

# Remote Monitor Panel

## Model: RP

### Installation/Operation Instructions

The RP is an optional remote indicator/activation panel which will allow you to monitor the status of your Phase Three charger and, when necessary, reinitiate the three stage charge regimen. It is designed for use with the following models: PT-14, PT-25, PT-40, PT-70A, PT-24-8, PT-24-13, PT-24-20, PT-24-40.

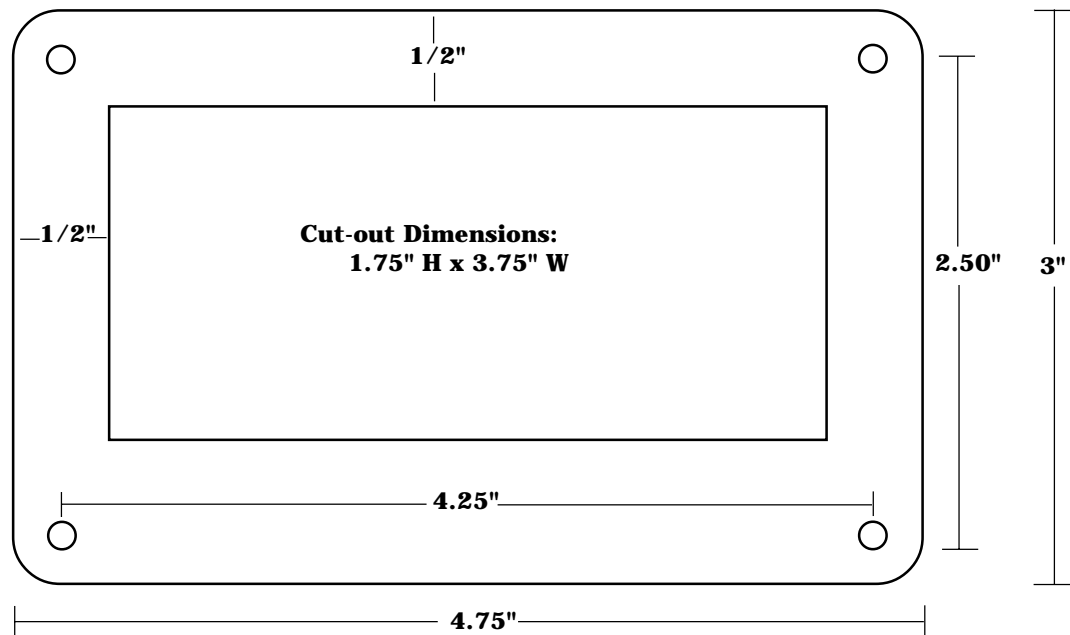
#### II) Installation

The panel comes pre-wired with 10' of cable and 4 mounting screws. A cut-out saw and drill may be required for the installation.

Select a suitable location for the panel. It is not ignition protected so it must not be mounted in any area where there is the possibility of the accumulation of explosive gasses.

Use the drawing below for cut-out dimensions and placement of pilot holes for the mounting screws.

**FIGURE 1: RP Remote Panel Installation Dimensions**



M02037640A



**U.S.A. HEADQUARTERS**  
P.O. Box 1306, Newport Beach, CA 92663  
Phone: 714-751-0488 Fax: 714-957-1621  
E-Mail: sales@newmarpower.com

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COMMUNICATION • NAVIGATION  
[www.newmarpower.com](http://www.newmarpower.com)

**EURO WAREHOUSE**  
Phone: +31-35-603-2494 Fax: +31-35-603-2149  
E-Mail: sales@newmarpower.com

After installing the panel route the cable to the charger and insert the plug on the end of the cable into the remote panel jack. (Location varies according to model—see front panel of unit.)

If more cable length is required, cable extensions are commonly available from most electronics supply retailers such as Radio Shack/Tandy. Request a 6 conductor modular-to-modular line cord (part number 279-422, 25 feet long) and 6 pin modular in-line coupler (279-423).

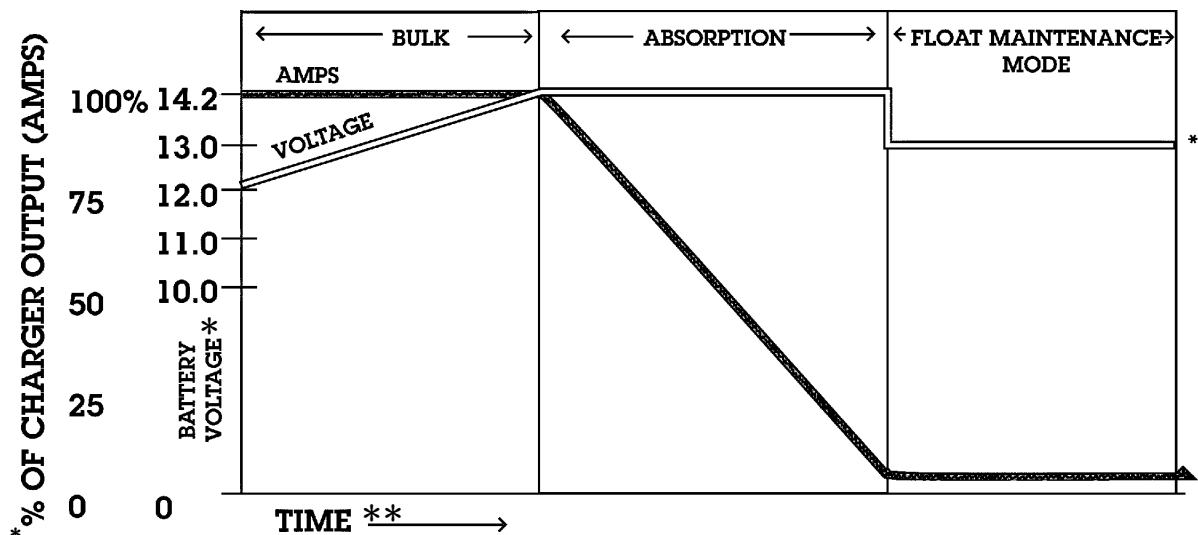
## II) Operation

### A) Status Indicators

The RP remote panel enables you to monitor the Phase Three charger's status at-a-glance from the remote location of your choice. Red and green L.E.D.'s indicate whether the charger is in the bulk, absorption or float phase of the three stage charge cycle.

