



Battery Charger

XT 14000 **EXTENDED**

For lead-acid batteries



*User Manual and Guide to professional
charging of starter and deep cycle batteries.*

INTRODUCTION

Congratulations on purchasing your new CTEK professional switch mode battery charger. This charger is part of a range of professional battery chargers from CTEK SWEDEN AB. It represents the latest technology in battery charging with charging and analysis in eight steps with temperature compensation. **Read this User Manual and follow the instructions carefully before using your new charger.**

SAFETY

- The charger is designed for lead-acid batteries. Do not use the charger for any other purpose
- Use safety glasses and turn your head away when connecting or disconnecting a battery.
- Battery acid is corrosive. Rinse immediately with water if acid comes into contact with skin or eyes. Seek medical advice.
- Make sure that the cable is not pinched or in contact with warm surfaces or sharp edges.
- While charging, a battery can emit explosive gases, so it is important to avoid sparks in the immediate area.
- Always provide for proper ventilation during charging.
- Avoid covering the charger.
- Make sure that the electrical cable does not come into contact with water.
- Never charge a frozen battery.
- Never charge a damaged battery.
- Do not place the charger on the battery while charging.
- The electrical connection must fulfil the national heavy current requirements.
- Check the charger cabling before use. Make sure there are no cracks in the cabling or in the protective covering. A charger with damaged cables may not be used.
- Always check that the charger has gone over to maintenance charging mode before leaving the charger unattended and connected for long periods. If the charger had not gone over to maintenance charging within 3 days, this is an indication of a problem. In this case the charger must be disconnected manually.
- All batteries fail sooner or later. A battery that fails during charging is normally taken care of by the chargers advanced control, but certain uncommon errors in the battery can still arise. Don't leave the battery charger unattended for a longer period of time.
- Only mount the charger on a flat surface.
- This equipment may not be used by children or by those who can not read and understand the manual if they are not supervised by a responsible person who can guarantee that the battery charger is being used in a safe manner. Store and use the battery charger out of the reach of children. Make sure that children do not play with the battery charger.
- When using outdoors the charger has to be positioned horizontally with the long side or topside turned up.

CHARGING

Connecting the charger to a battery fitted in a vehicle

1. The power cord should be disconnected when connecting or disconnecting the battery leads.
2. Identify the battery terminal that is grounded (connected to the chassis). The negative terminal is normally the grounded post.
3. Charging a negatively grounded battery. Connect the red cable to the positive terminal on the battery and the black cable to good metal engine ground away from the battery. Ensure you do not connect the black cable to fuel lines or sheet-metal body parts.
4. Charging a positively grounded battery. Connect the black cable to the negative terminal on the battery and the red cable to good metal engine ground away from the battery. Ensure you do not connect the red cable to fuel lines or sheet-metal body parts.

Connecting the charger to an out of vehicle battery:

1. The power cord should be disconnected when connecting or disconnecting the battery leads.
2. Connect the red cable to the positive terminal on the battery and the black cable to the negative terminal.
3. If the battery leads have been connected incorrectly, the reverse polarity protection system will ensure that neither the charger nor the battery are damaged.

Start charging

1. Connect the chargers AC cord to an AC Power Supply. The charger will indicate POWER, yellow indication lamp (B).
2. The lamp for completely discharged battery (1) will illuminate if the battery's voltage is less than 24V.

3. Normal charging will be indicated by the following lights: completely discharged battery (1), bulk charging (2), absorption charging (3) or maintenance charging (4). When the maintenance charging lamp illuminates the battery is fully charged. Charging will start if the voltage drops. The charger can normally be connected for months.
4. If the battery leads have been connected incorrectly, the reverse polarity protection system will ensure that neither the charger nor the battery is damaged and is indicated by lamp (0).
5. If nothing happens. If the lamp indicating the setting and the power lamp remain lit but no other lamp illuminates, the connection to the battery or chassis may be poor or the battery may be faulty. Another cause may be a lack of voltage in the AC Power Supply. Begin by improving the connection between the battery and charger.
6. Charging can be stopped at any time by disconnecting the charger's AC cord. Always disconnect the AC cord before disconnecting the battery leads. When you stop charging a battery installed in a vehicle you should always disconnect the battery lead from the chassis before disconnecting the other battery lead.

