

Switch Mode

BATTERY CHARGER For lead-acid batteries 1.2-120Ah MULTI XS 3600



*User's Manual and a guide
to professional battery charging
For Starter/Deep Cycle batteries*



INTRODUCTION

The MULTI XS 3600 is a switch mode charger with pulse maintenance and is one of a series of professional chargers from CTEK SWEDEN AB. It represents state-of-the-art technology within battery charging. A MULTI XS 3600 will prolong the service life of your battery. **Please read this manual carefully and follow the instructions.**

CHARGING




Charging batteries in a vehicle:

1. The power cord should be removed from the power outlet before connecting or disconnecting the battery leads.
2. Identify which of the poles is the earth (connected to the chassis). The earth is normally connected to the negative terminal.
3. **Charging of negative earthed battery:** Connect the red wire to the positive pole of the battery and the black wire to the vehicle chassis. Make sure the black wire is not connected close to a fuel hose or the battery.
4. **Charging of positive earthed battery:** Connect the black wire to the negative pole of the battery and the red wire to the vehicle chassis. Make sure the red wire is not connected close to a fuel hose or the battery.

Charging of a battery not connected to a vehicle:

1. The power cord should be removed from the power outlet before connecting or disconnecting the battery leads.
2. Connect the red wire to the positive pole of the battery and the black wire to the negative pole.

Begin Charging

1. Set the correct voltage for the battery by pushing the Mode Selector Button until the light for the correct voltage is lit (see Battery Types and Settings).
2. When you are sure the battery leads are correctly placed, connect the power cord to the power outlet to begin charging. If the battery leads are wrongly connected, the pole-changing switch will ensure the battery and charger are not damaged. The fault indicator  will light. In which case start from the beginning again.
3. The charging lamp  will now indicate charging or the maintenance lamp  will indicate that the battery is fully charged. If the voltage drops the charger sends a pulse to the battery. The length of the pulse depends on how much the voltage has dropped. The charger can be connected for months.
4. **If nothing happens:** If the voltage indicator is lit but no other lamp is lit there could be a bad connection to the battery or chassis or the battery could be faulty. Check the wall power outlet. If you experience problems: start with the sensitive connection between the battery clamps and the charger.




5. Charging can be stopped at any time by disconnecting the supply cord or by setting the charger on Standby. Always remove the power cord from the power outlet before disconnecting the battery leads from a battery in a vehicle. When you stop charging a battery in a vehicle, remove the cable from the chassis before removing the other cable.
6. If the charger lamp and the maintenance-charger lamp are flashing alternately, the reason for this is due to:
 - An interruption during charging, due to a loose connection or because the battery has ceased to work.
 - The battery has become sulphated. If the lamps flash for more than 30 minutes, this indicates that the battery is dead and needs to be replaced.
 - If there is an interval of more than 10 seconds between the flashes, this indicates that the battery has a high self-discharge rate and may need to be replaced.

SAFETY




- The charger is designed for charging 1.2-120 Ah lead-acid batteries. Do not use it for any other purpose.
- Always use safety goggles and turn your face away from the battery when turning it on and off!
- When being charged, batteries could emit explosive gases. Prevent flames and sparks close to the battery.
- Always provide for proper ventilation during charging.
- Avoid covering the charger.
- Battery acid is corrosive. Rinse immediately with water if acid comes into contact with skin or eyes. Seek medical advice.
- Never charge a frozen battery
- Never place the charger on top of the battery when charging.

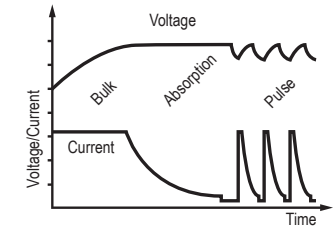
BATTERY TYPES AND SETTINGS

The following recommendations should only be seen as guidelines. Please consult the battery manufacturer for further instructions.

	Mode 14.4V/0.8A This mode is normally used for <14 Ah batteries.
	Mode 14.4V/3.6A Normal setting for wet batteries, MF and for most GEL batteries.
	Mode 14.7V/3.6A This setting is recommended for many AGM batteries such as Optima, Maxxima and Odysseys. This mode is also useful for charging batteries in minus degrees.

