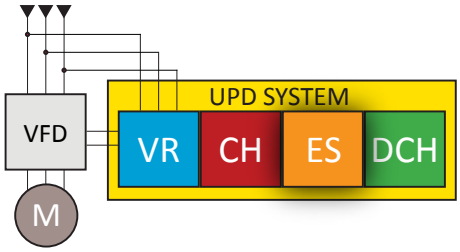
Ultracapacitor Solutions

Undervoltage Solutions



BONITRON

Ultracapacitor Solutions

Process availability and uptime are the watchwords of a profitable business. Reliability is the key to constant production. Sags, dips, outages, and transients on the power grid can cause variable frequency drives (VFDs) to trip off-line. This can stop your process and damage your product or equipment. The cost of repair, lost product, and lost productivity can be staggering. Now you can protect your VFDs from power fluctuations from the utility or within the plant with Bonitron's Ride-Thru Solutions.

Conventional methods, such as automatic restart and kinetic buffering, do not allow the VFD to continue operating at full power. Many drives today claim some type of "Ride-Thru", and have been tested to meet SEMI-F47 specifications, however they cannot actually "Ride-Thru" voltage sags over 15% without ***losing control*** of the process. Most processes cannot tolerate changes in speed or power output without loss or damage. However, **Bonitron's Uninterruptible Power for Drives (UPD) systems with ultracapacitor storage allow your VFD to maintain full power through sags and outages so your process never sees a disturbance.**

Bonitron's UPD Systems allow your VFDs to meet or exceed:

- SEMI-F47
- Samsung Power Vaccine
- IEC 61000-4-34

Product Highlights

- Reliable operation in harsh environments
- Virtually maintenance free
- Tailored solutions
- Competitively priced
- Exceptional efficiency
- Compact design
- Extended operating life
- Environmentally safe

Industry Applications

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Uninterruptible Power for Drives

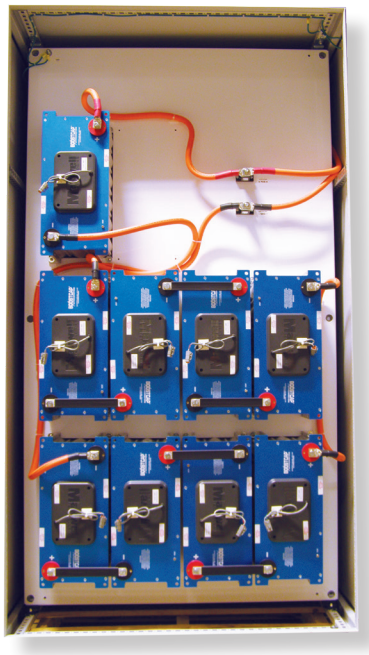
Bonitron Capacitor UPD Systems (Uninterruptible Power for Drives) are the cost effective way to ensure your critical process never sees power disturbances from voltage sags or **outages lasting up to 2 seconds**. Capacitor UPD Systems include a voltage regulator that monitors the drive's DC bus voltage. If drive voltage sags or disappears, the system becomes active immediately and provides power to the DC bus so that the process is not affected.

Ultracapacitor energy storage
- Full-load power for up to 2-seconds
  - 100%, 3-phase outages

Sized to drive system process
- Typically much lower cost than plant-wide UPS
- Support single or multiple drives with one UPD System

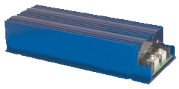
Parallel Connection
- High reliability
- Test system with no effect on process
- Very low standby power

Seamless power transfer from utility, to Bonitron, to generator or restored utility
- 208 – 480VAC systems



> 50kW

< 50kW



Series Selection	Maximum Current	UPD Duration	Voltage Regulator	Charger	Energy Storage	Integrated Discharger	Interactive Display
S3534UR	85 A	Outage 2 sec	●	●	Ultracapacitor	●	●
S3460UR	425 A	Outage 2 sec	●	●	Ultracapacitor	●	●

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Voltage Regulators

Bonitron RideThru Voltage Regulators regulate the DC bus during a voltage sag or outage event. If the incoming voltage level drops, the Voltage Regulator boosts the DC bus up to the minimum level needed by the drive. RideThru Voltage Regulators provide full-load power for up to 2 secoSimple Integration

- M3460R, M3534R
- Provides full-load power for up to 2 seconds for sags and 100%, 3-phase outages with ultracapacitors

Chargers

Bonitron M3528 Chargers maintain energy levels in batteries and ultracapacitors.

- Adjustable current limit
- LED indicators
- Isolated status contacts

Dischargers

The M3628 Series discharges capacitor banks to safe working levels quickly.

