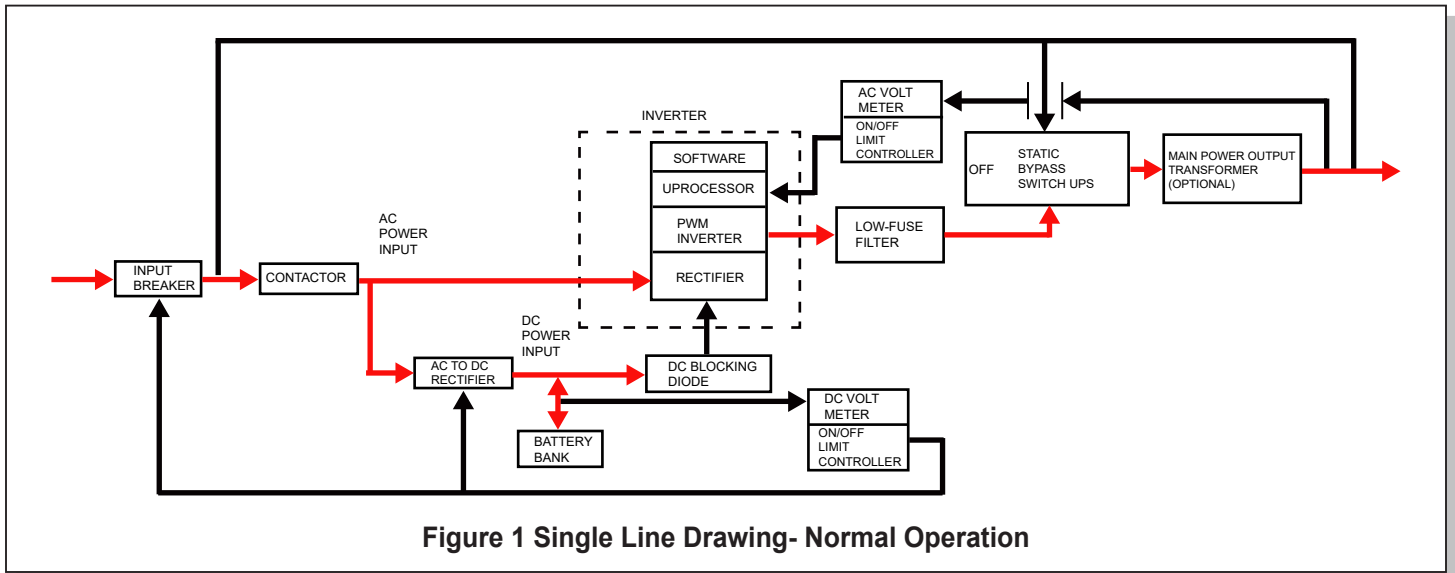


### Overview

The UPS provides two power paths between the utility source and the critical load. Figure 1 shows the path for normal operation, with the load powered from the inverter. Figure 2 shows the path for bypass operation, with the load supplied through the static bypass line. The input circuit breaker (MCCB) is for protection of the UPS and cables are field supplied and field installed.

