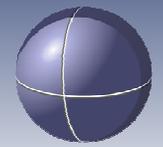


Tr/IPS™ Solar G3 MCU

Battery Q&A



TRACKPOINT
SYSTEMS

Q: So the batteries in the new solar Tr/IPS™ G3 MCU from TrackPoint Systems are advertised as having a life of “greater than 7 years”. But that life goes down the more the battery is used, right?

A: No, not all! Since these batteries are rechargeable lithium, using the batteries by sending lots of messages doesn't decrease how long the battery pack is useful. We want you to use the system by sending lots of messages!

Q: But my rechargeable lithium batteries in my laptop and cell phone need to be replaced after just a couple of years! Why are the batteries in the Tr/IPS™ G3 MCU different?

A: It's a matter of chemistry.

The lithium ion or lithium polymer packs in your laptop and cell phone use Lithium Cobalt (LiCoO₂) in their construction. LiCoO₂ is great for consumer products like that because it's fairly cheap and can deliver a lot of energy. But on the downside, they are only good for up to 500 charge cycles, and they're pretty much dead after 3 years even if you don't use up all those charge cycles.

The batteries in the Tr/IPS™ G3 MCU are Lithium Iron Phosphate (LFP). These batteries were designed for specific purposes, like cordless power tools and electric cars. But they work great for untethered tracking, too! LFP batteries are rated for 2000 charge cycles; they actually perform better at high temperature; and they don't degrade and become unusable after 3 years like LiCoO₂ batteries.

Q: Will 2000 charge cycles really last 7+ years? That's only 5.5 years' worth of days.

A: Yes, that will be more than enough to last for 7+ years. A “charge cycle” really means that the battery went from 100% to 0%, then back to 100%. If the battery only went from 100% to 50%, for example, that's only ½ a charge cycle.

The Tr/IPS™ G3 MCU uses less than 10% of its battery capacity per day, so that 2000 charge cycles is more like 20,000 days of use! There are other reasons the battery pack won't last the full 20,000 days, but 7+ years is a no problem at all.

Q: Are they safe? What about environmental effects?

A: LFP is a significantly safer and more environmentally friendly battery than Li-Ion or Lead Acid. In fact, LFP is so stable that these battery packs have passed UL certification for air transport without any external protection circuitry! Li-Ion, on the other hand, will experience thermal runaway and possible explosion if the charging and use of the batteries are not handled properly. LFP is also considered environmentally-friendly, such that the batteries can be disposed of in a landfill without special processing. Li-Ion cannot be disposed of in a landfill due to the presence of the highly-toxic Cobalt material. And as for Lead-Acid....well, it's all right there in the name.

Q: OK, sounds good...so what's the downside?

A: Well, LFP is more expensive battery pack than Li-Ion or other traditional batteries like Lead Acid. But considering how long the pack will last before replacement, it's actually much cheaper in the long run! If you have to replace an Li-Ion pack every 2-3 years, it quickly becomes more expensive than the LFP solution.

Also, an LFP battery pack doesn't store as much energy as a similarly sized Li-Ion pack. That means you might not get as much usable battery life *between* charges if you use LFP instead of Li-Ion. Fortunately, though, that's where TrackPoint's patented power management technology comes into play. The Tr/IPS™ G3 MCU has all the necessary intelligence to ensure that it can go for days and weeks between charges, and still be available to be used as needed.

Q: If LFP is a newer technology and hasn't even been in production for 7 years, how do we know it's REALLY going to be good for 7+ years?

A: LFP might be a newer technology, but it's being invested in heavily by major manufacturers in diverse industries, as well as by the United States government. As an example, DeWalt power tools has begun to replace their standard Li-Ion packs with LFP due to the long life and fast charge cycles. Also, Chevrolet has chosen to use LFP batteries in their newest model of electric car due to the inherent safety and long life of the LFP batteries. The U.S. government even provided a \$250 million grant to a U.S. manufacturer of LFP batteries. Simply put, LFP is an excellent technology that is here to stay.