

GWL/ Power Group Technology Solutions - Stay Powered for the Future

GWL/Power Specification Document



LiFePO₄ Batteries with PCM

6V and 12V models



**GWL
POWER**

Technical Specifications

April 2012

<http://www.ev-power.eu>

Nominal technical specification of the LiFePO₄ batteries with the PCM

Specification		LP6V4AHP	LP12V7AHP	LP12V12AHP	LP12V17AHP	LP12V25AHP	LP12V34AHP	LP12V42AHP
Charge voltage		7.3 V	14.6 V	14.6 V	14.6 V	14.6 V	14.6 V	14.6 V
Nominal voltage		6V	12 V	12 V	12 V	12 V	12 V	12 V
Open terminal voltage	minimal	6.4 V	12.8 V	12.8 V	12.8 V	12.8 V	12.8 V	12.8 V
Nominal energy (Wh)	at 25°C	25 Wh	90 Wh	153 Wh	217 Wh	320 Wh	435 Wh	537 Wh
Typical capacity (new)	at 25°C	4 Ah	7 Ah	12 Ah	17 Ah	25 Ah	34 Ah	42 Ah
Minimal capacity (new)	at 25°C	3.8 Ah	6.8 Ah	11.5 Ah	16.2 Ah	23.8 Ah	31.8 Ah	40 Ah
Initial capacity range (new)		3.8 Ah to 4.2 Ah	6.8 Ah to 7.5 Ah	11.5 Ah to 12.4 Ah	16.2 Ah to 17.5 Ah	23.8 Ah to 26 Ah	31.8 Ah to 36 Ah	40 Ah to 43 Ah
Standard charge	0.2C	0.8 A	1.4 A	2.4 A	3.4 A	5 A	7 A	8 A
Rapid charge	0.5C	2 A	3.5 A	6 A	8 A	12 A	17 A	21 A
Max. charge current	1C	4 A	7 A	12 A	17 A	25 A	34 A	42 A
Standard discharge	0.5C	2 A	3.5 A	6 A	8 A	12 A	17 A	21 A
Fast discharge	1C	4 A	7 A	12 A	17 A	25 A	34 A	42 A
Max discharge current		8 A	14 A	24 A	34 A	50 A	50 A	50 A
Overcharge current protection	by PCM	10 A	20 A	30 A	40 A	60 A	60 A	60 A
Low voltage level		11 V	11 V	11 V	11 V	11 V	11 V	11 V
Deep discharge level		10 V	10 V	10 V	10 V	10 V	10 V	10 V
Discharge cut-off voltage	by PCM	8V (<10V)	8V (<10V)	8V (<10V)	8V (<10V)	8V (<10V)	8V (<10V)	8V (<10V)
Battery Weight		600±100g	1200±100g	1900±100g	2100±100g	3200±100g	4200±100g	5350±100g
Battery Dimension		70x47x101	151x65x100	151x98x100	180x76x166	175x166x125	195x130x180	197x165x170
Cycle Life (0.5C)		1000	1000	1000	1000	1000	1000	1000
Capacity after 500 cycles (0.5C)	80%	3.2 Ah	5.6 Ah	9.6 Ah	13.6 Ah	20 Ah	27 Ah	33 Ah
Capacity after 800 cycles (0.5C)	60%	2.4 Ah	4.2 Ah	7.2 Ah	10.2 Ah	15 Ah	20 Ah	25 Ah
Operating temperature		-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C
Capacity at -20°C (new)	45%	1.8 Ah	3.1 Ah	5.4 Ah	7.6 Ah	11 Ah	15 Ah	19 Ah
Capacity at 0°C (new)	80%	3.2 Ah	5.6 Ah	9.6 Ah	13.6 Ah	20 Ah	27 Ah	33 Ah
Capacity at 20°C (new)	100%	4 Ah	7 Ah	12 Ah	17 Ah	25 Ah	34 Ah	42 Ah
Capacity at 60°C (new)	100%	4 Ah	7 Ah	12 Ah	17 Ah	25 Ah	34 Ah	42 Ah
Capacity after 30 days storage (new)	80%	3.2 Ah	5.6 Ah	9.6 Ah	13.6 Ah	20 Ah	27 Ah	33 Ah

PCM - Protection Circuit Module - protects the LiFePO₄ battery against accidental damage and limits the improper use of the battery.

