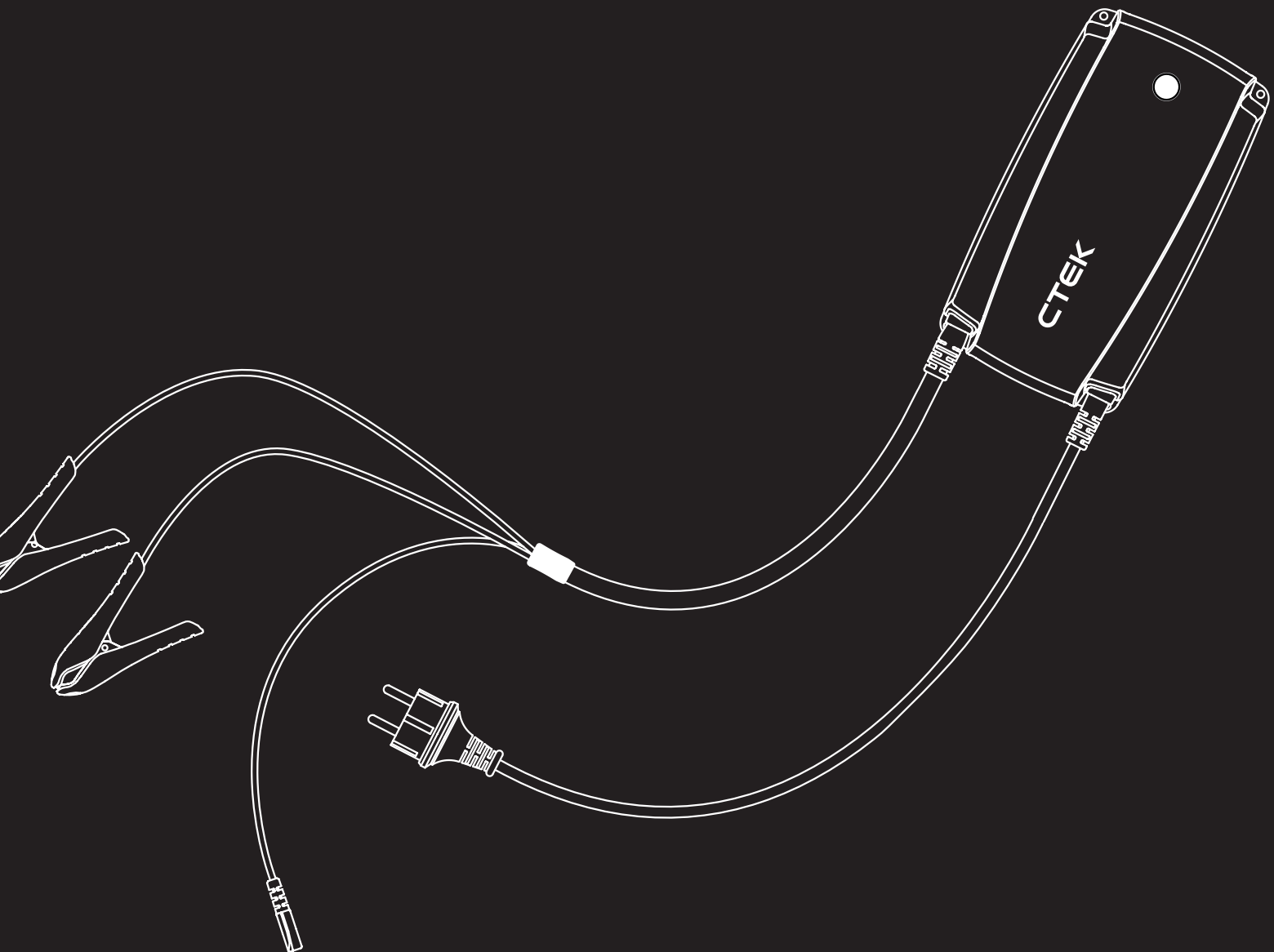


# CTEK

## ***BATTERY CHARGER FAQ'S***

*PRO25 & PRO25SE*

Part No: 40-328 (PRO25) | 40-327 (PRO25SE)



### **Will my PRO25S charge lithium batteries?**

Yes, it will charge all types of (12V LiFePO<sub>4</sub>) lithium Batteries when the Lithium programme is selected.

### **Will my PRO25S charge AGM batteries?**

Yes, it charges all lead-acid type batteries in normal mode.

### **Will my PRO25SE charge lithium batteries?**

Yes, it will charge all types of (12V LiFePO<sub>4</sub>) lithium Batteries when the Lithium programme is selected.

