KREMER

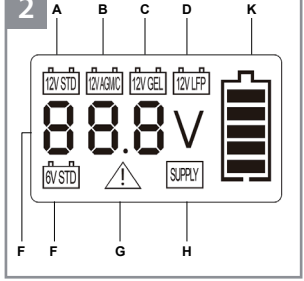
GB

6V/12V
Smart Battery Charger

Read and understand these instructions before attempting any operation of this battery charger and retain for future reference!

1

2

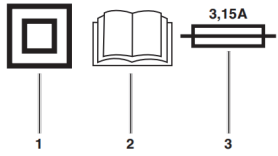


3a

[redacted]	80%
8 Ah	2 h
20 Ah	5 h
40 Ah	10 h
80 Ah	20 h

ATTENTION: Press 5 seconds of "Mode" button –> switch between Normal to Additional function.
Normal: 12V STD, 12V AGM/C, 12V GEL, 12V LFP
Additional function: 6V STD, SUPPLY

4



Disconnect from the mains supply before connecting or disconnecting the battery to or
IMPORTANT: Explosive gases. Avoid flames and sparks. Provide good ventilation during the charging process.

Danger!

When using the equipment, a few safety precautions must be observed to avoid injuries and damage. Please read the complete operating instructions and safety regulations with due care.Keep this manual in a safe place, so that the information is available at all times. If you give the equipment to any other person, hand over these operating instructions and safety regulations as well. We cannot accept any liability for damage or accidents which arise due to a failure to follow these instructions and the safety instructions.

1. Safety regulations

The corresponding safety information can be
found in the enclosed booklet.

Danger!
Read all safety regulations and Instructions.

Any errors made in following the safety regulations and instructions may result in an electric shock, fire and/or serious injury.
Keep all safety regulations and instructions
in a safe place for future use.

This equipment can be used by children of 8 years and older and by people with limited physical,sensory or mental capacities or those with no experience and knowledge if they are supervised or have received instruction in how to use the equipment safely and understand the dangers which result from such use. Children are not allowed to play with the equipment. Unless supervised,children are not allowed to clean the equipment and carry out user-level maintenance work.

Waste disposal

Batteries: Only dispose of these items through motor vehicle workshops, special collection points or special waste collection points. Ask your local council.
Explanation of the warning signs on the
equipment (see Fig. 4)
1 = The equipment is totally insulated
2 = **CAUTION** - Read the operating instructions to reduce the risk of injury.
3 = Fuse value on pcb
4 = Disconnect from the mains supply before
connecting or disconnecting the battery to

or from the charger.

IMPORTANT: Explosive gases. Avoid flames and sparks. Provide good ventilation during the charging process.

2.Layout and items supplied

2.1 Layout (Fig. 1)
1 Function key
2 LCD display
3 Charging cable, black (-)
4 Charging cable, red (+)
5 Suspension eye
6 Mains power cable

2.2 Items supplied
• Open the packaging and take out the equipment with care.
• Remove the packaging material and any packaging and/or transportation braces (if available).
• Check to see if all items are supplied.
• Inspect the equipment and accessories for transport damage.
• If possible, please keep the packaging until the end of the guarantee period.

Danger!
The equipment and packaging material are not toys. Do not let children play with plastic bags, foils or small parts. There is a danger of swallowing or suffocating!

• Original operating instructions
• Safety instructions

3.Proper use

The charger is designed for charging non maintenance-free or maintenance-free 12V lead acid batteries (wet / Ca/Ca / EFB batteries) and for lead gel and AGM batteries which are used in motor vehicles

The SUPPLY function enables the device to be used as a buffer power supply as well, e.g. while changing a battery or for the operation of 12V d.c. consumers (observe the max. power consumption).

The equipment is designed for mobile use only and not for installation in caravans, mobile homes or similar vehicles. Do not expose the charger to rain or snow.

The equipment is to be used only for its prescribed purpose. Any other use is deemed to be a case of misuse. The user / operator and not the manufacturer will be liable for any damage or injuries of any kind caused as a result of this.

Please note that our equipment has not been designed for use in commercial, trade or industrial applications. Our warranty will be voided if the machine is used in commercial, trade or industrial businesses or for equivalent purposes.

