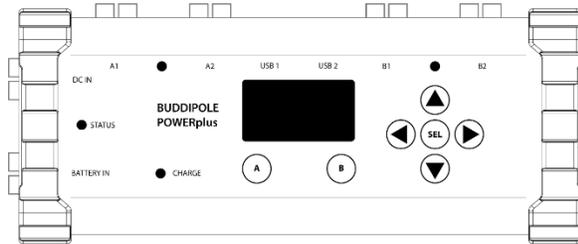


# Battery Backup - Application Note 104

## POWERplus and battery backup

One of the major benefits of POWERplus is it contains efficient power switching between DC input and standby power input. The left side of POWERplus houses the power input connectors for both the main and backup power sources.



## Battery Backup

Battery backup is common in the amateur radio world, allowing continuing communications in the event of a power failure. How much reserve power you will need is related to your goals as a radio operator. A net control operator will need more power than a station that is mostly monitoring a net.

Regardless of the size of the battery, the requirement is for a charged battery to be ready to go, and to recover from discharge rapidly when power has been restored. It is also useful to know the state of charge so you can tell the readiness of the stand by system.

## POWERplus as a UPS

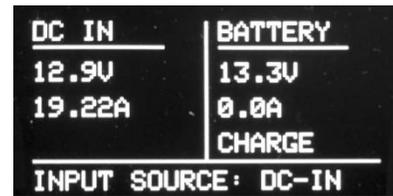
Although POWERplus is very compact it boasts a built in high efficiency multi-chemistry battery charger capable of supporting an external battery from as small as 10Ah to up to 75Ah. Recommended charge rates for batteries are typically in the range of C/10 or C/20 although higher rates are also used. This means the 6A maximum charge rate of the POWERplus can easily support up to 120Ah battery at C/20 or 65Ah at C/10 charge rates. Way beyond the battery tender style of charger.

The charger will fully charge the battery even if your DC input voltage is less than terminal voltage of a fully charged battery, so you don't need to be concerned about a mismatch between the needs of the radio and the needs of the battery.

## Battery Charger Monitoring

In addition to monitoring input and output power, POWERplus also provides a view of the operation of the battery charger. This provides visibility into the state of the charging cycle. The maximum charge current is set by the user and this defines the current when the battery is fully depleted.

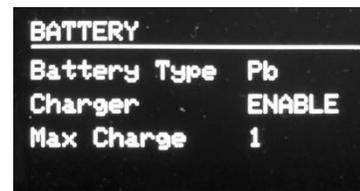
The POWERplus display below shows the DC input voltage and load current in addition to the Battery input voltage and charge current.



At a glance you can see that the charger is enabled and the actual charge current flowing. In this case it is a trickle current required to keep the battery ready for use.

## Battery Charger Control

The user can select between Lead Acid and LiFePO4 battery types, set the charge current and enable or disable the charger from the POWERplus front panel.



The max charge current can be set from 1 to 6A to suit a large range in battery capacity.

## Power tips

There is a trend to using small, lightweight LiFePO4 batteries in many applications including emergency backup power. These batteries typically use internal BMS (Battery Management Systems) protecting the battery from abuse. Choose the battery carefully if you need high peak currents terminals. Some 20Ah batteries will support maximum current up to 40A.

A smaller battery will likely be unsuitable for currents in this range as BMS will intervene and disconnect the battery if overcurrent is detected.