IMPORTANT INFORMATION

Please note that the battery pack in the 24V system in most cases consists of more than one battery. They are linked up to the 24V system, but the individual batteries generally have a lower voltage. Therefore it is important for the charger to be connected correctly.

CHARGING PHASES

XT 14000 EXTENDED charges and analyses in seven fully automatic steps.

The battery charger has an 7-step fully automatic charging cycle:

Desulphation

Desulphation with pulses recovers sulphated batteries. Indicates with lamp 1.

Soft start (Lamp 1)

Start mode for the charging cycle. The start phase continues until the battery's terminal voltage has risen above the set limit, at which point the charger switches to bulk charging. If the terminal voltage has not passed the voltage limit within the time limit, the charger switches to fault mode (lamp 0) and discontinues the charging. If so, the battery is faulty or its capacity is too large.

Bulk (Lamp 2)

Main charge when 80% of charging takes place. The charger delivers maximum current until the terminal voltage has risen to the set level. Bulk has a maximum time, at which point the charger automatically switches to Absorption.

Absorption (Lamp 3)

Complete charge up to virtually 100%. The terminal voltage is maintained at the set level. During this phase the current tapers successively. Once the current has tapered to the set limit, this phase switches to being timed. If the total time for Absorption exceeds the time limit the charger automatically switches to maintenance.

Analysis (Lamp 3)

Testing self-discharge. If self-discharge is too high, charging is discontinued and fault mode is indicated.

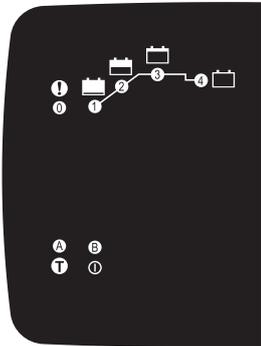
Maintenance charging - Float (Lamp 4)

Charging at constant voltage.

Maintenance charging - Pulse (Lamp 4)

State of charge varies between 95% and 100%. The battery receives a pulse when the voltage drops and keeps the battery in perfect condition when it is not in use. The charger can be connected for months at a time. The charger continuously measures the terminal voltage to determine whether a charging pulse should be initiated. If the battery is loaded and/or the battery's terminal voltage drops the charger starts a charging pulse until the terminal voltage reaches the set level. The charging pulse is then discontinued and the cycle is repeated infinitely. If the terminal voltage drops below a lower limit, the charger automatically goes back to the beginning of the charging curve.

INDICATORS



Lamp	Description
0	Fault mode, the charging is discontinued. For fault causes, see below.
1	Soft start
2	Bulk charging
3	Absorption charging
4	Maintenance charging
A	Charging without temperature compensation.
B	Mains voltage connected

Fault mode

The charger goes to fault mode in the following situations:

- The battery is connected with poles reversed to the charger's terminals.
- The charger's analysis function has interrupted charging.
- The charger has been in start mode for more than 4 hours.

TEMPERATURE COMPENSATION

XT 14000 have a sensor cable placed together with the battery cables. The units will automatically adjust the charging voltage if the temperature deviates from +25°C. A high temperature lowers the voltage and freezing conditions is handled by higher voltage.

The temperature is best measured on or very close to the battery. Therefore always place the sensor as close to the battery as possible when charging. The sensor cable could be prolonged or cut to length with the same functionality. A short-circuited or disconnected sensor is indicated by lamp A. The charging voltage is then adjusted to the +25°C condition.

SPECIFICATION

	XT 14000 EXTENDED
Voltage AC	170–260VAC, 50–60Hz.
Charging voltage	28.8V
Charging current	14A max.
Current, mains	2.9A rms (at full charging current)
Back Current Drain*	<2Ah per month
Current ripple**	<4%
Ambient temperature	-20°C to +50°C Output power is automatically reduced at higher temperatures.
Cooling	Fan
Charger type	Eight-step, fully automatic
Battery types	All types of 24V lead-acid batteries (WET, MF, AGM and GEL).
Battery capacity	28–300Ah, up to 500Ah maintenance
Protection class	IP44 (Outdoor use)***
Weight	1.9kg

*) Back current drain is the current that the charger drains from the battery if the AC cord is disconnected.

