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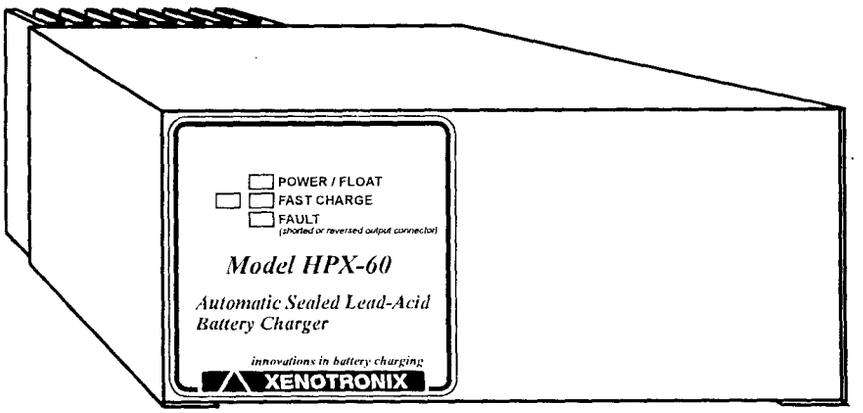
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XENOTRONIX
innovations in battery charging

Automatic Battery Charger for Sealed or Valve Regulated Lead-Acid Batteries

Model HPX-60 Series

Operating Instructions



WARNING CONCERNING THE REMOVAL OF COVER:

CAUTION: TO PREVENT THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICE TO QUALIFIED SERVICE PERSONNEL.

CAUTION: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE UNIT TO RAIN OR MOISTURE.

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS - This manual contains important safety and operating instructions for Model HPX-60 Battery Chargers. Before using the battery charger, please read all instructions and cautionary markings on the battery charger, the battery, and the product using the battery.

CAUTION - To reduce the risk of electric shock:

- Do not expose unit to rain or moisture - use indoors only.
- Do not remove cover. There are no user serviceable parts inside. Refer service to qualified service personnel.
- Connect the battery charger directly to a grounding receptacle. An adaptor should not be used with this unit. This unit is equipped with a power cord having an equipment grounding conductor and a grounding plug (3-prong). The plug must be plugged into an outlet that has been properly installed and grounded in accordance with all local and national codes and ordinances.
- Disconnect charger from AC power before attempting any maintenance or cleaning. Turning off controls may not reduce this risk.

WARNING - Do not attempt to recharge non-rechargeable batteries. Charge only sealed or valve regulated, lead-acid, non-automotive, maintenance free rechargeable batteries. Attempting to charge other types of batteries may result in personal injury and battery damage.

- The heat sink and enclosure will become hot during the charge cycle - ***DO NOT TOUCH!***
- Connect or disconnect the output connectors only when the unit is disconnected from AC power or arcing and burning may result (due to the possible presence of explosive gases).

DANGER - Never alter power cord or plug provided. If it will not fit the outlet, replace the power cord with the proper type of cord or have a proper outlet installed by a qualified electrician. Improper connection will result in the risk of an electric shock or fire.

Make sure cords are located so that they will not be stepped on, tripped over, or otherwise subjected to damage or stress. Do not operate this unit with a damaged cord or plug - replace them immediately. To reduce the risk of damage to electric plug, pull by plug rather than cord when disconnecting unit.

Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way. Do not disassemble charger; incorrect reassembly will result in the risk of an electric shock or fire. Refer service to qualified service personnel.

Recharge batteries in well ventilated areas to prevent build-up of explosive gases. Allow space around the charger and adequate air circulation to reduce internal heat buildup.

GENERAL DESCRIPTION

This unit is a two stage, constant voltage battery charger with current limiting, current fold back, and automatic temperature compensation of the output voltage. It is protected against shorting the output terminals and reversing the output terminals on a battery. It is equipped with an IEC-320 type power input module with fuse holder and a spare fuse. A 6' long detachable power cord with NEMA 5-15P plug is provided for use in North America. Other power cords can be ordered with plugs designed to mate with receptacles in other countries. There is an input voltage selection switch located above the input module to select between 115 V~ and 230 V~. The standard output cable is 3' long with insulated boots and spring clips. There is one indicator light on the front panel. It lights green to indicate when power is applied and, when a battery is attached, that the charger is in float mode. It lights yellow when the unit is charging the battery. It lights red to indicate a fault condition (shorted or reversed output connector). The unit has a full metal enclosure to ensure field reliability.