Warning – Important

The PCM is not to replace the battery management - Note that the PCM inside this type of battery is designed only for last moment safety power-disconnect. In normal operation, the user must stop discharging the battery when the voltage gets below 10V (for 12V batteries). This means the battery voltage MUST be monitored outside the battery and the load must be stopped when the voltage is getting to 10V level. For the proper operation the PCM board inside is not designed to replace a battery management!

Deep discharge protection - even though the PCM battery does contain the PCM board (Protective Circuit Module), the purpose of the PCM board is not to be used instead of the proper battery protection. The battery with the PCM needs to be protected as any other lithium battery. As indicated in the specification file, the deep discharge voltage for the 12V PCM battery is set to 10V. You need to install battery-monitoring equipment to disconnect the load from the battery if the voltage drops to the 10V level. You should not rely on the PCM board only. The PCM board is only a last instance serving as an additional (backup) protection in case of the failure of the main protection against deep discharge.

Proper fusing – it is necessary to protect the battery against accidental over discharge by a proper fusing. Using a proper fuse protects not only the battery but also it protects the equipment, as the fusing does not allow too high currents to pass through the device in case of a failure. You should always install a proper fuse to protect the battery. (For example for a 12V/100W equipment you should install a 10AMP fuse. For the 12V batteries it is easy to use the 12V fuses manufactured by the automotive suppliers.)



Not for traction and high current applications!

Observe voltage limits: Do not over charge above 14.6V. Do not discharge below 10 V. Read instruction manual! Keep away from children! Protect your eyes and skin! Danger of fire, explosion or gas release!

Over charge protection - The maximal voltage for the PCM battery is given as 14.6V. To protect the battery against overcharge, you should install an over charge protection that will disconnect the charging source from the battery when the maximal voltage is over-reached.

Over heating protection - The PCM module inside the battery can be over heated during high current discharge/charge or during the balancing of the cells. The battery should not be operated in unventilated enclosures that do not allow for the release of the heat. If the battery is mounted in an enclosure, proper ventilation must be insured.

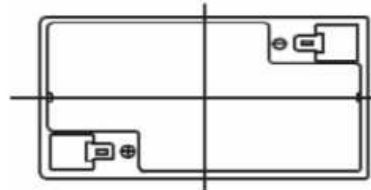
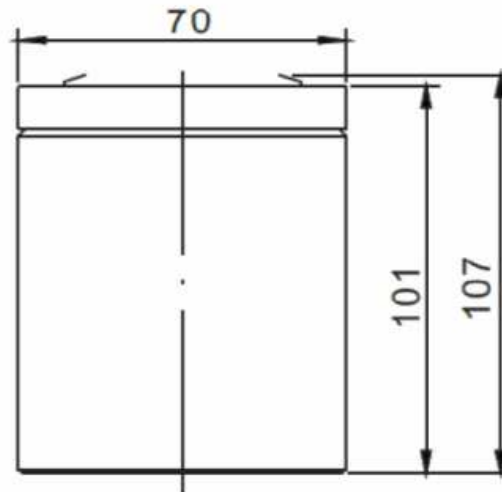
Fire protection - no matter what kind of equipment you may be using, you always need to consider the fire protection. The batteries should be never used in places where some flammable gases may cause explosion. When using the battery, the battery should not be placed close to flammable substances, like paper, plastics, wood or other materials. Any kind of battery should be installed in fireproof cabinets to protect from fire in a case of a battery failure or an accident. We strongly recommend installing fire alarms at any place where batteries are charged and discharged. Please remember the fire is a good servant but a very bad master!

The 6V and 12V batteries with PCM not to be used for traction applications!

IMPORTANT: Note that the 6V/12V batteries (with PCM inside the housing case) are not designed for high current drains, such as in traction applications, scooters, motorcycles, high power backup devices (UPS) or for starting batteries. Due to the limitations of the PCM boards, the optimal discharge current is 0.5C (e.g. 6A for 12Ah model), the maximal discharge current is 1C (e.g. 12A for 12Ah model). The 6V/12V batteries with PCM will become damaged if used with too high currents. The warranty claims cannot be applied to such types of damages.

