



Phase Three Charger Monitor/Control Unit Installation/Operation Manual

**Model:
PT-MCU**

General Description

The Phase Three Charger Monitor/Control Unit (Model: PT-MCU) provides the following:

- Digital DC voltmeter; reads DC system status to nearest 1/10th volt on up to three separate battery banks, provides local/remote high/low voltage alarm
- Output Voltage Adjustment Potentionmeter (-4% to +3%)
- Double pole circuit breaker for local on-off control and AC over-current protection
- AC 'ON' indicator light
- AC input fail alarm contacts

It is designed for use with any of the Phase Three charger models that accept the optional model TCS-12/24 battery temperature compensation sensor.

Installation/Wiring

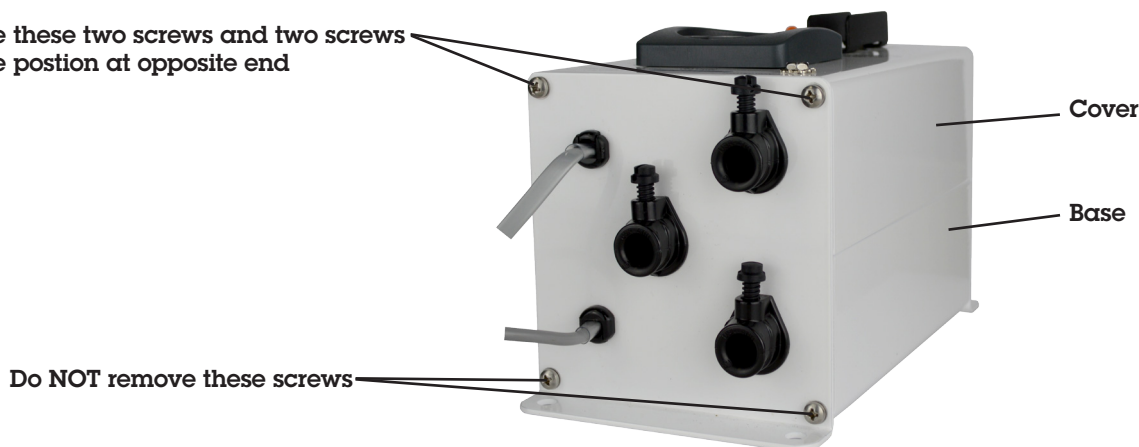
Note: Installation requires removal of the cover (see Figure B for opened configuration). If the unit is mounted in an area with limited access around the sides and/or top and bottom, the installer is advised to perform wiring prior to mounting.

1) Mount the PT-MCU on the bulkhead or other suitable metal or non-metal surface, as close as possible to the PT Charger. For ease of wiring and to use the power cord provided with the PT Charger, it should be mounted within 5 feet.

2) Remove the four screws which secure the cover to the base of the unit (see Figure A).

Figure A: Removing the Cover

Remove these two screws and two screws in same position at opposite end



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3) Lift the cover and rotate away from the base. Caution: Avoid putting strain on the internal wiring

4) Re-secure the cover to the base in the open configuration with two screws as shown in Figure B

5) On some models, a 15 amp AC power cord has been supplied with the Phase Three Charger (may already be factory installed, depending on model). The PT-MCU comes with a 30 amp, double pole circuit breaker so the charger's AC power cord must be removed and an appropriate sized three conductor cable connected to the charger's AC input. When located inside engine room spaces, 12 AWG wire size with a 105° C rated insulation is recommended.

6) A. Once the AC input cable has been attached to the charger input, push the other end of the cable through any of the strain reliefs (see Figure B). (Maximum cable diameter: 0.40")

B. Strip off the outer insulation jacket about 6 inches, then strip and attach #10 ring lugs to all three of the individual AC wires (115 VAC: L, N, & Ground; 230 VAC: L1, L2 & Ground).

7) Route another installer supplied cable from the AC power source, pass it through either one of the remaining strain reliefs and repeat step 6-B.

8) Remove the top nut and flat washer from the #10 grounding stud (location shown in Figure C on the following page) and attach the AC ground wires. For proper grounding contact, the two ring lugs must be sandwiched between the two flat washers.

