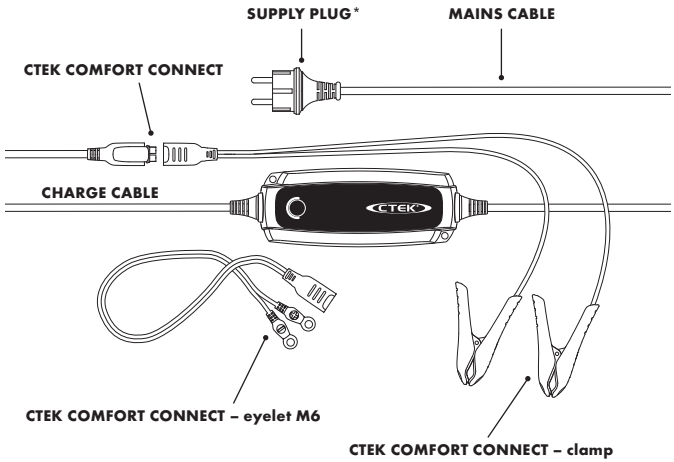
CONGRATULATIONS

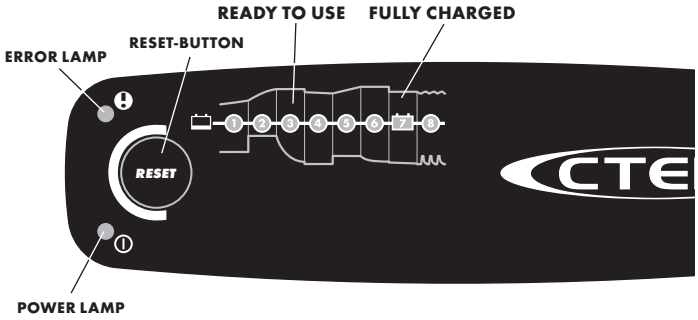
To the purchase of your new professional switch mode battery charger. This charger is included in a series of professional chargers from CTEK SWEDEN AB and represents the latest technology in battery charging. The LITHIUM XS charger model is designed for Lithium-ion batteries using $LiFePO_4$ technology only. Please check with the battery manufacturer for details. Do not use the LITHIUM XS charger for any other battery technology.



*** Supply plugs may differ to suit your wall socket.**

HOW TO CHARGE

1. Connect the charger to the battery.
2. Connect the charger to the wall socket.
3. Follow the 8-step display through the charging process.
   The battery is ready to start the engine when STEP 3 is lit.
   The battery is fully charged when STEP 7 is lit.
4. Stop charging at any time by disconnecting the mains cable from the wall socket.



BATTERIES WITH "UNDER VOLTAGE PROTECTION"

Some Lithium-ion batteries have an on-board **UVP (under voltage protection)** that disconnects the battery to avoid it becoming too deeply discharged. This prohibits the CTEK charger from detecting that there's a battery connected. To bypass this, the battery charger needs to open the UVP. By pressing the RESET-button for **10 seconds**, the charger opens the UVP. During this process, the charging STEP 7 is lit. Once the UVP has been opened and the battery is ready to be charged, the charger automatically starts the charging cycle.

ERROR LAMP

If the error lamp is lit, check the following:

1. Is the chargers positive lead connected to the battery´s positive pole?

2. Is the charger connected to a 12V $LiFePO_4$ battery?

3. Has charging been interrupted in STEP 1 or 4?
Restart the charger by pressing the RESET-button. If charging is still being interrupted, the battery...

STEP 1: *...can not accept charge.*
...may be too large for the charger to wake up. Press RESET-button up to 5 times.
...a paralell load may be connected to the battery. Disconnect the battery and try again.

STEP 4: *...can not keep charge and may need to be replaced.*

POWER LAMP

If the power lamp is lit with a:

1. STEADY LIGHT
The mains cable is connected to the wall socket.

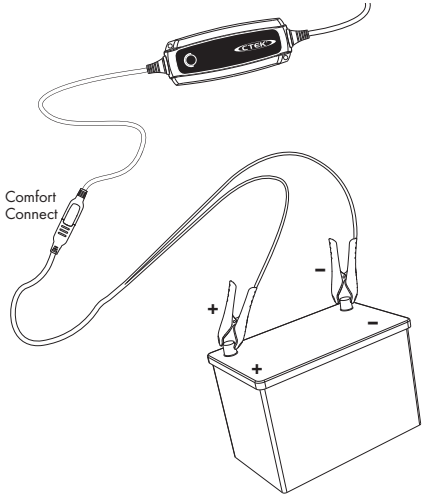
2. FLASHING LIGHT:
The charger has entered the energy save mode. This happens if the charger isn´t connected to the battery within 2 minutes or the battery on board UVP (under voltage protection) is activated.

