

Ample Power Company



Troubleshooting the Smart Charge Manager

Introduction

Most installations that fail to operate from the start are due to some wiring problem. The purpose of this guide is to provide a troubleshooting approach that will locate those wiring errors with a minimal of effort.

This guide is to be used in conjunction with the Installation and Operating Instructions for the Smart Charge Manager.

Remove External Controls

Before troubleshooting, remove the wire on TB1-8 if it is connected to the Energy Monitor/Controller. If you have voltage setpoints that appear in error, disconnect the wire on TB1-6 which is the positive temperature sensor wire.

Power Supply/Charger Modules

The Power Supply/Charger Modules will operate with just AC connected. Thus they are easy to test on the bench with just a voltmeter. No batteries need be connected. Remove all external DC wiring and take the Power Supply/Charger Module to a suitable work area and apply AC, and then measure the DC output.

At the rear of the unit, or the top of some units, is a two-pin terminal block. One pin is ground, and the other pin is the control input. With the control input open, the output voltage should be about 13.3 Volts. With the control input grounded, the output voltage is about 14.3 Volts.

Units which don't operate as standalone power supplies must be sent back to the factory for repair or replacement.

Temperature Sensor

Battery temperature affects the setpoint voltages. With the temperature sensor connected, do not expect to see battery voltages which are published for a temperature of 77° F, (25° C). When troubleshooting, the temperature sensor should be disconnected to eliminate errors in temperature determination. Removing the T+ line from the SCM terminal block disconnects the sensor.

When connected, the voltage at the temperature sensor is 2.98 Volts where every 0.01 Volts represents a change of 1° C. Every degree Centigrade is equivalent to 1.8 degrees Fahrenheit.

Temperature sensors can be tested with a 10K Ohm resistor and a 12V power source. Connect the sensor and the resis-

tor in series across the power source, observing polarity of the sensor where red is positive. Measure the voltage across the sensor and verify that it matches temperature as explained earlier.

SCM and PSC Minimum Configuration

The SCM and PSC modules can be tested without batteries connected. Required are the signals listed as required in the SCM manual.

SCM Module at Turn On

When the SCM is first turned on, the red LED should illuminate for 5–8 seconds. After that, the red LED should extinguish and the green LED should start flashing on and off. Refer to the installation manual for the flash codes.

Voltages on the Terminal Block

Check the voltages on the terminal block #1. Given below are the expected value or range of values. Take the measurements before contacting support.

- **Pin 1, POWER +** . . . approximately battery voltage.
- **Pin 2, B+** . . . approximately battery voltage if parallel solenoid is used.
- **Pin 3, BAT.VOLTS SENSE** . . . approximately battery voltage.
- **Pin 4, GROUND** . . . same as negative distribution.
- **Pin 5, T- (BLK)** . . . same as Pin 4.
- **Pin 6, T+ (RED)** . . . 2.98 Volts
- **Pin 7, PARALLEL** . . . approximately battery voltage if the solenoid is not actuated, otherwise ground.
- **Pin 8, ABS** . . . approximately ground if not connected the Energy Monitor/Controller.
- **Pin 9, CNTL1** . . . generally between positive and negative five Volts.
- **Pin 10, SHC** . . . approximately ground.
- **Pin 11, SHG** . . . approximately ground.

- **Pin 12, CNTL2** . . . generally between positive and negative five Volts.
- **Pin 13, CNTL3** . . . generally between positive and negative five Volts.
- **Pin 14, CNTL4** . . . generally between positive and negative five Volts.
- **Pin 15, LIM1** . . . approximately ground.
- **Pin 16, LIM2** . . . approximately ground.

Getting Assistance

Free online support is available.