

Different Backup Methods - What Are My Choices?

As discussed in previous issues of “The PULS Advantage”, power fluctuations and outages can damage control equipment and cause unexpected down time. This situation can lead to lost productivity and revenue. As the number of power faults and outages increase across the globe, many users are installing backup systems as part of their standard equipment to prevent such losses and down time. Just as power problems comes in all shapes and sizes, so do the solutions in the devices to help bridge such power issues.

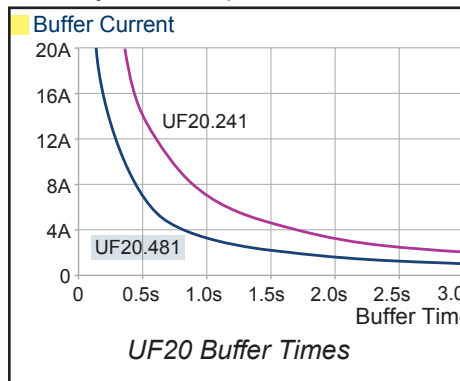
Backup Requirements:

With any backup application, there are specific questions that need to be answered to fully understand what devices are required to prevent equipment from dropping out. First, what output voltage is required? Second, how much current requires backup? Third, how much backup time is required? And finally, are there any loads in this application that do not require backup and if so how much? With this information, recommendations can be made on the size of the power supply as well as the backup method and any additional devices that might be required.



Short Backup Time:

We all have experienced what happens to the power after a lightning strike or when the AC turns on. You can see the lights sometimes flicker or dim. This is caused by a drop in the voltage and if the voltage gets too low, equipment can turn off. At home, this interruption could cause your desktop PC to turn off which is no big deal unless you have open documents.



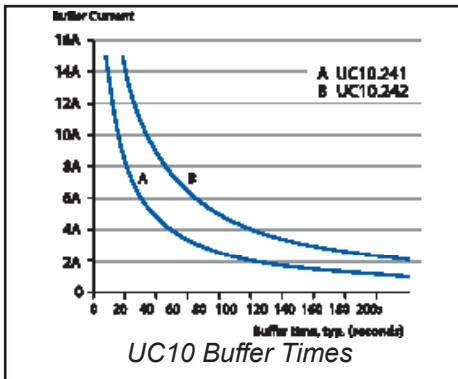
But if this interruption happens during production and PLCs, industrial computers, or touch screens start turning off, chaos can occur with loss of data and long restart times. In these instances, an electrolytic capacitor Buffer Module can provide short term energy to ride through these “blips” without disrupting your application. The PULS UF20.241 can provide 20A @ 24VDC for a guaranteed 200ms buffer (ride through) time. At lower current, the Buffer Module can provide greater buffer times. This is a very simple device which is connected in parallel to the output of the power supply. When the input voltage of the UF20 drops to a determined level, the stored energy is released onto the DC bus. No additional control modules are needed with the UF20 Buffer Module. PULS also offers a 20A, 48VDC model.

Maintenance-Free Backup:

Until recently, EDLC (Electrochemical Double Layer Capacitors) or Supercaps, were too expensive for widespread use as a back up method. The costs have come down in recent years allowing Supercaps to be used as a battery free back up option. This has allowed a method of providing longer buffer times while providing certain backup advantages over a battery method. A capacitor Buffer Module provides maintenance-free backup over the life of the product and can be used in non-ventilated enclosures without the hydrogen gas build up. The output is de-coupled from the input to separate loads into buffered and non-buffered circuits allowing the energy to be used only on the equipment requiring backup. Supercaps also perform better at colder temperatures and the number of charges and discharges do not



have an impact on the lifetime, unlike batteries. The PULS UC10.241 (6KW) can provide 15A at 24VDC for up to 9 seconds and the UC10.242 (12KW) can carry the same current for up to 18 seconds. As with the PULS electrolytic capacitor Buffer Modules, no additional control modules are needed saving additional cost and panel space.



Battery Backup:

Battery backup UPS have been around for many years and offer the most flexibility and longest backup times available. AC models have been used on home and work PCs and are readily available. The problem with using an AC UPS to help support a DC application is too many things can go wrong including a blown fuse or a failure in the power supply leaving the application with no backup. Moving the backup to the DC side ensures that the application will have the DC power it requires to keep the system up and running or to allow for a control shutdown. There are several DC models available on the market, but these competitive units utilize two batteries in series for 24VDC and can only provide the battery voltage during backup which decays from approximately 27VDC down to 19VDC or lower. Some loads may not support voltages below 20VDC and may drop out which defeats the purpose of a backup system. These competitive models can only monitor and charge the batteries in a series or “sum” voltage method which prevents optimum conditions for charging both batteries equally. Mismatched batteries or wear and tear on one battery can have negative effects

on both batteries which sometimes requires more frequent battery replacements.

PULS Battery Backup:

PULS has taken the DC-UPS to a whole new level with the “1-Battery-Concept” which requires only



one 12VDC battery to back up a 24VDC load. Two other “The PULS Advantage” have detailed this unique concept, so only a summary will be discussed here. With a single 12V battery, the battery can be optimally charged and monitored resulting in the longest battery life possible. A single battery allows a fixed regulated output voltage for the load that does not change during the entire discharge of

the battery. Because a single battery is being monitored and measured, there is no guess work to know when the battery needs replacing and the PULS DC UPS can provide a distinct “Replace Battery” contact. PULS offers a variety of 10A, 24VDC single battery UPS controllers; UB10.241 - for small battery sizes, UB10.242 – for up to a 130Ah battery, UBC10.241 with integrated 5Ah battery and the UB10.245 offering both 24V and 12V backup. PULS also offers a 20A UPS controller and the only difference is that this controller utilizes two batteries in series to keep the battery cables to a reasonable size. Even with two batteries in series, the PULS UB20.241 20A, 24VDC UPS controller maintains the unique PULS “1-Battery-Concept” by utilizing the center tap between the two batteries. With this center tap, PULS can charge and monitor the two batteries independently of each other offering superior battery management.

No matter your backup needs, big or small, PULS has the product to meet your requirements offering superior performance and reliability. Exactly what you expect in a backup system.

