

CONGRATULATIONS

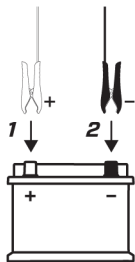
to the purchase of your new professional switch mode battery charger. This charger is included in a series of professional chargers from CTEK SWEDEN AB and represents the latest technology in battery charging.

Read safety instruction



HOW TO CHARGE

1. Connect the charger to the battery.



For batteries mounted inside a vehicle

1. Connect the charger according to the vehicles manual.
2. Connect the charger to the wall socket.
3. Disconnect the charger from the wall socket before disconnecting the battery.
4. Disconnect the black clamp before the red clamp.



2. Connect the charger to the wall socket. The power lamp will indicate that the mains cable is connected to the wall socket. The power lamp will blink if the battery clamps are incorrectly connected. The reverse polarity protection will ensure that the battery or charger will not be damaged.

3. Press the MODE-button to select charging program.

NORMAL BATTERY PROGRAM

LITHIUM BATTERY PROGRAM

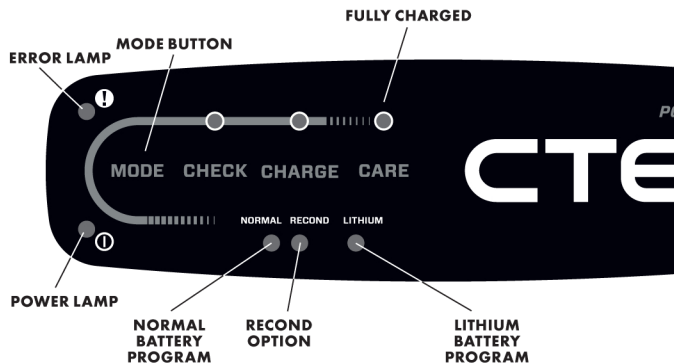
Continue to press the MODE-button to combine charging program with charging options.

RECOND RECOND OPTION

Press the MODE-button several times until the desired combination of charging program and options are lit.

4. Follow the display through the charging process.
The battery is fully charged when the CARE lamp is lit.

5. Stop charging at any time by disconnecting the mains cable from the wall socket.



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CHARGING PROGRAMS

Settings are made by pressing the MODE-button. After about two seconds the charger activates the selected program. The selected program will be restarted next time the charger is connected.

The table explains the different Charging Programs:

Program	Explanation
NORMAL	Normal battery program 14.4V/2.3A Only for lead-acid batteries.
RECOND	Recond option 15.8V/0.9A Use to restore capacity to WET and Ca/Ca batteries. Recond your battery once per year and after deep discharge to maximise lifetime and capacity.

READY TO USE

The table shows the estimated time for empty battery to 80% charge.

BATTERY SIZE (Ah)	TIME TO 80% CHARGED
5Ah	2h
10Ah	4h
15Ah	6h
20Ah	7h
25Ah	9h

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 can't detect a battery in 2 minutes.

ERROR LAMP

If the error lamp is lit, check the following:



1. Polarity error: Is the charger's positive lead connected to the positive charging point? Is the charger's negative lead connected to the negative charging point?

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

3. Has charging been interrupted in STEP 1, 2 or 5?

Restart the charger by pressing the MODE-button. If charging is still being interrupted, the battery...

CHECK: ...is seriously sulphated and can not accept charge. The battery may need to be replaced.

CARE: ...can not keep charge. The battery may need to be replaced.

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	CHECK		CHARGE		CARE			
	1	2	3	4	5	6	7	8
NORMAL	15.8V	2.3A until 12.6V	Increasing voltage to 14.4V, 2.3A	Declining current 14.4V	Voltage limit 12V		13.6V 2.3A	12.7V-14.4V 2.3A-1.0A
RECOND						Max 15.8V 0.9A		
Time limit:	Max 4h		Max 20h	16h	3 minutes	2h or 6h	10 days	Max 1h pulse, Auto pulse every 24h

STEP 1 DESULPHATION

Detects sulphated batteries. Pulsing current and voltage, removes sulphate from the lead plates of the battery restoring the battery capacity.

STEP 2 SOFT START

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

STEP 3 BULK

Charging with maximum current until approximately 80% battery capacity.

STEP 4 ABSORPTION

Charging with declining current to maximize up to 100% battery capacity.