4. Technical data
Mains voltage: .....220-240 V ~ 50Hz
Max. power rating: ..... 70 W
Rated output voltage: ..... 12 V DC
Rated output current: ..... 4 A
Battery capacity STD/AGM/C/12V GEL:10-120Ah
Battery capacity "12V LFP" (2A): 2-60 Ah
SUPPLY function output max.: ..... 3 A
6V STD charging program: . 2 A
Protection class: II
Protection type: IP65
Ambient temperature: .....- 20°C – 40°C

5.Operation
Before you connect the equipment to the power supply make sure that the data on the specifications label are identical to the supply voltage.
Danger! Do not charge any frozen batteries.
Please also refer to the instructions in the owner's manuals for the car, radio, navigation system, etc.

Notes on automatic charging (charging programs 12V STD, 12V AGM/C, 12V GEL, 12 V LFP only)
The charger is a microprocessor controlled automatic charger, i.e. it is suitable in particular for charging maintenance-free batteries and for the long-term charging and maintenance-charging of batteries which are not in constant use, e.g. for classic cars, recreational vehicles, lawn tractors and the like. The integrated microprocessor enables charging in several steps. The final charging step, maintenance charging, maintains the battery capacity at 95–100% and therefore keeps the battery fully charged at all times. The charging operation does not need to be monitored. However, do not leave the battery unattended if you charge it over an extended period of time, so that you can disconnect it from the mains power supply in the event of a fault in the charger.

5.1 Explanation of the symbols (Fig. 2)
A Charging a 12V STD battery (lead acid battery).
B Charging a 12V AGM battery and in Winter mode with an ambient temperature of – 20°C to +5°C. Danger! Do not charge any frozen batteries.
C Charging a 12V GEL battery .
D Charging a 12 LFP battery
E Charging voltage in volts, faulty battery (BAt) / fully charged (FUL) / connected with reverse polarity or short-circuit at the clamps (Err)
F Restoration of the charging capability of discharged lead acid batteries with higher charging voltage
G Clamps are wrongly connected (reverse polarity) or there is a short-circuit
H Power supply, e.g. when changing a battery
K Charge status of the battery in percent (1 increment = 25%) and charging process (increment lit = the battery has reached the charge level shown; increment in the battery symbol flashes = the battery is being charged to the next charge level; all increments are lit = the battery is fully charged).

5.2 Setting the charging programs (Fig. 2)
Note:
• Press the "Mode" button (Fig. 1/Item 1) to switch to the various programs. The symbol for the applicable program will appear in the display. The batteries will be charged using the program which is displayed.
• To go to the 6V STD program, press the "Mode" button for **5 seconds.**
• To get back to the 12V STD program from the 6V STD program or the SUPPLY function, also press the "Mode" button for 5 seconds.
• If the voltage of the battery is less than 3.5 V or more than 15 V, the battery is either not suitable for charging or it is faulty. The message "BAt" will appear in the LCD display. The "G" symbol will flash. It is also possible that other battery errors or faults can mean that the battery cannot be charged.
• If there is a short-circuit between the charging terminals while the SUPPLY function is on, the message "Lo V" will appear in the LCD display. The "G" symbol will flash.
• When the charger is disconnected from the socket outlet, the last charging program to have been set will be saved (apart from 6V STD and SUPPLY) and will be the default program the next time the charger is used.
• When the charger clamps are connected to the battery, the charger draws a very small amount of electricity from the battery. This is not a fault.

5.2.1 Standard charging programs
A) 12V STD: Charging program for lead acid batteries (wet, Ca/Ca, EFB batteries) and gel batteries.
B)12V AGM/C: Charging program for AGM batteries and cold weather conditions (ambient temperature of -20°C to +5°C) for normal lead acid batteries (wet / Ca/Ca batteries)

C)12V GEL: Charging program for GEL batteries.
D) 12V LFP: Charging program for LFP batteries.

5.2.2 Special charging programs
F) 6V STD: Charging program for 6V batteries.

Important! To go to this program, the "Mode" button (Fig. 1/Item 1) must be pressed for 5 seconds.