Figure B: Cover Opened and Secured

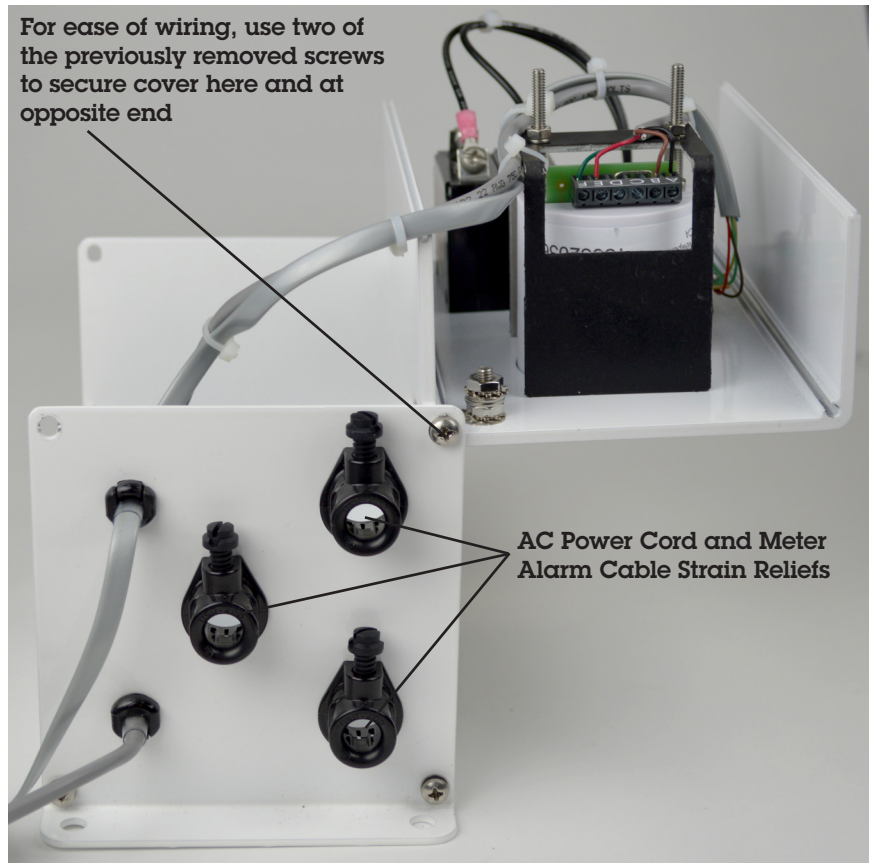
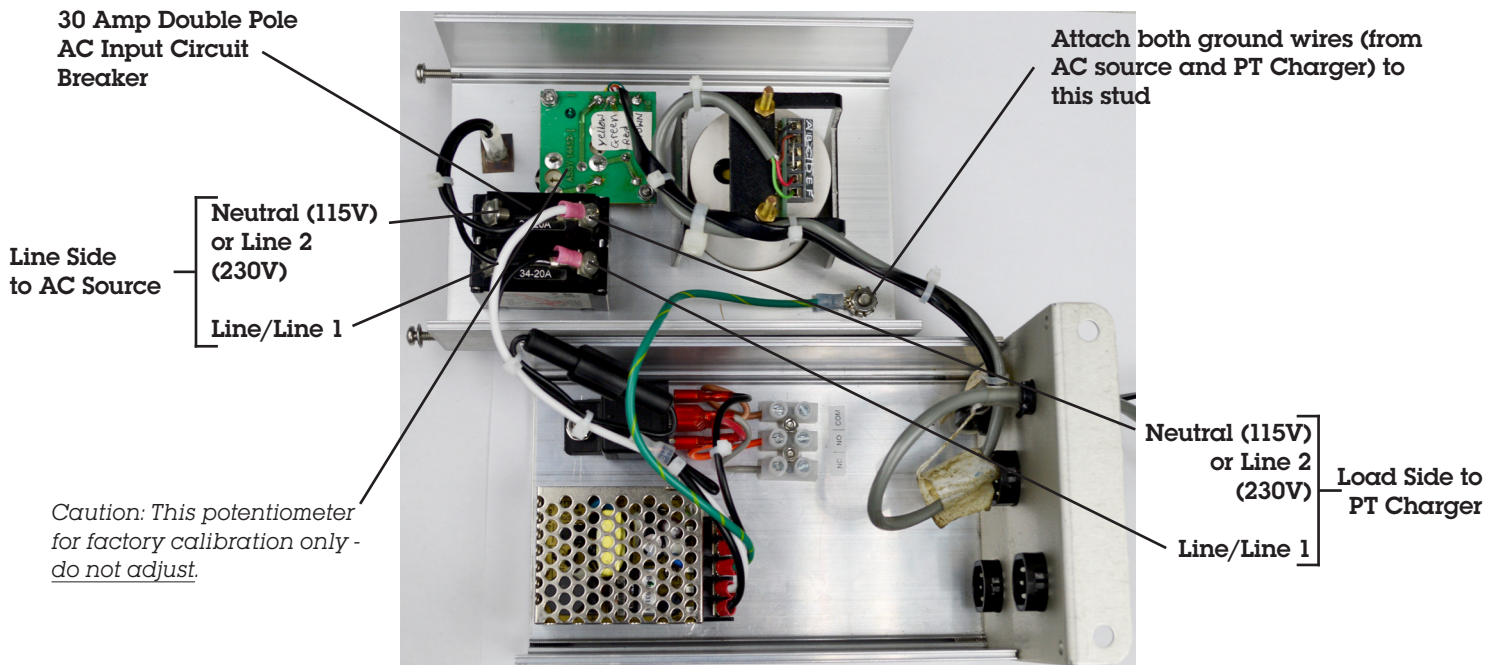


