply +12 volt DC power. The unit may have switched power that enables the charge process or it may be left on continually. The power can come from any fused source. Initially with the J1772 not mated the relay will be off and the NC (normally closed) contact will be connected to the relay common.

When the J1772 Cable is plugged into the inlet the pilot signal is changed immediately to connected. Still no power is available for charging while the connector is being mated. Then the latch on the J1772 connector locks on the Inlet, after the trigger is released the AVC2 board will use the proximity signal and activate the relay connecting common to Normally Open. The green PROX LED (proximity or latch) will indicate this. The pilot signal will also be changed to request power from the EVSE. Later when it is time to disconnect, pressing the trigger to release the connector latch is sensed by the AVC2 board. The relay turns off, the connection returns to common to Normally closed, the green PROX LED goes off, and the pilot signal is changed back to CONNECTED and stops charging power. This all happens before the connectors are separated.

Relay in AVC2 board  
0.3 Amp @125VA  
1.0 Amp @30VDC

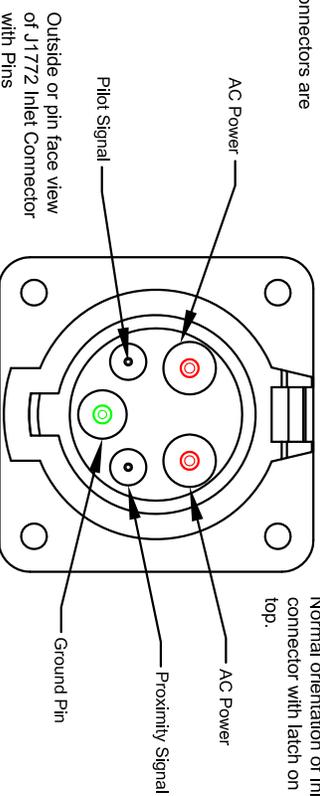
+12 must be fused  
This load is <0.5ma when not latched  
This load is <25ma when latched



| Signal    | ITT J1772 | Aluminum | Chinese        |
|-----------|-----------|----------|----------------|
| Ground    | Green     | Green    | Yellow/Green   |
| AC Power  | Red       | Red      | Red L large    |
| AC Power  | Black     | Black    | Black N large  |
| Pilot     | Orange    | Blue     | Red CC small   |
| Proximity | Blue      | Violet   | Black CP small |

Normal orientation of Inlet connector with latch on top.

Aluminum Inlet connectors need an AVC2r module that includes the resistor which is on the back of the other Inlet connectors



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Wiring - J1772 AVC2 Board

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Drawing: J1772\_AVC2\_Wiring

## AVC2 and AVC2.r troubleshooting

A few people have initial installation problems and these notes are intended to help reduce frustration and delays in getting J1772 working.

First check your wiring to the DC power and J1772 terminals of the module.

The green ground wire of the J1772 vehicle inlet connector **MUST** go to the chassis/frame of the car and the 12 volt accessory battery negative. It also goes to the GND terminal of the AVC2 module. This is required for module power and the J1772 pilot and proximity signals to work properly and to maximize the safety of your cars electrical system.

The 12volt DC power is needed for the module to work even if you are not using the relay. Measure the voltage between the CH (chassis of the car) terminal to the +12 terminal on the module and verify it is nominal 12 volts (9 to 18 is fine). The current draw is under 0.5ma when not active and 25ma when the led and relay are active.

Connect the PILOT and PROXimity wires to the appropriate terminals. The wiring diagram shows the pins from the outside where the cable plugs in.

Watch for stray wire strands from a wire shorting two terminals together.

Some vehicle inlet connectors include a resistor between the proximity and ground pins. This 2.74 K ohm ½ watt resistor is specified in the J1772 standard as being at this location for trouble shooting. If you have the resistor on your connector that small pin is the proximity. The detection circuit does care about this resistor and it must be part of the system.

If you have the resistor you need an AVC2 module.

If you do not have the resistor you need an AVC2.r module that has the resistor inside the module OR you can use an AVC2 module and provide your own 2.74 K ohm ½ watt resistor.

For a quick test jumper PROX to GND on the module with 12V power on. The green LED will come on and the relay will click.

You can take this test to the next level by putting an ohm meter set on a diode range between PILOT and GND. One way will be open and the other will show a value. When you test jumper PROX to GND on the module, with power on, the value will change when the relay clicks to a lower value.

If you use the relay to enable charging or inhibit motion while charging remember this is a little relay 0.3Amp at 120 Volts AC or 1 amp at under 30Volts DC. These are absolute maximums.

EVSE faults are usually leakage currents in the car to ground. Disconnect the red and Black power leads from the vehicle inlet connector to your charger and see if the fault goes away. Then work forward finding the fault which is likely leakage to ground. Lead acid batteries are notorious for this kind of leakage. Instruments on the main battery back that are not isolated are another common ground fault.

While we always recommend charging with a complete EVSE unit, it is possible to charge at home with a J1772 cable and a NEMA plug. The module will respond when the cable is latched. The problem is the J1772 connector system is not designed to mate or separate under load, the pins are not robust enough for this use. This will not work with commercial vehicles like a Volt.

If you are going to do this add a 2 pole switch between the J1772 cable and the NEMA plug. Always have the switch OFF when mating or separating either connector and only turn it on when everything is fully mated. Many feel this is "safe enough" but we believe that especially if family members or friends may use the charging cable it should have a full EVSE protecting everyone and then a guest with a commercial car can charge as well.

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