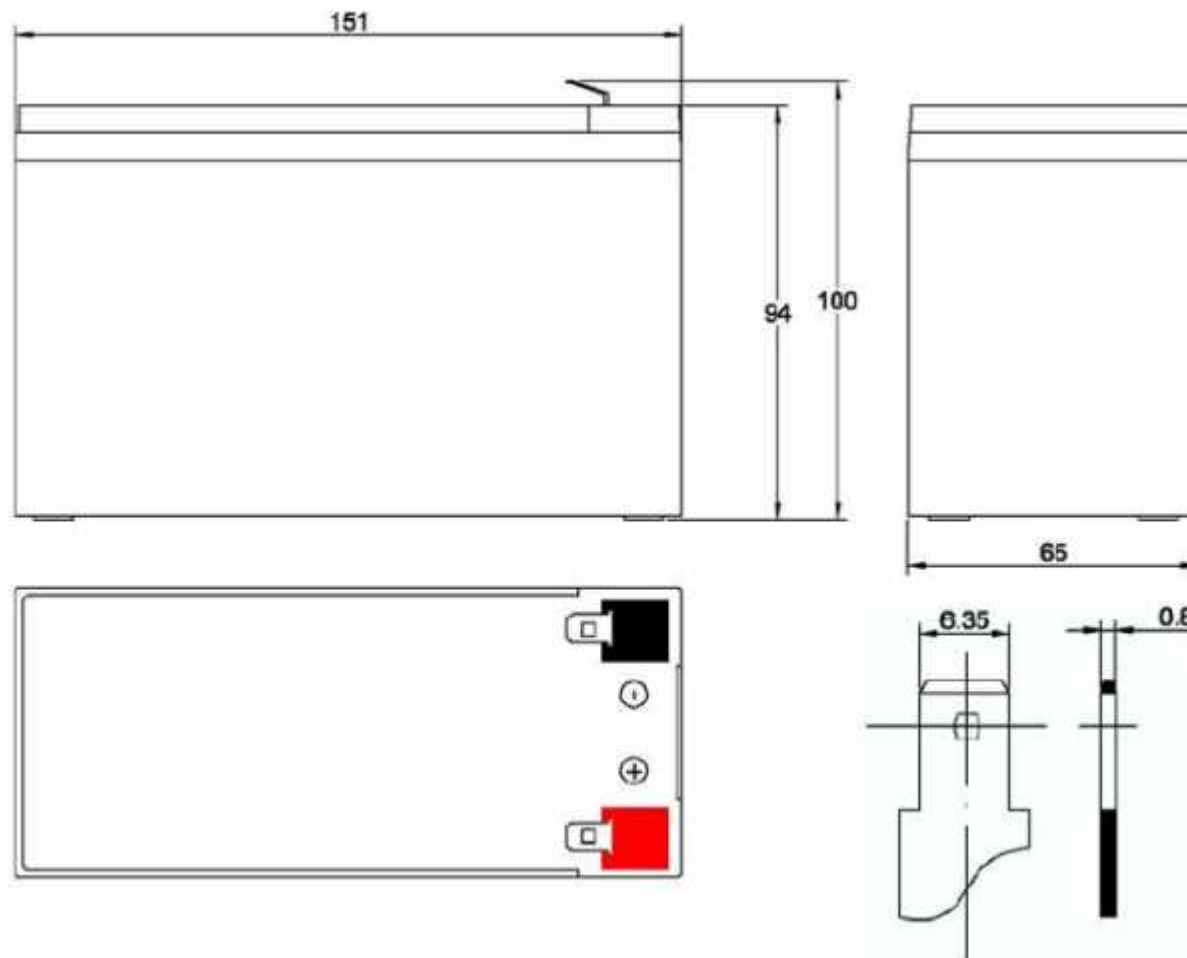
LP6V4AHP

6V 4 Ah



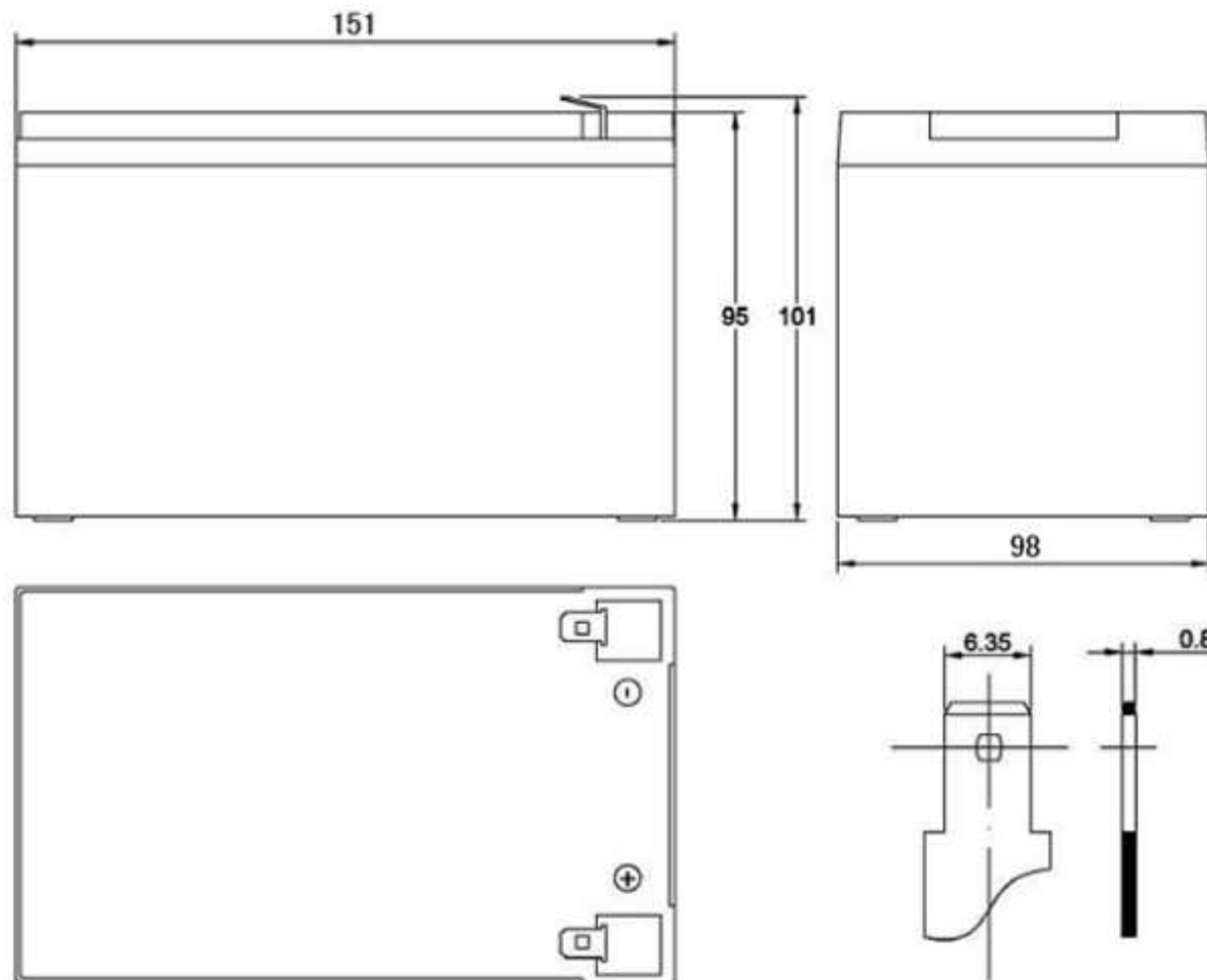