### **What is ripple and how does it affect batteries?**

Ripple is a measurement of the AC power leaking through to the DC side of the charger. High current ripple results in the heating up and drying out of a battery and in a shortened lifetime. High voltage ripple results in imprecise charging and can damage a vehicle electronics.

CTEK's chargers have a very 'pure' charge current and voltage, i.e., minimal ripple.

### **How much electrical energy does it take to charge a lead-acid battery with a CTEK charger?**

Here is an easy way to calculate the electrical energy expenditure when charging a lead-acid battery with CTEK chargers.

#### **Given:**

Battery voltage = *12V*

Battery size = *75Ah*

The battery's charge level = *50%*

The battery's efficiency level = *87%*

CTEK charger's efficiency level = *80%*

#### **Calculate:**

Energy consumed from the mains supply to fully charge the battery

First, how much energy is needed to fill the battery?

$$12V \times 75Ah \times 50\% = 12 \times 75 \times 0.5 = 450Wh$$

How much energy does the charger need to deliver based on the battery's efficiency level?

$$450Wh / 87\% = 450 / 0.87 = 517Wh$$

How much energy does the mains supply deliver to the charger when taking the efficiency level into consideration?

$$517Wh / 80\% = 517 / 0.8 = 647Wh \text{ or } 0.647kWh.$$

**Answer:**

0.647kWh is used to charge the battery based on the given data. Assuming 1kWh price of \$0.14, it will cost \$0.09 to charge a half-charged 75Ah battery.

Vary the battery sizes and charging level to calculate other examples.

**What is AGM?**

AGM stands for Absorbed Glass Mat and differs from a standard Flooded battery in that the electrolyte is held on a fibre glass mat and pressed against the active plate area, instead of being allowed to flood around the plates. This type of battery has a low internal resistance and can accept charge very quickly making it ideal for the modern start stop systems. If the battery casing should become damaged the electrolyte will not leak out.

**What is EFB or ECM?**

EFB stands for Enhanced Flooded Battery, ECM stands for enhanced cyclic mat, two different names for the same type of battery and both are similar in set up to a standard Flooded battery. There are some design changes with this technology, active plate material is more dense, anti-corrosion treatment for negative and positive grid and lower specific gravity to improve charge acceptance are just some of the differences. The EFB battery provides a more cost-effective battery solution over more expensive AGM type batteries.

**What is CA/CA?**

Calcium/Calcium batteries are a flooded low maintenance or maintenance free battery usually VRLA type. During construction some of the Antimony

used in the construction is replaced by Calcium (2% approx.). The benefits are a more robust grid, low water loss and longer shelf life.

### **What is WET/ FLOODED?**

The Flooded battery consists of a series of negative plates (sponge lead) and positive plates (Lead Dioxide) separator material and an Electrolyte solution which is approx. 65% water 35% Sulphuric acid. The flooded type of battery can be vented (which can be topped up) or VRLA which is sealed.

### **What is MF/VRLA?**

MF or Maintenance free also known as a VRLA or Valve Regulated Battery type battery is a flooded battery with the addition of Calcium / Silver to the grid material to reduce gassing and water loss. The battery becomes a small pressure vessel by the addition of a pressure valve (instead of the vents in a standard battery) designed to retain gasses created during charging process - Hydrogen and Oxygen within the battery long enough to recombine into water, which replenishes the electrolyte level. Because of this process these batteries are also called recombination batteries.

### **What is GEL?**

The Gel battery differs from any other lead acid battery because the electrolyte is no longer a fluid, Silica is added to create an electrolyte Gel which is applied to the active surface area of the plate. If the battery casing should become damaged the electrolyte will not leak out.

### **What is SPIRAL CELL?**

A very distinctive looking battery, and very similar internally to the AGM battery. But instead of the plates being flat they are wound together very tightly into a cylindrical shape, which gives the battery its name Spiral cell. If the battery casing should become damaged the electrolyte will not leak out.

### **What is LiFePO<sub>4</sub>?**

The lithium iron phosphate (LiFePO<sub>4</sub>) battery is a totally different technology from all the lead acid types mentioned previously. Due to its low weight and high-power output, it has become very popular in weight

critical environments such as Powersports etc. The replacement cost of the unit at present makes its application restricted

### **What does SoC mean?**

SoC means State of Charge and gives the state of charge as a percentage. A battery that has 11.65V (or less) is flat and has SoC 0. A battery with 12.76V (or more) is fully charged and has SoC 100.

### **Can you charge a lead acid battery with the Lithium mode?**

No - CTEK recommend the correct charge mode be used at all times.

# CTEK

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