Figure C: Grounding and Circuit Breaker Wiring



9) Attach the Line & Neutral (115V installations) or Line 1 & Line 2 (230V) wires from the PT Charger's AC cord to the load side of the circuit breaker as shown in Figure C. Be sure to replace the indicator light wires (factory pre-wired to the circuit breaker load side).

10) Attach the Line & Neutral (115V) or Line 1 & Line 2 (230V) wires from the AC source power cord to the line side of the circuit breaker as shown in Figure C.

11) Alarm wiring options:

A. Battery Low/High Voltage: If low or high battery voltage alarming is desired refer to the provided, model DCV, DC Voltage Monitor instruction manual for alarm activation and wiring instructions.

B. AC Fail Alarm Contacts: One set of Form C alarm contacts are available to activate an alarm if AC input power is lost to the PT-MCU/Battery Charger. This alarm circuit uses a small universal AC input 12V DC power supply to drive a SPDT relay. The label identifying the terminal block positions for the alarm relay are shown in the energized state (AC power connected).

Relay contact ratings (with AC power connected):

Normally Open (NO): 30 amps

Normally Closed (NC): 40 amps

Voltage: 75V DC Max.

Figure D: AC Alarm Contacts

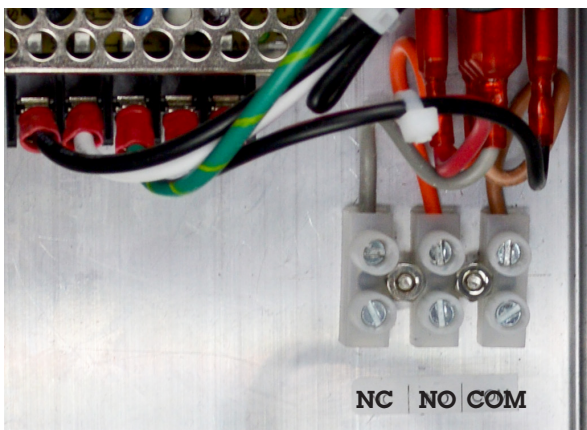


Figure F: Typical AC Fail Alarm Wiring

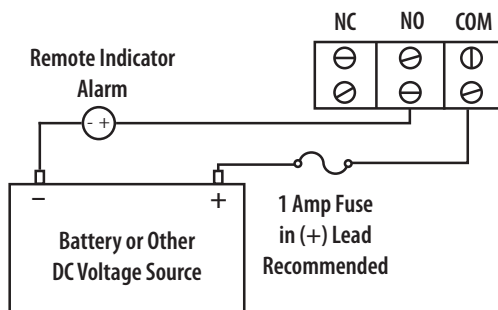
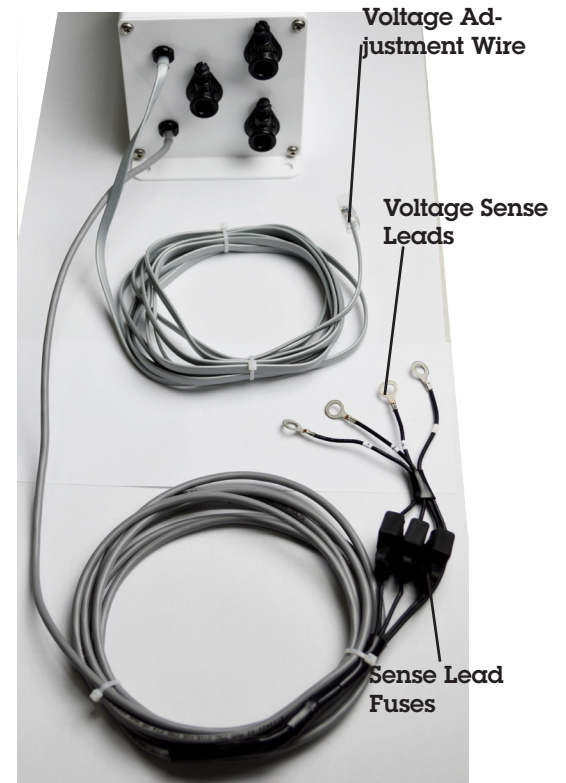