LP12V7AHP

12V 7 Ah



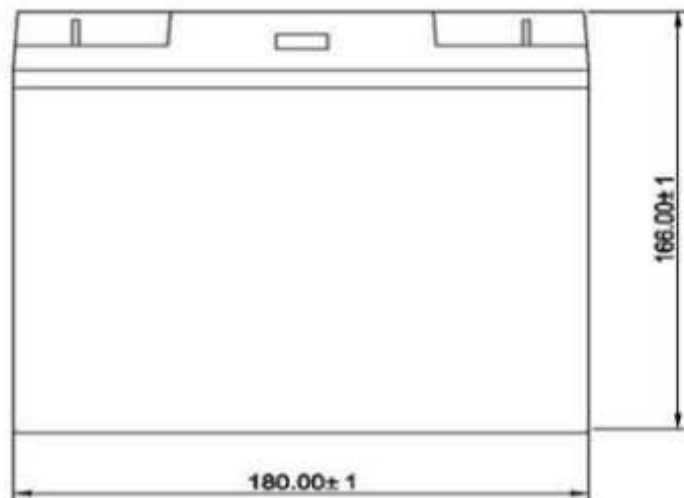
LP12V12AHP

12V 12 Ah



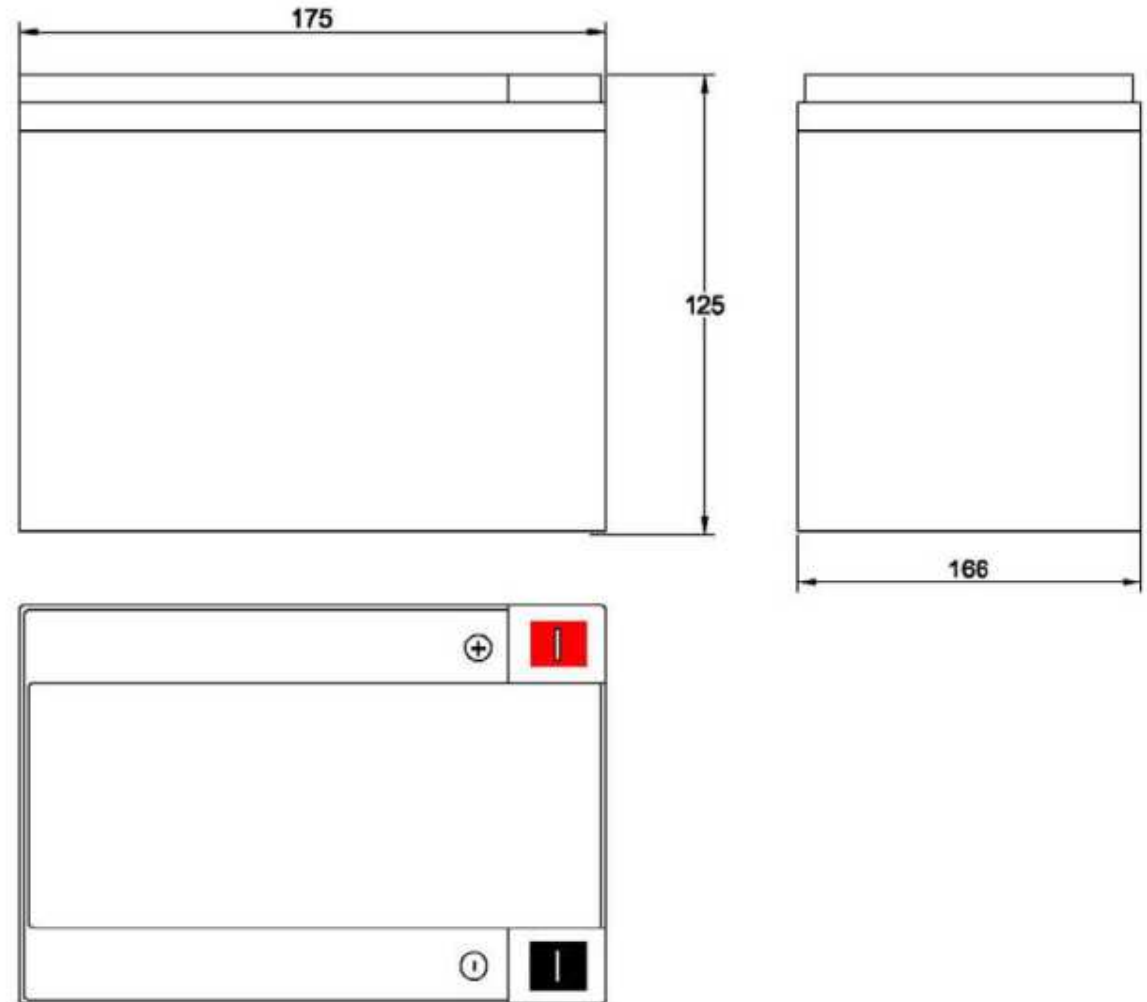
LP12V17AHP

12V 17 Ah



LP12V25AHP