This unit is designed to automatically switch into a single stage, float charge mode when the battery is charged. A single stage, parallel charger version is available for keeping a battery fully charged when used with a permanent or intermittent parallel load. The use of an optional low voltage cut out is recommend when using parallel loads. This unit is not designed to operate as a standalone power supply.

OPERATING INSTRUCTIONS

Before using this battery charger, make sure it is compatible with your battery. Refer to the ratings on the battery charger, the specifications in this manual, and your battery documentation.

Determine the battery polarity. Most batteries identify the positive terminal with a "+" sign or the color red and identify the negative terminal with a "-" sign or the color black. Connect the red insulated output clip to the positive battery terminal and connect the black insulated output clip to the negative battery terminal. If the charger is provided with a polarized connector, make sure your battery connector is wired to match the output connector.

The input voltage setting is displayed on the [illegible] on the back of the unit. If this setting must be changed, make sure the power cord is disconnected while operating the switch. Operating the switch while power is applied may cause damage to the switch or charger. Plug the power cord into a properly grounded outlet which supplies the correct input voltage.

The indicator light should now be yellow, indicating that the charger is operating and in charge mode. The yellow charge light will stay on until the battery is about 95% recharged. At this point the indicator will turn green and the battery may be used. The battery should be left connected to the charger for an additional three hours to ensure a 100% recharge. To insure a full charge and to help your battery keep its full capacity, we recommend the battery be left connected to the charger, in float charge mode, until ready to use. The battery may be left connected to the charger indefinitely, in float charge mode, without danger of overcharging.

CHARGING NOTES AND TIPS

For safer and more efficient charging, batteries should be charged with higher voltages when cold and lower voltages when warm. This unit incorporates automatic temperature compensation of the output voltage. It will increase the charge voltage in cold conditions and decrease charge voltage in warm conditions. For this feature to work properly, the battery and charger should be located in the same environment (allow the battery and charger to stabilize at room temperature before charging). Initially, the charger open circuit voltage may read a little high until its internal temperature warms during operation, thereby lowering the voltage.

Make sure that you only charge a battery with the same nominal voltage rating as the charger. Charging a lower voltage battery will cause battery damage due to severe overcharging. Charging a higher voltage battery may damage the charger due to overheating.

These battery chargers are designed to ideally charge a battery at the C/10 rate (capacity divided by 10 hours). Therefore, a 40 amp-hour battery would require a 4 Amp charge. Larger or smaller capacity batteries can be charged with these chargers with the following precautions (refer to these charger specifications and your battery documentation for proper switch and charge currents to determine compatibility with this charger):

- When charging a larger capacity battery, the battery may be overcharged due to the unit not switching into float charge mode. Holding a battery for prolonged times at the high rate charge voltage may damage the battery. Larger capacity batteries really require a larger current charger or a float charger.
- When charging a smaller capacity battery, the battery may be undercharged because the charger switches into float charge mode too early (relative to capacity). Leave the battery connected to the charger for several hours to finish charging in the float charge mode.

XENOTRONIX can custom make, or modify our existing units, to exactly match your charging needs. Call our sales department for technical information and pricing. Following are *some* of the modifications we can perform:

- Reduce charge current to match your battery capacity.
- Change switch point to match battery and charge rate.
- Adjust float and charge voltages for special conditions or batteries.
- Make charger into a parallel charger (for use with loads in parallel with a battery).
- Provide custom cables and connectors.
- Private labeling.

TROUBLESHOOTING

NO INDICATOR LIGHT - If the indicator light is dark, check the fuse and replace if necessary. If the fuse is good, check the voltage switch setting and input power (is the receptacle controlled by a light switch?). If all else appears normal then the charger probably needs repair.

NO CHARGE INDICATOR, NOT CHARGING - If the charger will not go into charge mode (yellow indicator) then the battery is probably already charged. Try again with another battery which you know is not charged.

FAULT INDICATOR - If the indicator light is red then either the outputs are hooked up in reverse or shorted together. Make sure of the connection to the battery. Note: A nearly completely dead battery (less than one volt) looks like a short to the charger. If you suspect the battery is dead, leave the charger on the battery to see if it will go into charge mode. The charger will deliver a small amount of current into a dead battery and may eventually go into normal charge mode and recover the battery. If the charger will not go into charge mode within one hour, and then into float mode within 24 hours, the battery is probably damaged beyond recovery.

CHARGER WILL NOT SWITCH INTO FLOAT MODE - If the charger will not switch into the float mode, after 24 hours, then the battery is probably damaged and is not properly accepting the charge. Check the open circuit voltage of the battery to see if it has any shorted cells - there should be about 2.15 V/cell for a properly charged battery (divide the battery voltage by two to get the number of cells). If the battery voltage looks correct then you may be trying to charge a battery which has too large a capacity for the charger (see charging notes and tips).

