



PTC1220
PTC1230
PTC1240



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BATTERY CHARGER

MULTI STAGE CHARGING SYSTEM

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USER MANUAL



TECHNICAL SPECIFICATIONS	
Input Voltage:	AC (175V - 255V) - 50HZ
Chargeable Battery Type:	17AH to 600AH - (12V Lead Acid; Calcium; Gel; AGM types only)
Maximum Output Power:	PTC1220 (375W), PTC1230 (468W), PTC1240 (750W)
Working Temperature:	-15 °C to +40°C
Safety Protection: Short Circuit Protection; Reverse Polarity Protection; Zero volt start charge.	
High Temperature Protection: Active when charger internal temperature is above 60°C, the charger output current will automatically reduce 75% of normal output. Once the temperature drops below 55°C, the charger output will return	



MADE IN CHINA

The Power Train PTC1220, 30 and 40 Battery Chargers are designed to effectively charge all automotive and industrial type batteries. Manufactured to the latest design parameters and highest quality levels, they incorporate a unique micro-processor controlled Eight Stage Pulse Charging system, which intelligently assesses battery condition and size, to make battery charging much safer, much more effective - and thus prolong battery life. They are ideal for Automotive, Motorhome and Marine applications, to ensure the correct, safest and BEST method of charging a high capacity 12V battery bank or individual batteries.

Feature:

- Built-in microchip monitoring and charging control system.
- Zero volt minimum start – can charge a completely flat battery.
- Accurate voltage and current detection, monitoring on both AC input and DC output.
- Optimally designed charging cycle designed for Lead Acid, SLA, Gel, Deep Cycle and Calcium batteries.
- Complete Eight Stage Pulse Charging cycle including: desulphation, soft start; bulk; absorption; analysis (battery fault diagnosis); boost; float and maintenance stages.
- Automatic adjustment of charging voltages according to environmental temperature.
- Overcharge protection; protecting the battery from damage due to overcharging.
- Reverse polarity protection; short circuit protection; overload protection; high temperature protection.
- Battery type selector button (Gel Batteries require lower charging voltage compared to Lead-acid / AGM & Calcium Batteries).
- LED display simultaneously showing charging voltage, charging amperage and percentage of battery charge (99% flashing when fully charged)
- Battery type L.E.D indicators and illuminated charge curve diagram (clearly identifying charging stage and sequence to the operator).
- Battery Testing function while charging (faulty batteries will activate the ‘Faulty Battery’ indicator L.E.D and the warning alarm).
- Built-in automatic Cooling Fan.

Charge Function Characteristics

The microchip controlled automatic eight stage charging system provides accurate detection, monitoring and control of the charging output voltage and current in turn preventing serious over charge or short charging of the battery. This prevents battery plate oxidization; evens the consistency of the battery electrolyte; minimizes battery temperature rising while charging; recovers the battery capacity faster and extends battery life.

The “Lead-acid(AGM) / Calcium” or “Gel” selector switch alters the charging stage voltage parameters for the last three critical charging stages, allowing all types of batteries to be effectively charged and ready for optimal use.

Temperature compensated voltage adjustment automatically adjusts the charging voltage according to the environmental ambient temperature (-3mv / °C per battery cell). In summer, this function helps decrease battery heat generated while charging, thus minimizing the loss of battery electrolyte and preventing battery deformation caused by excessive heat during charging cycles. In winter, this function will help to fully charge the battery, preventing battery capacity loss caused by under charging, and thus helping to extend the battery lifespan.

Whilst charging the battery, it is common to see the voltage and percentage of remaining charge LED Displays to fluctuate up and down. When a battery is first connected, voltages will climb well over 12V and later drop back down. This will have an effect on the percentage of remaining charge display as the onboard software will calculate this figure based on the battery voltage reading. After the battery charger finishes its bulk and absorption stages, the charge voltages will slowly settle back down, thus giving an accurate reading of remaining charge, so please allow appropriate time to gather an accurate reading of percentage of remaining charge.

Protection and Warning functions

While charging the battery, the advanced microchip monitoring and

controlling the system will also monitor the condition of the battery, eg: damaged battery plates, internal component failure, loss of electrolyte etc. If damaged components are detected, the charger will stop charging, sound the warning alarm and illuminate the warning L.E.D. It will also discontinue charging if an “Overcharging” situation arises for any reason.