READY TO USE

The table shows the estimated time for an empty battery to reach 90% state of charge (SOC). ***Please note that charging times are longer in low ambient temperatures.***

BATTERY SIZE (Ah)	TIME TO 90% CHARGED
8Ah	2h
20Ah	5h
60Ah	16h

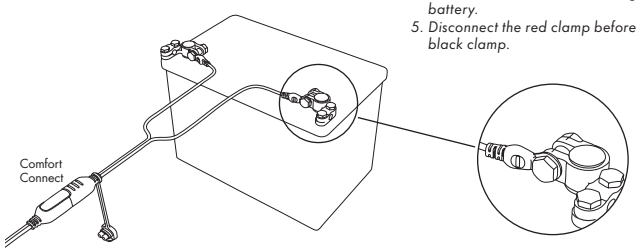
CONNECT AND DISCONNECT THE CHARGER TO A BATTERY



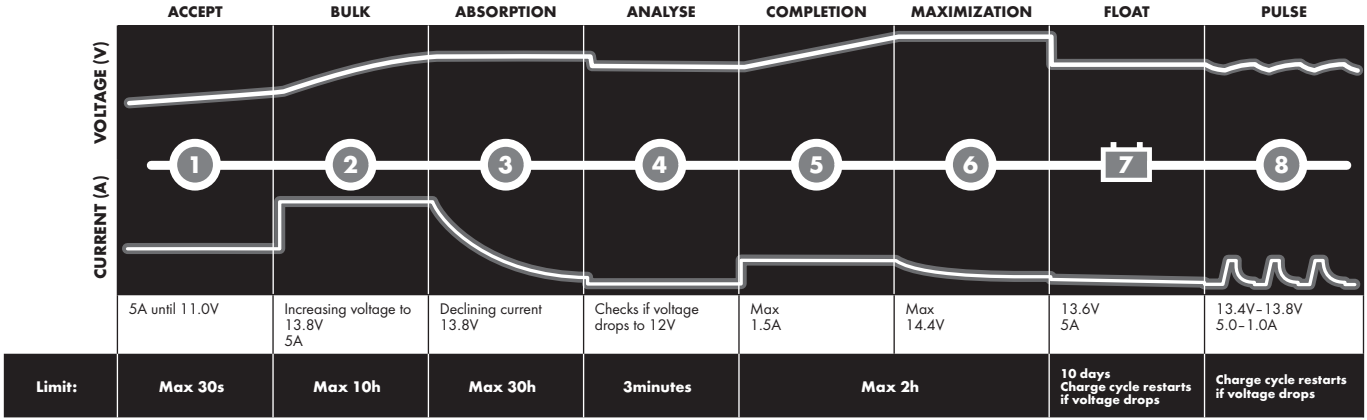
INFO
If the battery clamps are incorrectly connected, the reverse polarity protection will ensure that the battery and charger are not damaged.

For batteries mounted inside a vehicle
1. *Connect the red clamp to the battery's positive pole.*
2. *Connect the black clamp to the vehicle chassis remote from the fuel pipe and the battery.*
3. *Connect the charger to the wall socket.*
4. *Disconnect the charger from the wall socket before disconnecting the battery.*
5. *Disconnect the black clamp before the red clamp.*

Some vehicles may have positively earthed batteries.
1. *Connect the black clamp to the battery's negative pole.*
2. *Connect the red clamp to the vehicle chassis remote from the fuel pipe and the battery.*
3. *Connect the charger to the wall socket.*
4. *Disconnect the charger from the wall socket before disconnecting the battery.*
5. *Disconnect the red clamp before the black clamp.*



CHARGING PROGRAM



	5A until 11.0V	Increasing voltage to 13.8V 5A	Declining current 13.8V	Checks if voltage drops to 12V	Max 1.5A	Max 14.4V	13.6V 5A	13.4V–13.8V 5.0–1.0A
Limit:	**Max 30s**	**Max 10h**	**Max 30h**	**3minutes**	**Max 2h**		**10 days Charge cycle restarts if voltage drops**	**Charge cycle restarts if voltage drops**

STEP 1 ACCEPT
Tests if the battery can accept charge. This step prevents that charging proceeds with a defect battery.

STEP 2 BULK
Charging with maximum current until approximately 90% battery capacity.

STEP 3 ABSORPTION
Charging with declining current to maximize up to 95% battery capacity.

STEP 4 ANALYSE
Tests if the battery can hold charge. Batteries that can not hold charge may need to be replaced.

STEP 5 COMPLETION
Final charge with reduced current.

STEP 6 MAXIMIZATION
Final charge with maximum voltage up to 100% battery capacity.

STEP 7 FLOAT
Maintaining the battery voltage at maximum level by providing a constant voltage charge.

STEP 8 PULSE
Maintaining the battery at 95–100% capacity. The charger monitors the battery voltage and gives a pulse when necessary to keep the battery fully charged.