MAINTENANCE INSTRUCTIONS

FUSE REPLACEMENT - The AC input module contains the main fuse and a spare fuse. Detach the power cord. Use a flat head screwdriver or a coin to pry open the fuse drawer or holder. Replace the blown fuse with the spare. You can use the old fuse to push out the spare fuse. Now is a good time to install a new spare fuse. Replace fuses only with the same type (as indicated in this manual) and value (as indicated on the charger).

CLEANING - Unplug the charger before attempting any cleaning. If it becomes necessary to clean the enclosure, wipe the exterior of the enclosure with a damp cloth and a mild detergent. Do not use an abrasive cleanser. Do not spray cleaners directly onto the charger or immerse unit in water.

MODEL NUMBERING SYSTEM

Base #:	**HPX60**
Voltage Code:	Two digit number; Ex. **06** = 6 volts, **12** = 12 volts, **24** = 24 volts.
Stage Code:	**C** = dual stage charger (standard); **P** = single stage, parallel charger (float voltage only).
Current Code:	Three digit number (with decimal point understood to be two numbers from the right); Ex. **400** = 4.00 amps, **150** = 1.50 amps, **075** = 0.75 amps (750 mA), etc.
Battery Mfg. Code:	Letter code for battery manufacturer (optional)
Sequence:	Base # - dash - Voltage Code - Stage Code - Current Code - Battery Mfg. Code
Example:	***HPX60-12C400*** *is a Model HPX60 dual stage charger, rated at 12 volts and 4.00 amps.*

BATTERY CHARGER SPECIFICATIONS

Operating temperature	0 to 35°C (32 to 95°F)
Storage temperature	-40 to 80°C (-40 to 176°F)
Dimensions & Weight	H 3.40" (8.6 cm) x W 6.65" (16.9 cm) x D 5.30" (13.5 cm), About 7.4 lbs. (3.4 kg)
Input Fuse Type	5 x 20 mm fast acting, miniature glass fuse, UL & CSA approved
Power Requirements	115/230 V~, 50-60 Hz, .98 A RMS

OUTPUT RATINGS: @ 25°C

Unit	HPX60-12C400	HPX60-12C200	HPX60-24C200	HPX60-24C100
Charge Amps (Imax)	4 A ± 2% @ 12 V	2A ± 2% @ 12 V	2 A ± 2% @ 24 V	1A ± 2% @ 24 V
Charge Voltage	14.70 ± 0.30	14.70 ± 0.30	29.40 ± 0.60	29.40 ± 0.60
Switch Amps (Isw)*	approx. 533 mA	approx. 267 mA	approx. 267 mA	approx. 133 mA
Float Voltage	13.68 ± 0.12	13.68 ± 0.12	27.36 ± 0.24	27.36 ± 0.24

Other Models:

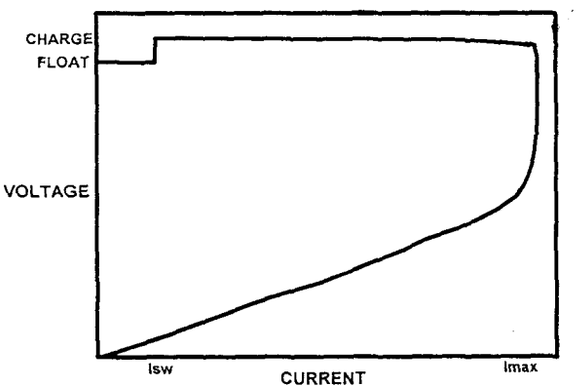
Charge Amps (Imax)	see marking label
Charge Voltage	2.45 V/Cell
Switch Amps (Isw)*	approx. Imax/7.5
Float Voltage	2.28 V/Cell

*Dependent upon battery manufacturer.
Contact Xenotronix Inc. for specifications.

BATTERY RECOMMENDATIONS:
(Lead Acid Batteries charged @ C/10 rate)

Model	Battery
HPX60-12C400	**12V 40**AH
HPX60-12C200	12V 20AH
HPX60-24C200	24V 20AH
HPX60-24C100	**24V 10**AH

AH = Ampere-hours
Lead Acid Batteries are nominally rated at 2V per cell (12V = 6 cells and 24V = 12 cells).



CHARGE CURVE (dual stage)

Refer any questions to XENOTRONIX Inc.
Monday-Friday 8:30am to 4:30pm ET
tel. 407-331-4793 fax. 407-331-4708

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