Charging Stages:

Stage 1 – “Desulphation”

In this initial start up stage, a high frequency voltage pulse (0.5 sec) is to assist in “waking up” a deeply discharged battery. This method of pulse charging can also help to reduce build up of sulphate crystals that may have formed on the battery plates during the time it was discharged. This stage will last as long as it takes the battery to reach approximately 10 volts. If the connected battery is only slightly discharged, this stage may only be activated for a short time before automatically switching to the next “soft start” stage.

Stage 2 – “Soft Start”

After the battery is connected, most conventional “Smart” Battery Chargers will immediately apply a high charging voltage and current output. This creates a large amount of gas and heat from the battery and when the consistency of the battery electrolyte / state of cell charge is uneven - (from time to time the consistency of the battery electrolyte can be uneven from daily use) - a full load charging characteristic can result in a period of potentially damaging overcharging. The Soft Start function eliminates this situation by starting the charging process slowly and softly, battery electrolyte and cell charge is able to even out, before receiving the main bulk charge. This significantly improves the battery charging capability and reception.

Stage 3 – “Bulk”

This is the main hard charging stage, where the charger will operate at the maximum rated current output (20A, 30A or 40A depending on model), until the battery reaches a voltage of 14.7V (for Lead-acid/ AGM), 15.6V (for Calcium) or 14.2V (Gel). Charging time period is determined by the capacity and charge state of the battery.

Stage 4 – “Absorption”

After the Bulk stage, the charger will automatically begin to reduce its current output depending on the charge acceptance into the battery, while maintaining the 14.7V or 14.2V setting. When the current reaches a predetermined threshold level of 5A (PTC20); 6A (PTC30) or 8A (PTC40) – charging will automatically halt, allowing the Analysis stage to be performed.

Lead-acid / AGM – 14.7V / Calcium Battery Setting – 15.6V / Gel- Battery Setting – 14.2V

Stage 5 – “Analysis” (Testing the battery while charging)

After the Absorption charging state, the battery charger will start the “Analysis” stage and will stop charging the battery for approximately 2 minutes. At this point, if the battery voltage is sensed at below 12.6V, the battery alarm and faulty battery indicator L.E.D will be tripped (“Faulty Battery” indicator enables only if a faulty battery is detected). When the battery voltage is equal to or above 12.6V, the next Boost stage will start.

Stage 6 – “Boost”

After successfully analyzing the battery condition, the charger will enter the Boost charge stage, which will charge at a higher voltage ensuring the battery attains a 100% full charge. The current output is limited at 25% of the maximum rated charger output. Once the current drops to 3A (PTC20); 4A (PTC30) or 6A (PTC40), the charger will enter the last float charge stage.

Lead-acid / AGM – 15.2V / Calcium Battery Setting – 16.2V / Gel Battery Setting – 14.7V

Stage 7 – “Float”

This stage will “even out” the voltage between all cells maintaining a constant voltage with a reduced current, thus prolonging the battery service time.

Lead-acid / AGM – 13.7V / Calcium Battery Setting – 13.7V / Gel Battery Setting – 13.3V

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Stage 8 – “Maintain”

This final stage regulates the fully charged battery. When the battery is left connected for an extended period, a small pulse charge is applied when the battery falls to around 13 volts, thus “waking up” the battery, bringing it back up to approximately 13.8 volts. Under maintenance charge, the pulse frequency is 60KHZ – 80KHZ, which ensures the battery voltage is fully maintained ready to be used at any time in future.

WARNING

- Explosive gases may escape from the battery during charging. Prevent flames and sparks Ensure area is well ventilated.
- Before charging ensure you have read the instruction manual in full,
- This appliance is for USE INDOORS, Do not expose to rain or excess dust.
- For charging 12 volt batteries only.
- Disconnect from 240Volt supply before making or disconnecting connections to the battery.
- This appliance requires an earthed 240Volt mains supply.
- This appliance is not for use with non-rechargeable batteries.
- Never charge a frozen battery.
- In the event of the AC cord becoming damaged it must be replaced by a qualified electrician.
- Corrosive gasses may escape during the charging process, ensure charger is placed well away from battery.
- This appliance is intended for use by responsible persons and should not be operated by children.
- Always check battery manufacturers specifications on charge rates and voltage prior to charging.

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