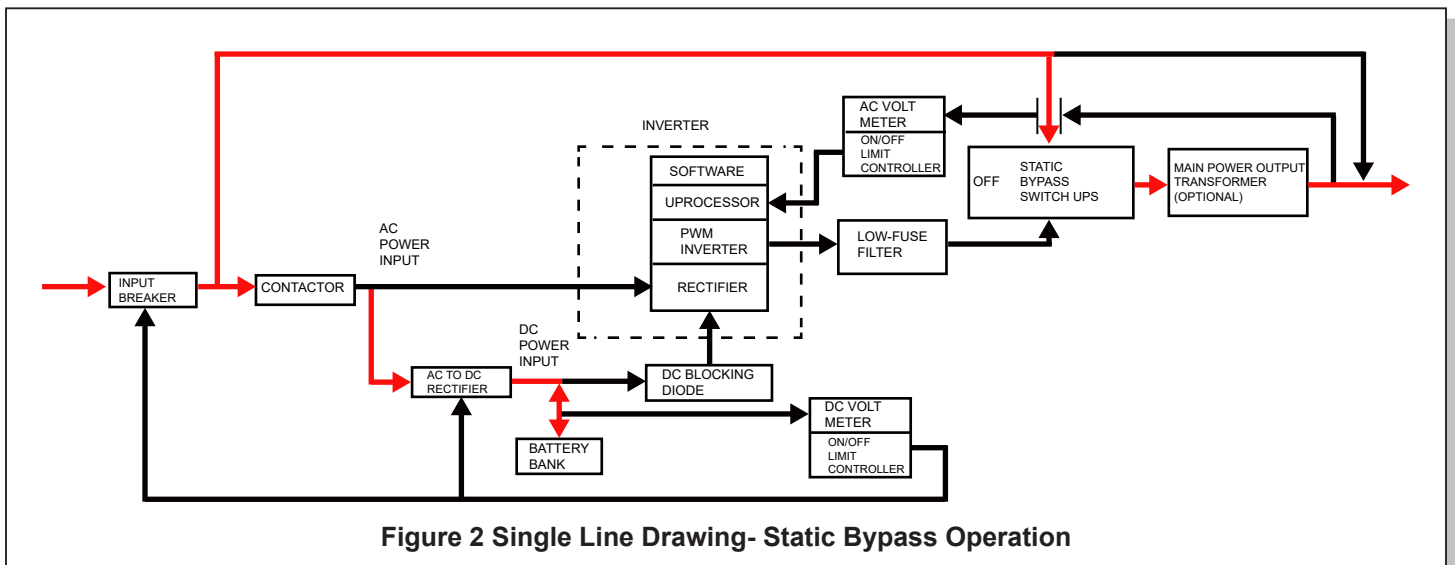
### Normal Operation

During normal operation, the path through the inverter is used to power the load. Two rectifiers convert Input AC power to DC. DC power is utilized to charge the UPS battery system (AC to DC Rectifier). The Inverter will convert AC to DC (Rectifier) to be able to generate clean AC power to supply the critical load. The conversion - inversion process eliminates any voltage transients or fluctuations existing in the input power before it reaches the critical load. (Figure 1)



### Manual Bypass Operation

A Manual Bypass Switch is provided as a standard feature of the Sierra 1. This switch is to bypass the inverter logic in case of failure, to enable the end user function until service can be performed. The advantage of this bypass is the input filtering is still providing protection to the critical loads on the inverter. (Figure 2)



### External Maintenance Bypass (EMB) Operation (Optional)

The optional EMB supplies the critical load with unconditioned input power. The purpose of this option is to route power to the critical load while the UPS rectifier and inverter are de-energized, and during start-up before the system is fully operational. With the EMB, there is a hard wired bypass that can be operated after the Static Bypass Switch has been operated, making it possible to isolate the entire UPS for service and maintenance. The internal control system determines the operation of the normal and EMB paths, with the load powered from the inverter being the normal operation. (Figure 3)