5.2.3 Additional function
H) SUPPLY: For supplying 12V d.c. voltage,

Press the "Mode" button –> switch from the 6V STD to the SUPPLY function

e.g. when changing a battery or for operating 12V d.c. consumers.

Warning! Protection against swapped poles will not be available. If the poles are swapped there is a risk of damaging the charger and the battery/on-board vehicle power supply or a connected consumer. It is imperative that you make sure the polarity is correct when you connect up. Observe
the maximum power consumption (see "Technical data") of the consumer.

Note:
• The direct voltage which is provided (shown in the display) is load-dependent and without load it is approx. 14.5 V.
• This function can be used for consumers which are operated from a vehicle's cigarette lighter.
• Refer to and observe the operating manual
for your 12 V consumer.

5.3 Charging the battery:
• Release or remove the battery stoppers (if fitted) from the battery.
• Check the acid level in the battery. If necessary, top up the battery with distilled water (if possible). Important! Battery acid is aggressive. Rinse off any acid splashes thoroughly with lots of water and seek medical advice if necessary.
• First connect the red charging cable to the
positive pole of the battery.
• Then connect the black charging cable to the bodywork of the vehicle away from the battery and the petrol pipe.
• **Warning!** Under normal circumstances the
negative battery pole is connected to the bodywork and you proceed as described above. In exceptional cases it is possible that the positive battery pole is connected to the body work (positive earthing). In this case, connect the black charger cable to the negative pole on the battery. Then connect the red charger cable to the bodywork at a point away from the battery and the petrol pipe.
• After the battery has been connected to the charger, you can connect the charger to a socket (see Technical Data). You can now
change the charging settings ((see section 5.2).
• **Important!** Charging may create dangerous
explosive gas and therefore you should avoid
spark formation and naked flames whilst the
battery is charging. There is a risk of explosion! It is essential that you ventilate the rooms well.
• When "FUL" appears in the LCD display (and all increments Fig. 2/Item K), charging has been completed. The charger holds the battery at 95% – 100% available battery capacity using pulsed charging. If the charger shows this after just a few minutes, this indicates that the battery capacity is low. The battery needs replacing.

Calculating the charging time (Fig. 3a-3c)
The charging time depends on the charge status of the battery. If the battery is fully discharged, the approximate charging time up to approx. 80% charged can be calculated using the following formula:

$$\text{Charging time/h} = \frac{\text{Battery capacity in Ah}}{\text{Amp. (charging current)}}$$

The charging current should be 1/10 to 1/6 of the battery capacity.

5.4 Fault indicator (Fig. 2/Item G)
The fault indicator will flash (light up) in the fol lowing cases:
• If the voltage of the battery is less than 3.5 V or more than 15 V. The battery is either unsuitable for charging or is defective. It is also possible that other battery errors or faults can mean that the battery cannot be charged.
• If the terminal clamps are connected to the battery terminals with the wrong polarity. The protection against swapped poles ensures that the battery and charger do not get damaged. Remove the charger from the battery and start the charging process from the beginning again. Caution! Protection against swapped poles is not available when the SUPPLY program is used.
• If there is a short-circuit between the two terminal clamps (the metal parts of the clamps come into contact with each other). The protection against short-circuits ensures that the battery and charger do not get damaged.

5.5 Finishing charging the battery
• Pull the plug out of the socket.
• First disconnect the black charging cable from the bodywork.
• Then release the red charging cable from the positive pole on the battery.
• **Important!** In case of positive earthing, first disconnect the red charging cable from the bodywork and then the black charging cable from the battery.
• Screw or push the battery stoppers back into position (if there are any).

Important! If the mains plug is pulled out but the charger cables are still connected to the battery, the charger will draw off a small amount of electricity from the battery. We therefore recommend that you always completely remove the charger from the battery when not in use.

6.Troubleshooting

If the equipment is operated properly you should experience no problems with malfunctions or faults. In the event of any malfunctions or faults, please check the following before you contact your customer services.

Fault	Possible cause	Remedy
Equipment does not charge up	- Charger clamps connected incorrectly - Contact between the charger Clamps - Battery defective	- Connect the red clamp to the positive pole and the back clamp to the bodywork - Prevent contact - Have the battery checked by an expert and replace it if necessary