



Keepower MAX
90A/12V or 45A/24V



Keepower MAX

AUTOMATIC CHARGER

English

The Keepower Max charger is developed to serve lead-acid 12V and 24V batteries. Provides optimal charging for batteries with capacity from 15Ah to 1800 Ah. Automatic charging process starts when battery's parameters are introduced using Navigator menu.

Unique charging curve makes possible to charge wet, gel, AGM and calcium batteries in optimal way with one charging unit. Each charging program is developed with parameters recommended by batteries producers. Spark proof technology used to develop Keepower Max makes possible to charge batteries still connected to car installation with no risk of damage for electronic devices e.g. ABS controller, air bags controller etc.

In Expert Mode user can create and store two own charging curves for both 12V and 24V modes. This helps to meet not standard producer's requirements for batteries charging conditions. Thanks to

implementing switch mode technology user can take an advantage of safe, high power batteries charging.

Keepower Max is capable to charge sulfated batteries using Boost Mode. Powerful Supply Mode with selectable voltage and selectable current limiter makes Keepower Max the most professional charger on the world wide market.

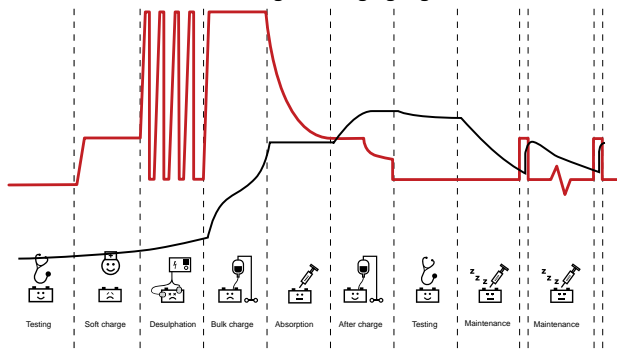
Ergonomic and user friendly Navigator menu combined with graphical LCD display helps to use all available functions, even the most advanced in an easy way. Communication with Keepower Max is intuitive and comfortable for all users. The Keepower Max charger is IP 20D protected.

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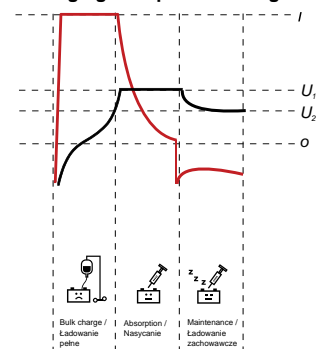
90A/12V or 45A/24V



The intelligent charging regime



Charging in Expert Mode regime



The intelligent charging curve



The "soft charge" phase is used when the battery is deep discharged. The battery is charged until it is ready to receive normal charging (11.6 V / 23.2 V) and then the normal charging is started.



Desulphation (Indication: Low LED flashing):
The "desulphation" phase is used if the battery has not been used in a longer period.



Bulk charging (Indication: Low LED flashing):
The "bulk" phase is the phase where the battery under a constant current is charged up to app. 85% of the full capacity.



Absorption (Indication: Medium LED flashing):
The "absorption" phase is the phase where the battery under a constant voltage is charged up to app. 98% of the full capacity.



After charging (Indication: Full LED flashing):
The "after charging" phase is the phase where the battery under a constant voltage is charged up to app. 100% of the full capacity. The voltage is raised 0.4V compared to the Bulk charging phase.



Testing (Indication: Full LED flashing):
The "testing" phase is the phase where the battery is tested for a defect battery cell.



Maintenance (Indication: Full LED constant):
The purpose with "maintenance" phase is to keep the battery at 100% over a long period of time. The charger is at all time measuring the voltage and when it goes below 12.8 V / 25.6 V it will start charging the battery.



Boost (Indication: Discharged LED flashing):
The "Boost" phase is used to kick-start the battery if it has low power. This "Boost" is made as an intelligent boosting. This means that the charger is boosting the battery for 1 hour with maximum current and then there the battery is tested to see if it is ready for normal charging. If the battery is not ready for normal charging, the charger will boost again. This process is repeated 4 times and if the battery is not ok after that the charger will indicate a fault.



Supply Mode (Indication: Full LED constant):
The "Supply mode" is used as a power supply when the car is fx in a showroom and the cars facilities is used without the motor running. In case of overload, the Warning LED comes on. If heavy overload, the charger switches off to protect itself.

A battery has to be connected for activation of "Supply mode".

Please note that spark protection is not active when in supply mode.

Expert Mode

The Expert Mode regime of charging has been developed to make professional user able to charge lead-acid batteries in accordance to non-standard requirements. In the Expert Mode charging regime user can modify main parameters of charging to create new charging program to meet non-standart battery's producer requirements or to meet requirements of experienced professional user.

Modifiable parameters are:

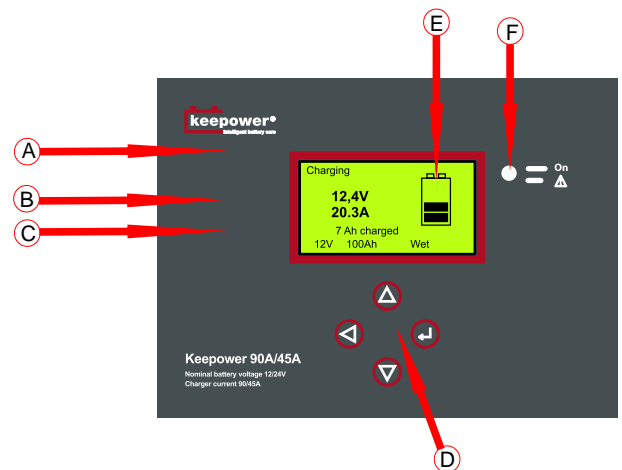
- I: charging current in Bulk Charging phase
- U₁: voltage in Absorption phase
- U₂: voltage in Maintenance phase
- o: charging current in Absorption phase, when attained automatically switches to next charging phase-Maintenance

Supply mode:

The Supply Mode have been developed to make able to keep voltage in vehicle instalation. Charger delivers up to 90A in supply mode. To adapt Supply mode to individual requirements user can select following parameters :

- I: current limit in Supply Mode from 5A to 90A for 12V mode and from 5A to 45A in 24V mode in 1A step.
- U: voltage selectable from 12 V to 14.5V in 12V mode or from 24V to 29V in 24V mode in 0.1V step.

Front panel:



Product Specification

Nominal battery voltage	12V/24V
Charge Current I _{batt}	90A/45A
Battery size	12V 15-1800Ah 24V 15 - 900Ah
Max. total output power	1600W
Input voltage	230Vrms ± 10%
(Mains voltage)	50/60 Hz ± 3Hz
IP	20D
Charger cable size/length	10mm ² /3000mm
Length main cable	3000mm
Weight	10,500kg

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- A- **Charging: actual action**
- B- **12.4V- the battery actual voltage**
- C- **20.3A- actual charging current**
- D- **7Ah charged-Ah supplied by the charger to the battery**
- E- **12V-voltage mode**
- F- **100Ah- nominal battery size**
- D- **Wet-battery type**
- D- **control buttons**
- E- **charging status**
- F- **charger On indicator**

* front panel diagram displays a sample values which might be displayed during battery charging in one of the available charging program