Figure E: Voltage Sense and Voltage Adjustment Wires



12) Remove the screws temporarily securing the cover and reassemble the unit.

13) Tighten the compression terminals on each side of the cable strain reliefs.

14) Note that each of the voltage sense leads are labeled for proper connection to the charger (see Figure E). Attach the numbered "1", "2" and "3" leads to the corresponding (+) output terminals of the charger, and the "-" lead to the (-) COMM. terminal.

*Exception: for the voltmeter to function properly, all three (+) wires must sense a minimum of 9.6 VDC. If one or more of the charger banks are unused, connect the unused sense lead(s) to Bank 1 (+).

Note: If batteries are already attached to the battery posts being wired to the PT-MCU, the Digital Voltmeter may make a loud "activation" beep upon contact for the sense leads. This is normal and may be disregarded.

Fusing Note: Each (+) sense lead is protected by an in-line 2 amp fuse. In the unlikely event one of these fuses should blow, it must be replaced with a BUSSMAN # ATM-2 fuse or (equivalent).

15) Connect the modular plug on the flat voltage adjustment wire to the TEMP COMP jack of the Phase Three Charger. Do not connect it to the REMOTE MONITOR panel jack. Note: Use of this manual voltage adjustment feature eliminates use of the charger's temperature compensation option, which automatically adjusts the charge's output voltage. Do not use a phone jack splitter in an attempt to accommodate both manual and automatic voltage adjustment. Neither function will work properly in that case.

Calibrating and Using the Digital Voltmeter

Refer to the provided DCV Installation/Operation Manual under "Calibrating the Instrument".

Note: The DCV features optional use, manually set backlighting. Because there is a direct electrical connection between the meter and the batteries, whenever the backlight is turned on, it will continue to illuminate, even if the charger is switched off. Although the current draw is very small, batteries may eventually be drained if the backlight is left on and the batteries remain uncharged for lengthy periods of time.

Adjusting Charger Output Voltage

The output voltage of the PT charger may be adjusted upward or downward within a range of -4% to +3% of the nominal factory set voltage using the front panel potentiometer. It must be adjusted only when the charger is in the "float" mode and output is less than 2 amps. The nominal float voltage depends on model and gel-cell, lead acid switch setting as follows:

12 Volt Models

Gel-Cell 13.6 VDC

Lead Acid 13.4 VDC

24 Volt Models

Gel-Cell 27.2 VDC

Lead Acid 26.8 VDC

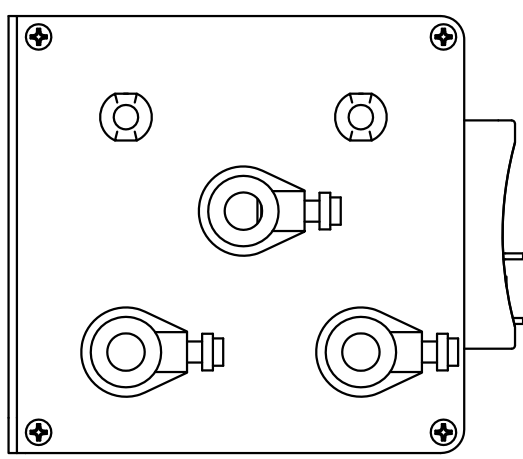
Note: Consult the battery manufacturer's instructions prior to making a change to the PT Charger's factory voltage settings.

Verify that the charger is in the float mode putting out less than 2 amps by checking both the digital voltmeter on the front of the PT-MCU and the ammeter on the front of the charger. Then adjust the potentiometer up or down as necessary with a small flat tip screwdriver.

