

**victron energy**  
B L U E P O W E R

# Phoenix Battery Charger

## Phoenix Battery Charger

### Adaptive 4-stage charge characteristic: bulk – absorption – float – storage

The Phoenix charger features a microprocessor controlled 'adaptive' battery management system that can be preset to suit different types of batteries. The 'adaptive' feature will automatically optimise the process relative to the way the battery is being used.

### The right amount of charge: variable absorption time

When only shallow discharges occur (a yacht connected to shore power for example) the absorption time is kept short in order to prevent overcharging of the battery. After a deep discharge the absorption time is automatically increased to make sure that the battery is completely recharged.

### Preventing damage due to excessive gassing: the BatterySafe mode (see fig. 2 below)

If, in order to quickly charge a battery, a high charge current in combination with a high absorption voltage has been chosen, the Phoenix charger will prevent damage due to excessive gassing by automatically limiting the rate of voltage increase once the gassing voltage has been reached (see the charge curve between 14,4 V and 15,0 V in fig. 2 below).

### Less maintenance and aging when the battery is not in use: the Storage mode (see fig. 1 & 2 below)

The storage mode kicks in whenever the battery has not been subjected to discharge during 24 hours. In the storage mode float voltage is reduced to 2,2 V/cell (13,2 V for 12 V battery) to minimise gassing and corrosion of the positive plates. Once a week the voltage is raised back to the absorption level to 'equalize' the battery. This feature prevents stratification of the electrolyte and sulphation, a major cause of early battery failure.

### To increase battery life: temperature compensation

Every Phoenix charger comes with a battery temperature sensor. When connected, charge voltage will automatically decrease with increasing battery temperature. This feature is especially recommended for sealed batteries and/or when important fluctuations of battery temperature are expected.

### Battery voltage sense

In order to compensate for voltage loss due to cable resistance, Phoenix chargers are provided with a voltage sense facility so that the battery always receives the correct charge voltage.

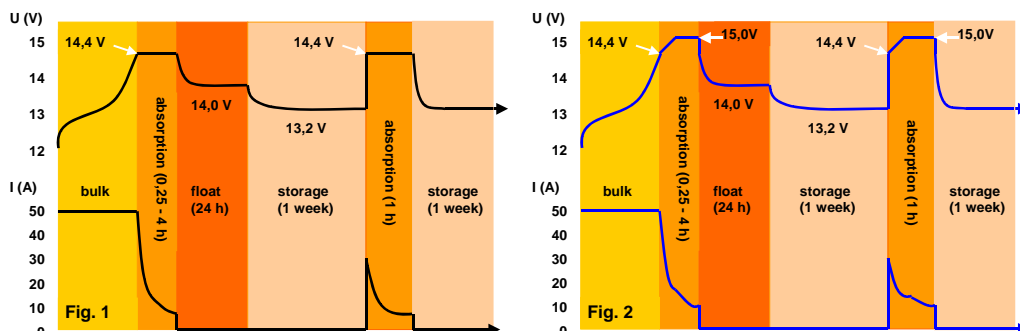
### Computer interface

Every Phoenix Charger is ready to communicate with a computer through its RS-485 data port. Together with our [VEConfigure](#) software, which can be downloaded free of charge from our website [www.victronenergy.com](http://www.victronenergy.com) and the data link MK1b (see accessories), all parameters of the chargers can be customised. The chargers can also be connected to [VENet](#), the new power control network of Victron Energy, or to other computerised monitoring and control systems.

### Learn more about batteries and battery charging

To learn more about batteries and charging batteries, please refer to our book 'Electricity on Board' (available free of charge from Victron Energy and downloadable from [www.victronenergy.com](http://www.victronenergy.com)). For more information about adaptive charging please look under Technical Information on our website.

### Charge curves: up to the gassing voltage (fig.1), and exceeding the gassing voltage (fig.2)





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## Specifications

Phoenix Charger	12/30	12/50	24/16	24/25
Input voltage range (V AC)	90-265			
Frequency (Hz)	45-65			
Power factor	1			
Charge voltage 'absorption' (V DC)	14,4	14,4	28,8	28,8
Charge voltage 'float' (V DC)	13,8	13,8	27,6	27,6
Storage mode (V DC)	13,2	13,2	26,4	26,4
Charge current house batt. (A) (2)	30	50 (3)	16	25 (3)
Charge current starter batt. (A)	4	4	4	4
Charge characteristic	4 stage adaptive			
Battery capacity (Ah)	100-400	200-800	100-200	100-400
Temperature sensor	√	√	√	√
Can be used as power supply	√	√	√	√
Forced cooling	√	√	√	√
Protection (1)	a,b,c,d			
Operating temp. range	-20 to 60°C (0 - 140°F)			
Humidity (non condensing)	max 95%			
<b>ENCLOSURE</b>				
Material & Colour	aluminium (blue RAL 5012)			
Battery-connection	M6 studs			
AC-connection	screw-clamp 4 mm <sup>2</sup> (AWG 6)			
Protection category	IP 21			
Weight kg (lbs)	3,8 (8)			
Dimensions (hwxwd in mm and inches)	350x200x108 mm (13.8x7.9x4.3 inch)			
<b>STANDARDS</b>				
Safety	EN 60335-1, EN 60335-2-29			
Emission	EN 55014-1, EN 61000-3-2,			
Immunity	EN 55014-2, EN 61000-3-3			
Vibration	IEC68-2-6:10-150Hz/1.0G			

- 1) Protection
  - a. Output short circuit
  - b. Battery reverse polarity detection
  - c. Battery voltage too high
  - d. Temperature too high
- 2) Up to 40 °C (100 °F) ambient

## Accessories



### Battery Alarm

An excessively high or low battery voltage is indicated by an audible and visual alarm, and potential free contacts.



### Phoenix Charger Control

The PCC panel provides remote control and monitoring of the charge process with LED indication of the charger status. In addition, the remote panel also offers output current adjustment that can be used to limit the output current and thus the power drawn from the AC supply. This is particularly useful when operating the charger from limited shore power or small gensets. The panel can also be used to change the battery charging parameters. The brightness of the LED's is automatically reduced during night time. Connection to the charger is with a standard UTP – cable.



### Computer controlled operation and monitoring (Victron Interface MK1b)

Every Phoenix Charger is ready to communicate with a computer through its RS-485 data port. All you need to link to your PC and be able to set and read out all parameters is the data link as shown. **Moreover, all Victron Energy products equipped with an RS-485 data port can easily be integrated in VENet, the new power control network of Victron Energy, or to other computerised monitoring and control systems.**



### BMV-501 Battery Monitor

The BMV – 501 Battery Monitor features an advanced microprocessor control system combined with high resolution measuring systems for battery voltage and charge/discharge current. Besides this, the software includes complex calculation algorithms, like Peukert's formula, to exactly determine the state of charge of the battery. The BMV – 501 selectively displays battery voltage, current, consumed Ah or time to go. The monitor also stores a host of data regarding performance and use of the battery.