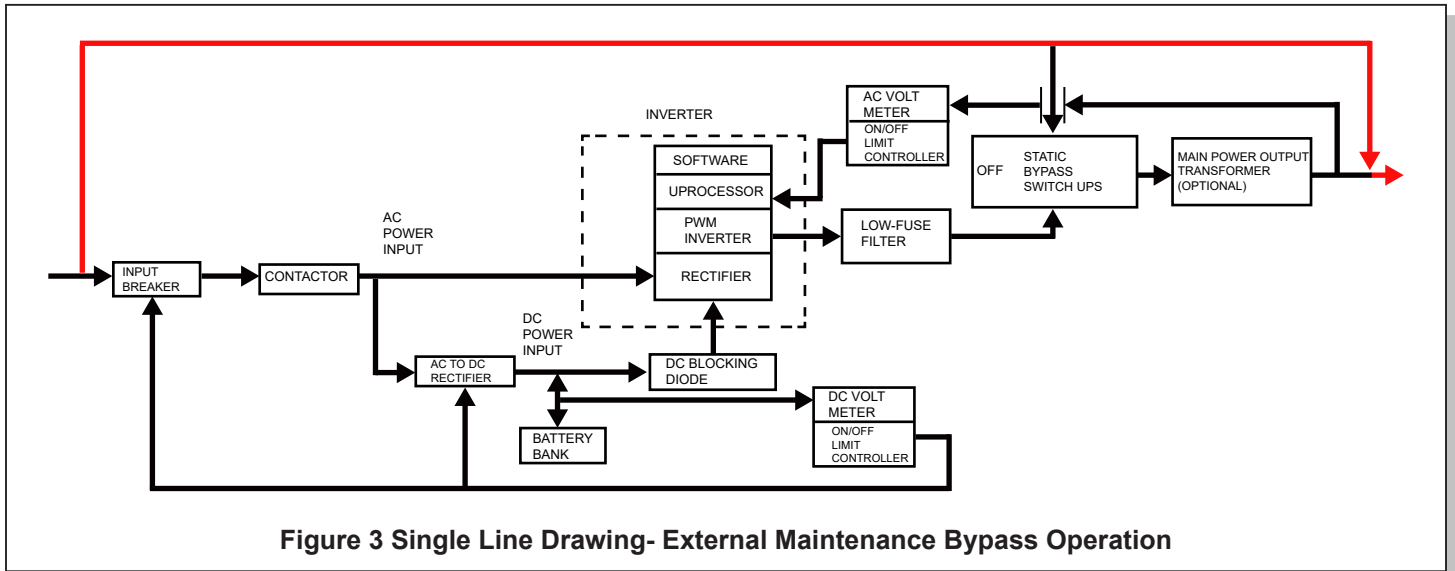


Figure 3 Single Line Drawing- External Maintenance Bypass Operation

### AC Loss/Battery Operation

If the input power is interrupted, the battery will immediately supply the DC power required by the Inverter to maintain continuous AC power to the load. A fully charged battery will provide power for the specified time at the rated load, or longer at reduced load. In the event of a power failure, the rectifiers will de-energize and the batteries will discharge into the inverter and maintain power to the critical load until the battery capacity expires and the inverter turns off or input power is restored, after which the rectifiers will power the inverter and simultaneously recharge the batteries. When power is restored after a low battery shutdown, the rectifiers automatically restart and recharge the batteries and the inverter is automatically restarted without operator intervention. The inverter will automatically, without operator intervention, assume the power from the rectifier. (Figure 4)

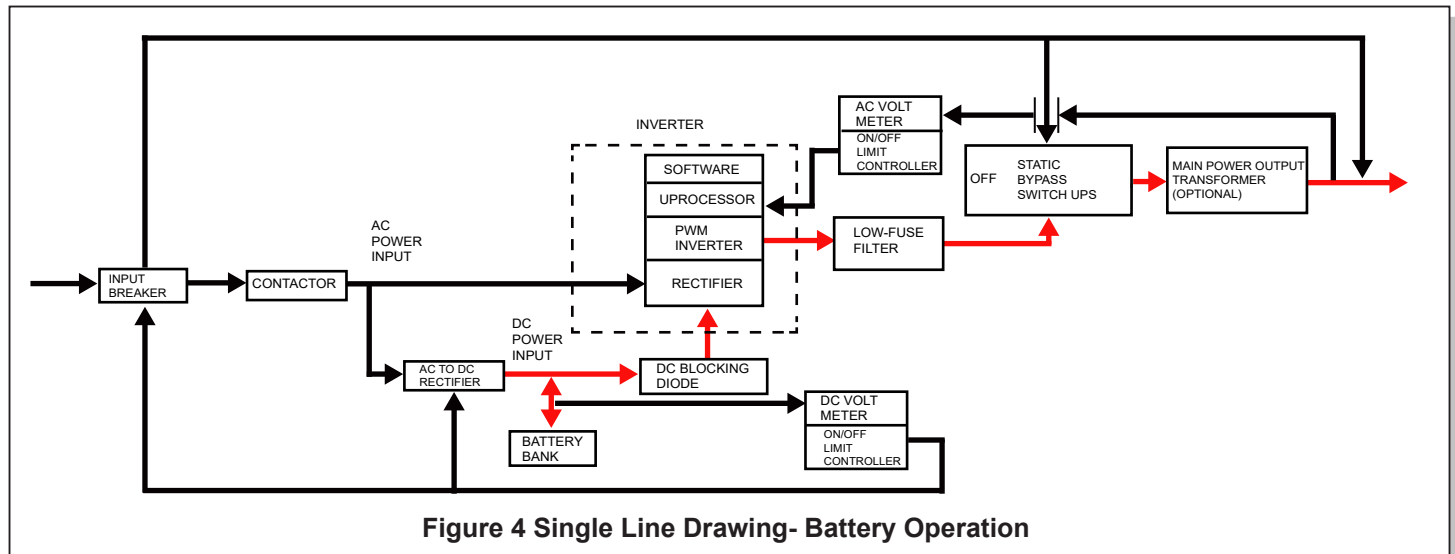


Figure 4 Single Line Drawing- Battery Operation