STEP 5 ANALYZE

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

STEP 6 RECOND

Choose the Recond program to add the Recond step to the charging process. During the Recond step voltage increases to create controlled gassing in the battery. Gassing mixes the battery acid and gives back energy to the battery.

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.

CHARGING PROGRAMS

Settings are made by pressing the MODE-button. After about two seconds the charger activates the selected program. The selected program will be restarted next time the charger is connected.

The table explains the different Charging Programs:

Program	Explanation
LITHIUM	Lithium battery program 14.2V/2.3A Use for LITHIUM batteries.

BATTERIES WITH "UNDER VOLTAGE PROTECTION"

Some Lithium batteries have an on-board UVP (under voltage protection) that disconnects the battery to avoid it becoming too deeply discharged. This prohibits the charger from detecting that there's a battery connected. To bypass this, the battery charger needs to open the UVP. There are two options available to "wake up" the battery - automatic and manual.

During the automatic "wake up" period the LED "CHECK" will flash until the charge program is started and LED "CHECK" is lit with a steady light. Automatic "wake up" will be active for maximum 5 minutes.

If the charger is in Standby mode after 10 minutes (LED power led is flashing) the automatic wake up did not succeed. Try the manual wake up.

To use the manual "wake up", press the Mode button for approximately 10 seconds to bypass the UVP. During the "wake up" period the LED "CHECK" will flash until the charge program is started and the LED "CHECK" is lit with a steady light. If the manual wake up is unsuccessful the power LED will start to flash after latest 10 minutes. Disconnect any parallel loads from the battery and try again. If the charging does not start after that, the battery 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 can't detect a battery in 2 minutes.

ERROR LAMP

If the error lamp is lit, check the following:



1. Polarity error: Is the charger's positive lead connected to the positive charging point? Is the charger's negative lead connected to the negative charging point?

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

3. Has charging been interrupted in "CHECK" or "CARE"?

Restart the charger by pressing the MODE-button. If charging is still being interrupted, the battery...

CHECK: ...can not accept charge or parallel loads may be connected to the battery. Remove the parallel loads and restart the charging by pressing the MODE-button.
...restart the charger maximum 3 times. If the charger doesn't continue to Bulk after that, the battery may need to be replaced.

CARE: ...can not keep charge and may need to be replaced.

	CHECK		CHARGE		CARE			
	1	2	3	4	5	6	7	8
LITHIUM	14.4V	Max 14.2V/1.0A	Max 14.2V/2.3A	Max 14.2V	Voltage limit 12.0V		Max 13.3V/2.3A	Max 13.8V/2.3A Pulse start at 13.2V. Pulse stop at 1.1A or at time limit.
Time limit:	5 minutes	30 minutes	20h	4h	3 minutes		10 days	Max 1h pulse. Auto pulse every 10 days

STEP 1 WAKE UP

Read section about batteries with "under voltage protection" on previous page.

STEP 2 ACCEPT

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

STEP 3 BULK

Charging with maximum current until approximately 90% battery capacity.

STEP 4 ABSORPTION

Charging with declining current to maximize up to 100% battery capacity.

READY TO USE

The table shows the estimated time for empty battery to 80% charge.

BATTERY SIZE (Ah)	TIME TO 80% CHARGED
5Ah	2h
10Ah	4h
15Ah	6h
20Ah	7h
25Ah	9h

STEP 5 ANALYZE

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

STEP 6

Not applicable.

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 to keep the battery fully charged.



TECHNICAL SPECIFICATIONS

Model number	1087
Rated Voltage AC	220-240VAC, 50-60Hz
Charging voltage	NORMAL 14.4V, RECOND 15.8V, LITHIUM 14.2V
Min battery voltage	Lead-acid: 2.0V, Lithium: 5.0V
Charging current	2.3A max
Current, mains	0.3A _{rms} (at full charging current)
Back current drain*	<1.5Ah/month
Ripple**	<4%
Ambient temperature	-20°C to +50°C
Charger type	8 step, fully automatic charging cycle
Battery types	All types of 12V Lead Acid batteries (WET, MF, Ca/Ca, AGM, GEL) 12V (4cells) Lithium batteries (LiFePO ₄ , LiFe, Li-iron, LFP)
Battery capacity	5-25Ah
Dimensions	168 x 65 x 38mm (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 has 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.

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 revised user manual see www.ctek.com. By e-mail: info@ctek.se,
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