For the purpose of illustrating each of the charger phases as indicated on the remote panel, refer to Figure 2, assume the charger has just been turned on, batteries are deeply discharged, and there are no DC loads on the system.

**FIGURE 2: Typical Charger Output Curve (into batteries without load)**



**Note: Actual charge and float voltages depend upon charger model, gel-cell/lead-acid switch position and/or temperature compensation function**

**\*\* Note: Time-out circuit which automatically switches to float mode factory set at 8-10 hours; may be installer adjusted between approximately 5-13 hours. (Refer to the Phase Three Installation/Operation manual for details.)**



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#### EURO WAREHOUSE

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**Note: As the charger transitions from one phase to the next, i.e., from bulk to absorption, from absorption to float, both L.E.D.'s may be temporarily illuminated at the same time.**

**1) Bulk** — Red L.E.D. Illuminated — Maximum Current; Increasing Voltage — When batteries are significantly discharged the charger responds initially by delivering maximum output current in order to rapidly replenish them. It is during this stage that charging current is maintained at a high level as battery voltage rises. Bulk charging continues until battery voltage reaches the “charge” voltage level (where batteries are at about 75-80% of capacity). NOTE: The “charge” voltage depends on a number of factors such as gel-cell/lead-acid switch setting, whether temperature compensation option is being used, etc. Refer to your Phase Three Installation/Operation manual for complete details.

**2) Absorption** — Green L.E.D. Illuminated — Elevated Voltage; Decreasing Current — When the “charge” voltage is reached the Absorption L.E.D. will illuminate. During this second stage the elevated “charge” battery voltage is maintained as output current begins to taper off and the battery plates become saturated. Charge voltage is maintained until the current sensing circuit detects that output current has tapered to about 5-15 % of charger rating\*. At this point the batteries are at about 95 % of full charge and the Phase Three charger switches to the third and final stage of the charge cycle.

*\* Note: The absorption phase may also be ended by the time-out circuit. Refer to your Phase Three Installation Operation manual for a complete explanation of the purpose and functioning of the time-out circuit.*

**3) Float** — Green L.E.D. Illuminated — Maintenance Charge — For extended battery life the Phase Three then automatically switches to a lower float voltage level. This float charge keeps batteries at peak condition without overcharging. The charger may be left in this stage indefinitely without attention (though periodic checks of electrolyte level in flooded batteries is recommended).

**Note: If the charger has timed-out in the float mode and a load is applied which is at or near the charger's full rating the following condition will occur:**

**4) Float and Bulk L.E.D.'s Illuminated** — Float Mode; Max Current — In this case the charger is maintaining the reduced float voltage on the battery while supplying maximum current to the load. If the load exceeds the charger rating some of the current is being supplied by the battery itself. Press the reinitiate button to speed battery recharge when the load falls below the charger's rating.

### **B) Charge Cycle Reinitiate Switch**

The RP remote panel also features a re-initiate button, which, when pressed, will cause the charger to restart the three stage cycle and reset the time-out circuit. Following are a few examples of why you may wish to do this:



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### **1) Speeding the Recharge Process after an Excess Load Condition**

When there has been a DC load on the battery system which exceeds the charger's rating and that load is removed, you will get a much faster recharge time if you press the reinitiate button, as the charger will then bring batteries to the higher "charge" voltage of the bulk/absorption phases before shifting into the lower voltage float mode.

### **2) Helping Ensure Full Charge in a Timely Manner**

In general, battery recharge time is shortest when there is no DC load upon the battery system. More load on the battery results in a longer the recharge time, as part of the charger's output current is used to supply the load, while the remaining available amperage is used for battery recharge.

Consequently, if you have, for instance, a continuous 20 amp load on a model PT-40, the charger may time-out into the float mode before batteries are fully charged. Charging will still continue and eventually full-charge will be reached, so this may not matter if timing is not critical. However, if you expect that you will lose AC to the charger soon, and wish to get the batteries as fully charged as possible prior to that, pressing the reinitiate button will immediately send more current to the battery as the charger brings the batteries to the higher "charge" voltage.

### **3) A Check of Battery State of Charge and Charger Output Current Status**

When the charger is in the float mode, you press the reinitiate button and the red L.E.D. indicates that the charger has gone into the bulk mode and remains there, this indicates that the charger is putting out current at or near full capacity. This may be due either to deeply discharged batteries or DC load(s) at or near the charger's full rating.

If the green absorption L.E.D. illuminates and continues to do so for a while, it indicates; **1)** that batteries are nearing full charge, but that battery plate saturation is not complete and current demand is still above 5-15 % of charger capacity, or **2)** that there is a moderate DC load demand which is preventing the charger from switching immediately to the float phase. (in which case the charger will remain in the absorption phase for as long as the load remains, or until the charger times out and it drops into the float mode.)

If the green absorption L.E.D. illuminates after pressing the reinitiate button then quickly reverts to the green float L.E.D., it is an indication that batteries are fully charged and there are no significant DC loads currently on the battery system.



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