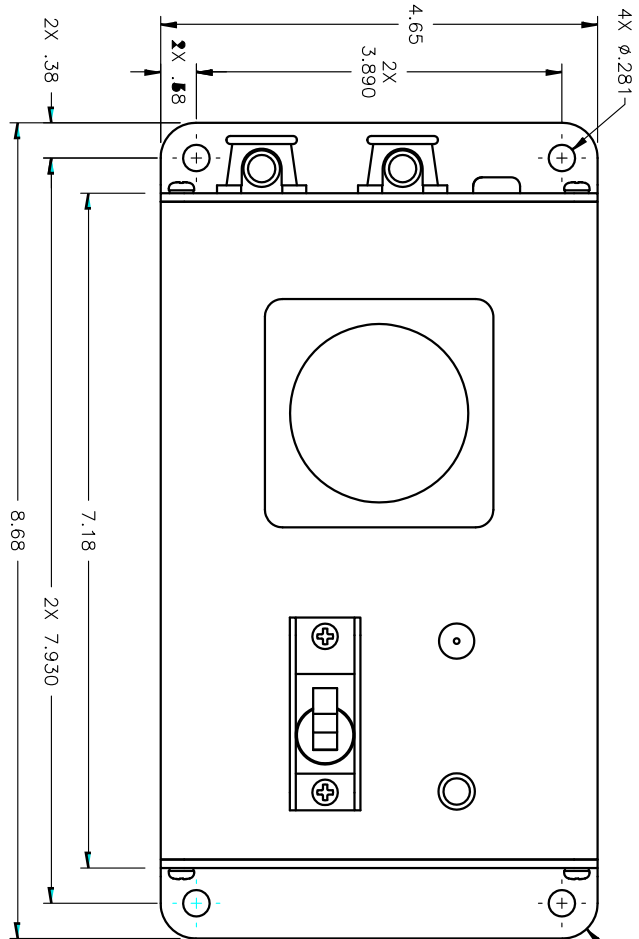
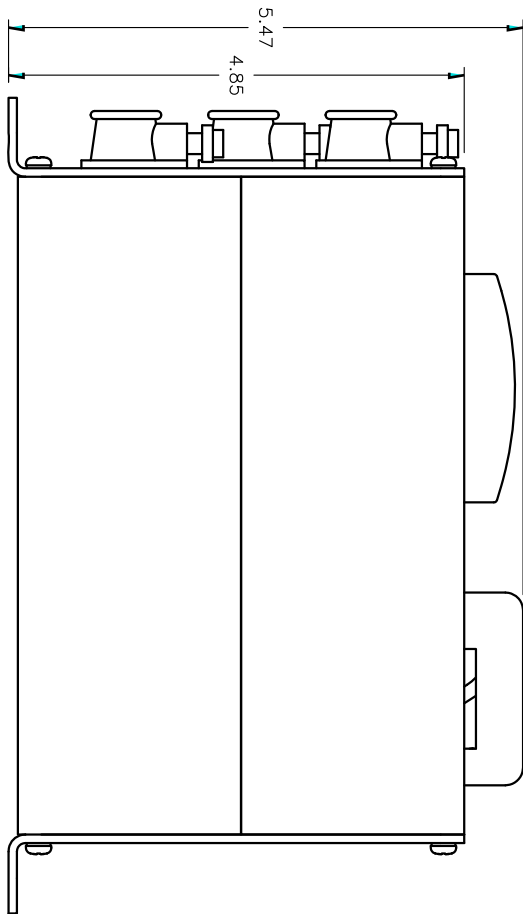
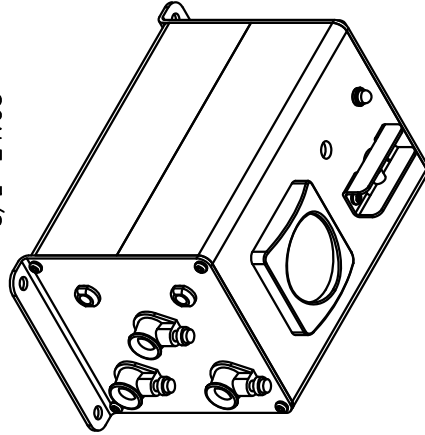
Circuit Breaker Control

AC input to the charger may be switched on and off using the front panel 30 amp double pole circuit breaker. The front panel indicator light will illuminate whenever AC is being applied to the charger.

Figure G: Outline and Mounting Drawings



SCALE: 3/8



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