CHARGING CYCLE

MULTI XS 3600 operates in a three step fully automatic cycle IU₀Up. It begins charging with an almost constant current (0.8 A or 3.6 A) until maximum voltage (14.4 V or 14.7 V) is reached. The charger changes mode at this point. It locks the voltage at maximum level and allows the current to drop. The MULTI XS 3600 switches automatically to pulse maintenance charging when the current drops to 0.4 A. The charging cycle restarts if the battery voltage drops to 12.8 V   or 12.9 V .






Bulk - Charging where 80% of the energy is returned. The charger delivers an almost constant current until the battery voltage reaches maximum level.

Absorption - Charging up to almost 100%. The charge current falls and the voltage is kept constant at the maximum level.

Pulse - Maintenance phase, where the charger delivers a pulse if the battery voltage drops. Charging varies between 95% and 100%. The battery receives a pulse when the voltage reduces. Keep the battery in good condition when not in use. The charger can be connected for months.

BULK CHARGING TIME

Battery size (Ah)	Mode	Time (h)
2		2
10		10
14		3
20		4.5
50		11.5
80		18
120		27

TEMPERATURE PROTECTION

The charger is internally protected from becoming overheated. The power reduces when the ambient temperature increases.

MAINTENANCE

The MULTI XS 3600 does not need any specific maintenance. Please note that dismantling the charger will cancel the warranty. A defective power cord has to be replaced. Keep your charger clean. Wipe it with a soft tissue and mild cleaning liquid. The charger must be disconnected for cleaning.

EQUIPMENT

The MULTI XS 3600 is delivered with a set of battery leads with battery pole clamps. Leads with eyelet terminals are available as accessory.

SPECIFICATION

Voltage AC	220-240 VAC, 50-60 Hz. Output power is reduced at lower input voltage. A perfect charge will still be achieved.
Current	0.6 A rms
Starting Current	< 25 A
Back Current Drain*	1.3 mA
Charging Voltage	Nominal: 12 V 14.4 V or 14.7 V.
Ripple**	Max 50 mV rms, max 0.13 A.
Charging Current	3.6 A max
Ambient Temperature	- 20°C till + 50°C. Automatic reduction of power at increased ambient temperature.
Cooling	Natural convection.
Charger type	Three step fully automatic IU ₀ U _p , with pulse maintenance mode.
Type of batteries	All types of lead-acid batteries (Wet, MF, VRLA, AGM and GEL.).
Battery Capacity	1.2 till 120 Ah
Dimensions	165 x 61 x 38 mm (L x W x H)
Insulation	IP 65
Weight	0.5 kg

*) Back Current Drain is what drains the battery if the charger is connected without the power cord connected. Multi XS 3600 extremely low Back Current Drain is equal to 1 Ah/month. A normal figure for other charger is 1 Ah/day, which could ruin your battery

**) Quality of the current and voltage is very important. A linear charger produces a current with a high ripple. High current ripple heats up the battery and makes the positive electrode age prematurely. High voltage ripple could harm other equipment connected to the battery. Multi XS 3600 produces a high quality current with very low ripple. There is no need to disconnect the battery from the vehicle.

LIMITED WARRANTY

CTEK SWEDEN AB, Rostugnsv. 3, SE-776 70 VIKMANSHYTTAN, SWEDEN issues this limited warranty to the original purchaser of this product. This limited warranty is not transferable. CTEK SWEDEN AB guarantees this unit for two years from the date of purchase against defect workmanship or material. It is the obligation of the purchaser to forward the unit together with proof of purchase to the manufacturer or its representative with transportation cost prepaid. This warranty is void if the unit is abused, handled carelessly or repaired by anyone other than CTEK SWEDEN AB or its authorized representative. CTEK SWEDEN AB makes no warranty other than this limited warranty and expressly excludes any implied warranty including any warranty for consequential damages. This is the only expressed limited warranty and CTEK SWEDEN AB neither assumes nor authorizes anyone to assume or make any other obligation towards the product other than this limited warranty.

DECLARATION OF COMPLIANCE

Manufacturer: CTEK SWEDEN AB, Rostugnsvägen 3, SE-776 70 VIKMANSHYTTAN, SWEDEN, Tel: + 46 225 351 80
Declares under sole responsibility that the battery charger MULTI XS 3600, to which this declaration relates complies with the following standards: EN60335-1, EN 60335-2-29 following the provisions of directive 73/23/EEC amended by 93/68/EEC and EN 55014-1, EN 61000-3-3, EN 61000-3-2, EN 55014-2 following the provisions of directive 89/336/EEC amended by 92/31/EEC and 93/68/EEC.

Vikmanshyttan Sweden, 2002-03-12

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