

UNIT - VII

Uninterrupted Power Supply (UPS)

By completing this module you will be able to understand various types of UPSs available in the market.

UPS is an electronic device that continues to supply electric power to the load for certain periods of time during a loss of main power from electricity board or when the power fluctuates from normal limits.

The generic standard for UPS system defines the limits on the amplitude and duration of deviation of the output voltage acceptable for switching power supply loads.

To make a power supply uninterruptable, we need energy storing backup for the period of time in the form of battery, an AC-DC Charger, and AC-DC Inverter.

Types of UPS

- **Stand By UPS**
- **Inline UPS**
- **Online UPS**

Stand by UPS includes a transfer switch that switches the load to the battery /inverter, in case the primary AC Power source fails. The transfer time typically is 1-5 ms and the power to the load will be interrupted.

Inline UPS also called as line interactive UPS which under normal condition smoothes and to some degree regulates the input AC voltage by a filter and a tap changing transformer.

The bidirectional inverter/charger is always connected to the output of the UPS and uses a portion of AC power to keep battery charged. When the power fails, the transfer switch from AC to Battery and provides output power.

Online UPS always delivers all or at least a portion of the output power through its inverter even under normal conditions. There are two types of online convertors 1) Double conversion and 2) Delta Conversion.

1) Double Conversion Online UPS is continuously processing the whole power through series connected AC-DC rectifier /charger and DC-AC inverter.

2) Delta Conversion UPS includes an additional "Delta Converter" that delivers a portion of the output power directly to the load and provides the power