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FAILSAFE UPS POWER SWITCH

DESCRIPTION *Read this manual thoroughly before installation or use.*

BackUPS is a power controller for ensuring reliable AC power to critical equipment that is powered with an Uninterruptible Power Supply (UPS). BackUPS constantly monitors the output of the UPS, and automatically bypasses the UPS if its output fails or becomes unstable. This keeps the load powered-up, and allows the UPS to be disconnected for battery replacement or other maintenance. BackUPS provides a Status output for remote monitoring, and can Bypass the UPS via a remote GPI input. BackUPS can also be used as a "Remote Reboot" device, to remotely reset equipment.

THEORY OF OPERATION

BackUPS has two AC inputs: *LINE* and *UPS*. *Line* is connected to a local AC socket. The UPS input is also connected to this socket, and the UPS output is connected to the *UPS* input on the BackUPS unit. Whenever the UPS is operating, its output is sent to the LOAD via the duplex outlet on the BackUPS. If the UPS output fails, BackUPS will instantly bypass the UPS, and route direct-LINE power to the load.

Whenever the UPS powers-up, the DELAY TIMER is activated. BackUPS monitors the UPS during the Delay Time interval, which is set via DIP switches. If UPS power is stable during this interval the UPS will be enabled, supplying power to the LOAD. Any interruption during or after the Delay will cause the unit to instantly bypass the UPS.

INSTALLATION

BackUPS is supplied with two power cables. Plug the longer cable into a local AC outlet, and plug other end into the IEC connector labeled INPUT FROM LINE. Plug the shorter cable into the output of the UPS, and plug the other end into the IEC connector labeled INPUT FROM UPS. Connect the UPS input to the local AC outlet. The load should be plugged into the duplex outlet on the back of the BackUPS unit.

SETUP

The DELAY TIME DIP switches are used to set the Delay Time and optional modes, as follows:

Switches 1 thru 7 set the Delay Time. See the chart on the top cover, and set one switch down to select the time desired. There are two Delay Time ranges: HI and LO. Set Switch 8 to select either range: UP=HI, DOWN=LO. To completely disable the delay timer, set Switch 9 down. (Leave this switch UP for initial installation.) To enable the Fast Reset mode, set Switch 10 down. (Leave this switch UP for initial installation.)

OPERATION

BackUPS has three modes of operation, set by the MODE switch:

DEL: In Delay mode, BackUPS instantly switches to LINE power if the UPS fails or becomes unstable. When the UPS powers-up, the Delay Timer monitors its output. If the UPS output is stable during the Delay interval, the UPS will be switched back online after the Delay interval times-out.

AUT: In Automatic mode, BackUPS instantly switches to LINE power if the UPS fails. When the UPS powers-up, BackUPS instantly switches back to UPS power. There is no Delay Timer function (even if DIP switch #9 is up).

BYP: In Bypass mode, BackUPS bypasses the UPS at all times, sending LINE power to the LOAD. Select this mode to remove the UPS for battery replacement or other maintenance.

LEDs provide visual confirmation of BackUPS operation, as follows:

The **RED** LEDs indicate presence of AC power at the two inputs and at the duplex output socket.

The **GREEN** LED indicates when the UPS is active and is supplying power to the load. If the green LED is off, the UPS is bypassed and the load is being powered via the LINE input.

The **BLUE** LED shows the status of the Delay Timer: If it's flashing, the timer is operating. When the timer has "timed-out", the blue LED will be solid-on. If the Timer is disabled (switch #9 down), the blue LED will be off.

To check/restart the timer: Unplug the INPUT FROM UPS, wait about one second, then plug it back in. The BLUE LED will flash during the Delay interval. Another way to restart the timer is to *momentarily* set Switch #9 down, then back up. Note that the timer will function only if the UPS output is on. (Red UPS LED must be on.)

FAST RESET MODE

The BackUPS unit will bypass the UPS if it senses a power interruption of about 200ms or more. However, if there is a need to trigger the Bypass mode with a shorter interruption, the FAST RESET mode can be enabled. In this mode, the unit will sense interruptions in UPS power as short as about 10ms. To enable Fast Reset, set DIP switch #10 down.

NOTE: The Fast Reset mode operates only when the unit is in DEL mode. It does not function in AUT mode.

(Fast Reset can be used as a diagnostic tool if there is reason to suspect short-term “glitches” in the UPS output.)

REMOTE STATUS AND CONTROL

BackUPS provides a Status output for remote monitoring, and the ability to switch to Bypass mode via a GPI input. Interface is via the REMOTE connector. The pin-outs are as follows, left-to-right:

| | |
|---|-------------------------|
| 1 | +12vdc |
| 2 | Grounded when UPS is ON |
| 3 | +12vdc |
| 4 | BYPASS INPUT + |
| 5 | BYPASS INPUT – |
| 6 | DC GROUND |

Pins 1 and 2 will supply 12vdc when the UPS is ON (green LED on).

Pins 4 and 5 are REMOTE BYPASS inputs. Apply 5-12 vdc to these pins to “force-bypass” the UPS. This voltage should come from an external source, as the BackUPS internal power supply will not operate if the UPS output fails. The current draw is about 10ma. If there is no reliable source of power, any 6 to 12 volt battery can be used.

USING BACKUPS AS A “REMOTE REBOOT” DEVICE

To use BackUPS to remotely reboot equipment that must be reset by power-cycling, install as follows:

1. Connect the INPUT FROM UPS to an AC power source. (The INPUT FROM LINE connection is not used.)
2. Connect the load to the duplex AC outlet on the BackUPS.
3. Set the MODE switch to AUT.
4. Set DIP switch #9 DOWN to disable the Delay Timer.
5. Use the Remote Bypass Input on the REMOTE connector, and interface it to a device that can remotely provide either a contact closure or 5-12 vdc control signal.
 - a. For a 5-12 vdc input, connect to Pins 4(+) and 5(-) of the Remote connector.
 - b. For a contact closure, connect a jumper wire between Pins 3 & 4, and connect the closure between Pins 5 & 6.

The load will be powered-up as soon as the BackUPS is connected to power. It will shut off power whenever a maintained input is sensed at the Remote Bypass input. In most cases, an input of about 5 seconds will be sufficient to power-down and reboot the load.

SPECIFICATIONS

| | |
|---------------|--|
| Inputs | 2: From Line, From UPS |
| Input voltage | 120VAC, IEC connector x2 |
| Output | 120VAC, Duplex outlet, 15A |
| Modes | UPS Bypass, Automatic, with or w/o Delay |
| Indicators | LEDs for AC power-on, UPS-on, Delay |
| Delay Time | 10 seconds – 16 minutes, $\pm 10\%$ |
| Status Output | +12VDC when UPS is active |
| Control Input | 5-12VDC = UPS Bypass mode, 1k ohm impeded. |
| Physical | 6.30" x 4.60" x 2.00", 2 lbs |

Specifications subject to change without notice.

Rev. A 2020