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SAFETY

- The charger is designed for charging 12V Lithium-ion batteries with $LiFePO_4$ technology . Do not use the charger for any other purpose.
- Never try to charge non rechargeable batteries.
- Check the charger cables prior to use. Ensure that no cracks have occurred in the cables or in the bend protection. A charger with damaged cables must not be used. A damage cable must be replaced by a CTEK representative.
- Never charge a damaged battery.
- Never charge a battery with temperature below 0°C if not specified by the battery manufacturer.
- Never place the charger on top of the battery when charging.
- Always provide for proper ventilation during charging.
- Avoid covering the charger.
- All batteries fail sooner or later. A battery that fails during charging is normally taken care of by the chargers advanced control, but some rare errors in the battery could still exist. Don't leave any battery during charging unattended for a longer period of time.
- Ensure that the cabling does not jam or comes into contact with hot surfaces or sharp edges.
- Always check that the charger has switched to STEP 7 before leaving the charger unattended and connected for long periods. If the charger has not switched to STEP 7 within 24 hours, this is an indication of an error. Manually disconnect the charger.
- This appliance is not designed for use by young children or people who cannot read or understand the manual unless they are under the supervision of a responsible person to ensure that they can use the battery charger safely. Store and use the battery charger out of the reach of children, and ensure that children cannot play with the charger.
- Connection to the mains supply must be in accordance with the national regulations for electrical installations.

TECHNICAL SPECIFICATIONS

Model number	1081
Rated Voltage AC	220–240VAC, 50–60Hz
Charging voltage	13.8/14.4 VDC
Charging current	5A max
Current, mains	0.65A_{rms} (at full charging current)
Back current drain*	<1Ah/month
Ripple**	<4%
Ambient temperature***	-20°C to +50°C, output power is reduced automatically at high temperatures
Charger type	8 step, fully automatic charging cycle
Battery types	12V $LiFePO_4$ batteries
Battery capacity	5–60Ah up to 120Ah for maintenance
Dimensions	168 x 65 x 40mm (L x W x H)
Insulation class	IP65
Weight	0.6kg

*) Back current drain is the current that drains the battery if the charger is not connected to the mains. CTEK chargers have a very low back current.
**) The quality of the charging voltage and charging current is very important. A high current ripple heats up the battery which has an aging effect on the positive electrode. High voltage ripple could harm other equipment that is connected to the battery. CTEK battery chargers produce very clean voltage and current with low ripple.
***) The battery charger is designed to operate from -20°C to +50°C. However battery manufacturers may recommend other temperature ranges for charging their batteries. Please check battery specifications.

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LIMITED WARRANTY

CTEK SWEDEN AB, issues this limited warranty to the original purchaser of this product. This limited warranty is not transferable. The warranty applies to manufacturing faults and material defects for 5 years from the date of purchase. The customer must return the product together with the receipt of purchase to the point of purchase. This warranty is void if the battery charger has been opened, handled carelessly or repaired by anyone other than CTEK SWEDEN AB or its authorised representatives. One of the screw holes in the bottom of the charger is sealed. Removing or damaging the seal will void the warranty. CTEK SWEDEN AB makes no warranty other than this limited warranty and is not liable for any other costs other than those mentioned above, i.e. no consequential damages. Moreover, CTEK SWEDEN AB is not obligated to any other warranty other than this warranty.

SUPPORT

CTEK offers a professional custom support: **www.ctek.com**.
For latest user manual see www.ctek.com. By e-mail: **info@ctek.se**,
by telephone: +46(0) 225 351 80, by fax +46(0) 225 351 95.

CTEK PRODUCTS ARE PROTECTED BY

2012-05-30

Patents	Designs	Trade marks
EP10156636.2 pending	RCD 509617	TMA 669987
US12/780968 pending	US D575225	CTM 844303
EP1618643	US D580853	CTM 372715
US7541778	US D581356	CTM 3151800
EP1744432	US D571179	TMA 823341
EP1483817 pending	RCD 321216	CTM 1025831
SE524203	RCD 000911839	CTM 405811
US7005832B2	RCD 081418	CTM 830545751 pending
EP1716626 pending	RCD 001119911-0001	CTM 1935061 pending
SE526631	RCD 001119911-0002	V28573IP00
US7638974B2	RCD 081244	CTM 2010004118 pending
EP09180286.8 pending	RCD 321198	CTM 4-2010-500516
US12/646405 pending	RCD 321197	CTM 410713
EP1483818	ZL 200830120184.0	CTM 2010/05152 pending
SE1483818	ZL 200830120183.6	CTM1042686
US7629774B2	RCD 001505138-0001	CTM 766840 pending
EP09170640.8 pending	RCD 000835541-0001	
US12/564360 pending	RCD 000835541-0002	
SE528232	D596126	
SE525604	D596125	
	RCD 001705138-0001	
	US D29/378528 pending	
	ZL 201030618223.7	
	US RE42303	
	US RE42230	

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