**) The quality of the charging voltage and charging current are very important. High current ripple heats the battery and ages the positive electrode. High voltage ripple can damage other equipment connected to batteries. The battery chargers from CTEK produce very high quality voltage and current with low ripple.

***) IP44 cannot be guaranteed if the charger is not positioned horizontally with the long side or topline turned up.

MAINTENANCE

The charger is maintenance-free. The charger must not be opened; doing so will invalidate the warranty. If the power cable is damaged it must be replaced by CTEK or its authorized representative. The charger casing can be cleaned using a damp cloth and mild cleaning agent. Remove the plug from the power socket before cleaning.

LIMITED WARRANTY

CTEK SWEDEN AB, Rostugnsvägen 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 warrants 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 CONFORMITY

CTEK SWEDEN AB hereby declares under sole responsibility that the XT 14000 EXTENDED battery charger, to which this declaration relates, conforms with the following standards: EN60335-1, EN60335-2-29 following the provisions of directive 73/23/EEC amended by 93/68/EEC and EN61000-3-3, EN61000-3-2, EN55014-1, EN55014-2, 55011 following the provisions of directive 89/336/EEC amended by 92/31/EEC and 93/68/EEC.

Vikmanshyttan Sweden, 01-06-2007

Börje Maleus, Managing Director, CTEK SWEDEN AB

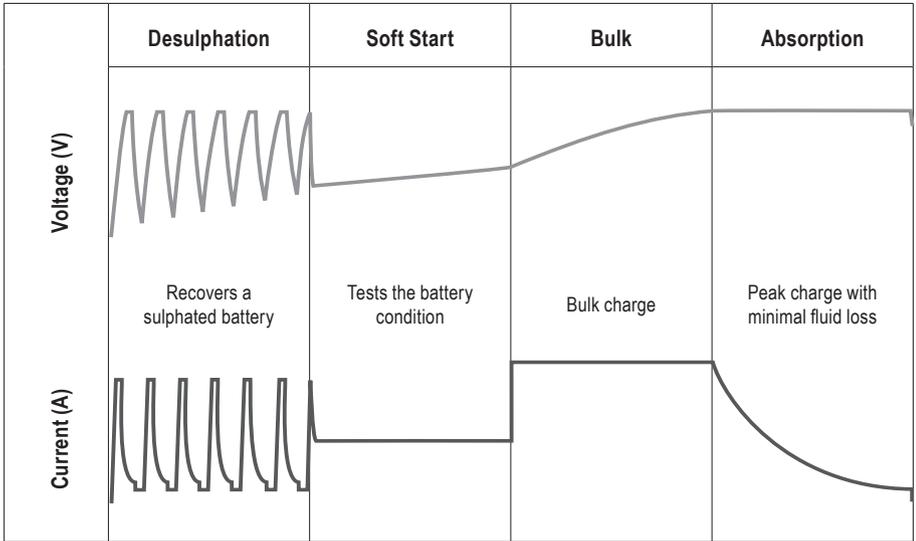
CTEK SWEDEN AB

Rostugnsvägen 3

SE-776 70 VIKMANSHYTTAN

www.ctek.com

PROGRAM DESCRIPTION



XT 14000 EXTENDED PARAMETERS

Mode	Desulphation	Soft Start	Bulk	Absorption
NORMAL or RECOND	YES	Max 14A for 4h until the voltage reaches 25.2V.	14A for max 20h.	28.8V for 4h after the current dropped to 2.5A, max 12h.

Analysis	Float	Pulse
<p>Tests whether the battery retains the energy</p>	<p>Maintenance for maximum performance</p>	<p>Maintenance for maximum battery life</p> 

Analysis	Float	Pulse
<p>Warning indication if voltage drops to 24.0V in 3 minutes.</p>	<p>27.2V with max 14A for max 10 days.</p>	<p>Pulse start at 25.8V, max voltage 28.8V.</p>