- Self-powered from DC bus or 24VDC external source
- Increased safety
- Typically sized to discharge to 50V in 1 minute
- LED indicators

M3628UCT Ultracapacitor Tester

Product Highlights

- Charges, discharges, measures ultracapacitors
- Variable output voltage: 2 - 20V
- Digital control interface
- Operates from standard 110 - 240VAC supply
- Tough impact and weather resistant case

Advantages

- Accurate capacitance and ESR measurement
- Overcurrent and over temperature protection
- Quickly charges and/or discharges ultracapacitors
- Portable - case on wheels

Benefits

- Measuring aging capacitors helps avoid pre-emptive replacement
- Quick verification of both new and stored capacitors
- Decreases maintenance time and cost

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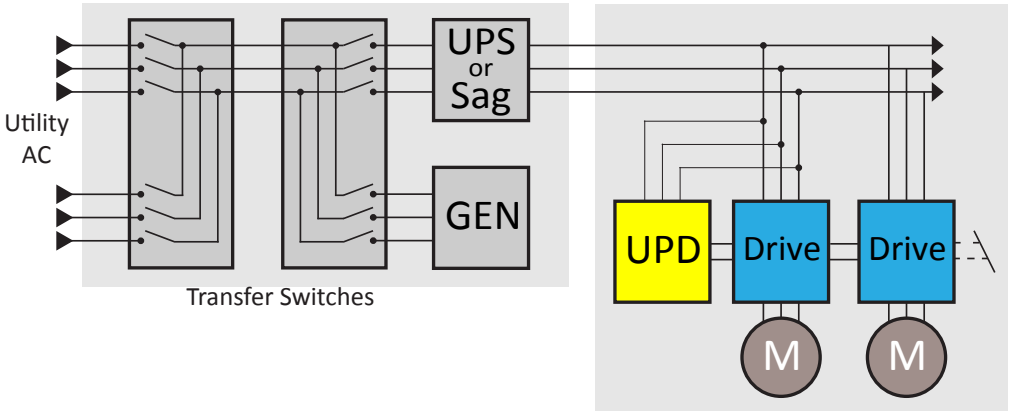
The Bonitron UPD Advantage

Electricity travels miles to reach the drives and motors that control your process. While outdoor power lines and substations are vulnerable to power outages caused by cars, weather, and even animals, the lines inside your plant are susceptible to power quality events as well.

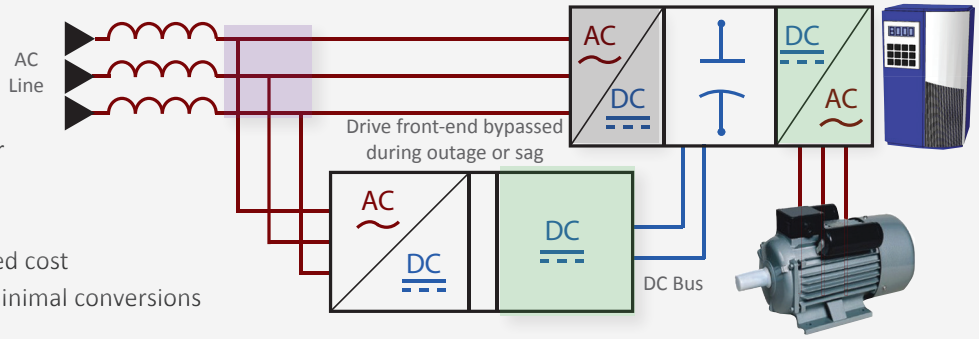


Unlike typical plant wide solutions, Bonitron designed its UPD solutions to connect directly to the DC terminals of one or multiple drives. If drive voltage sags, the Bonitron UPD immediately provides power so motor speed is not affected and the process never sees a disturbance. When properly sized, Bonitron UPD systems provide drives with full-load power until the AC line is restored or generators are online.

Bonitron Sag UPD Systems boost remaining AC power to power the DC bus of the drive via DC bus connection terminals on the drive. This eliminates an unnecessary and energy-wasting DC to AC conversion.

Bonitron UPD Advantages

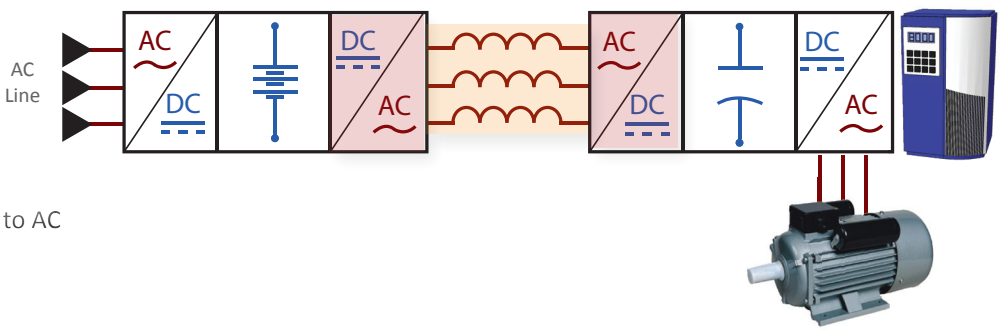
- Parallel Connection
  - High reliability
  - Seamless power source transfer
- Increased efficiency
  - Ultra-low standby power
  - Sized to drive system for reduced cost
  - Power supplied to DC bus for minimal conversions



Competitors' double conversion UPS systems convert DC voltage that is stored in batteries or capacitors back to AC voltage in order to power the drive, which in turn converts it back to DC. Variable frequency drives are not recommended for use with UPS Systems, as the drive input reactance interacts negatively with UPS inverters.

In-line UPS Disadvantages

- Series Connection
  - Decreased reliability
- Decreased efficiency
  - Unnecessary conversions
  - Converts energy storage back to AC



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