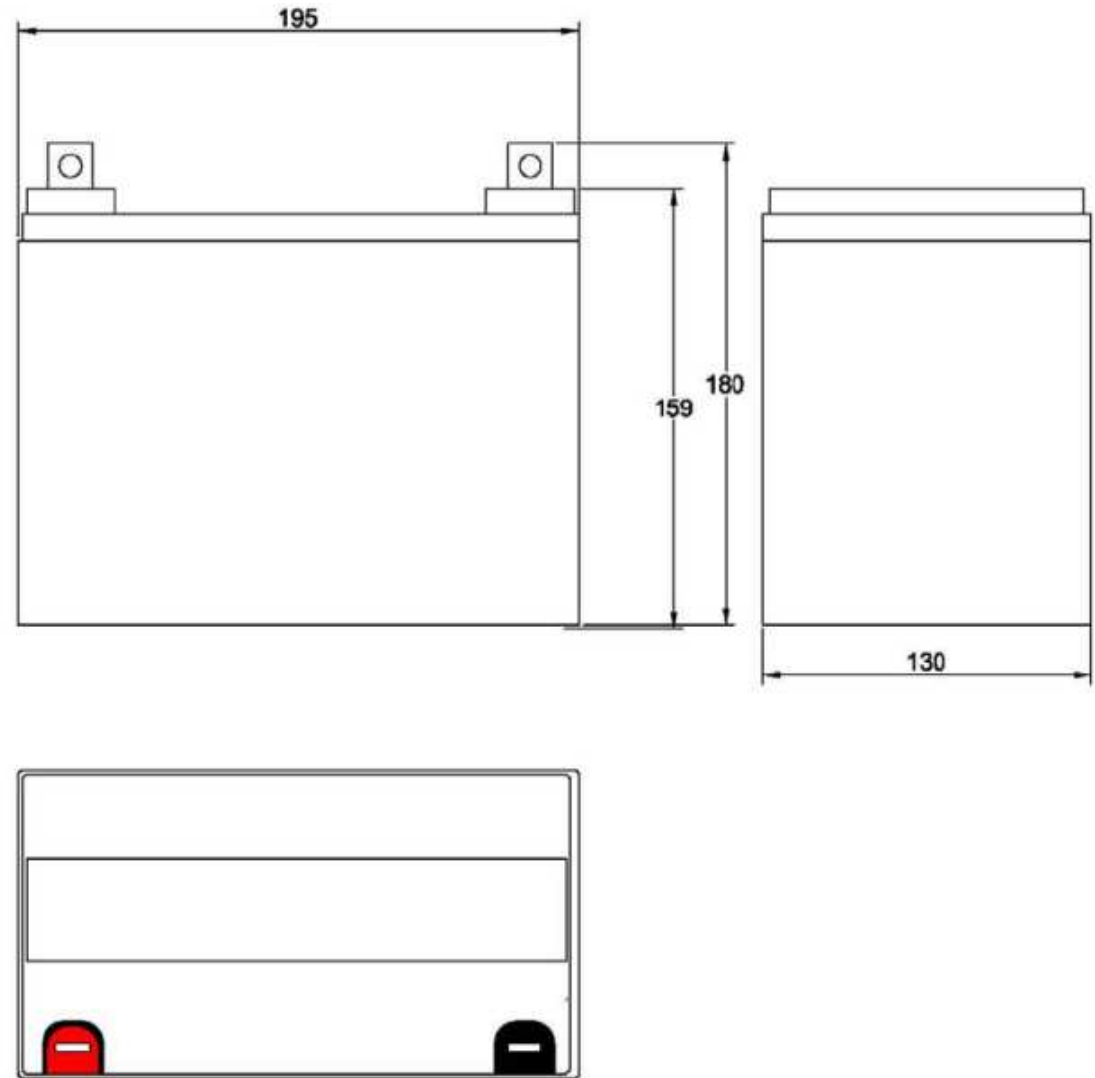
12V 25 Ah



LP12V34AHP

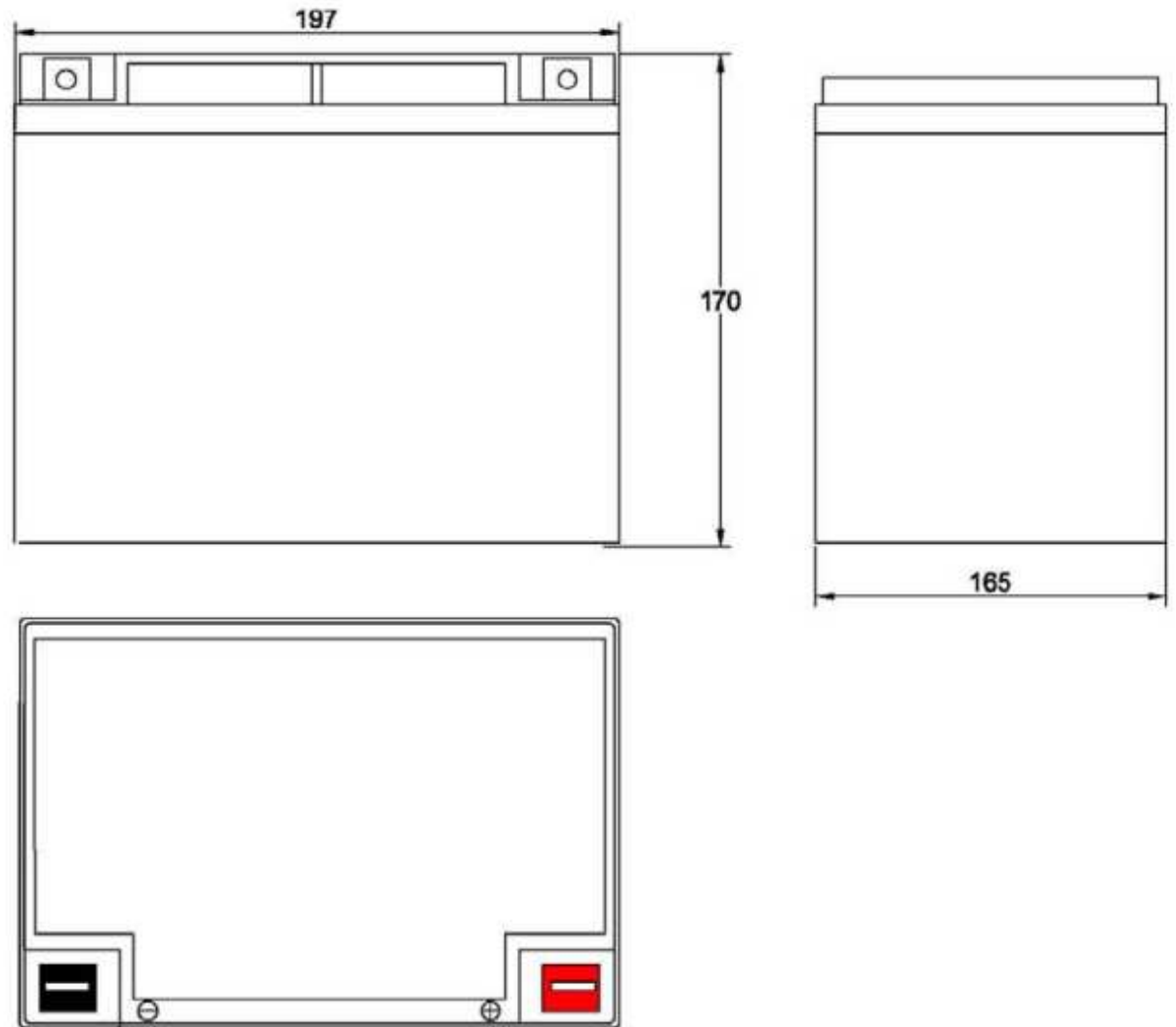


12V 34 Ah



LP12V42AHP

12V 42 Ah



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