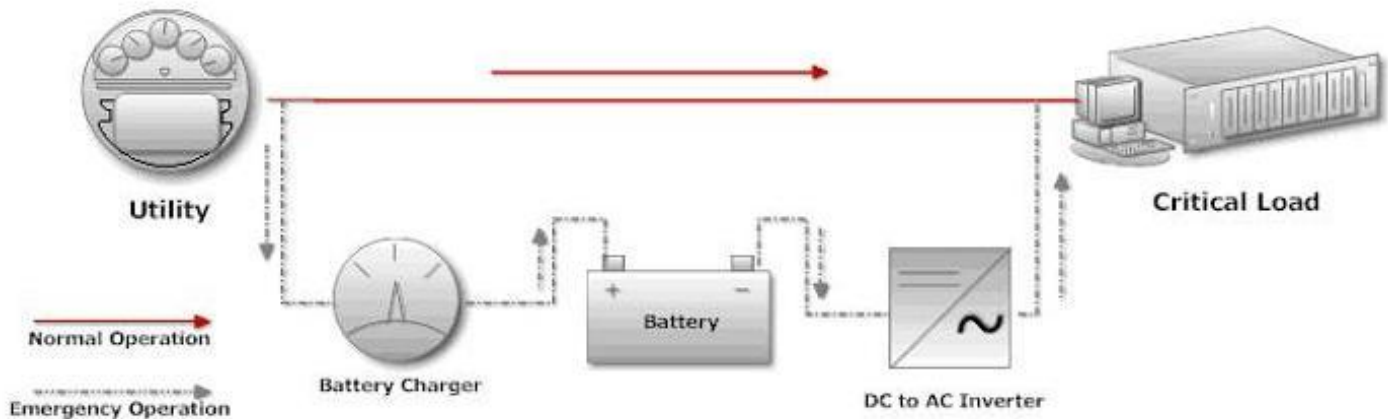


### Standby UPS's

These are ideal for small PC or workstation applications for home or business. They only operate when the utility power switches off. During normal operation the utility power runs through the UPS, into the critical load. This means that your critical load is running off utility power until the UPS switches to emergency operation upon power failure. It is during the emergency operation that your critical load will remain on and running for the length of time the battery in the UPS allows. (The diagram below illustrates the operation.)

#### Benefits:

- Low cost
- High value and efficiency
- Compact size

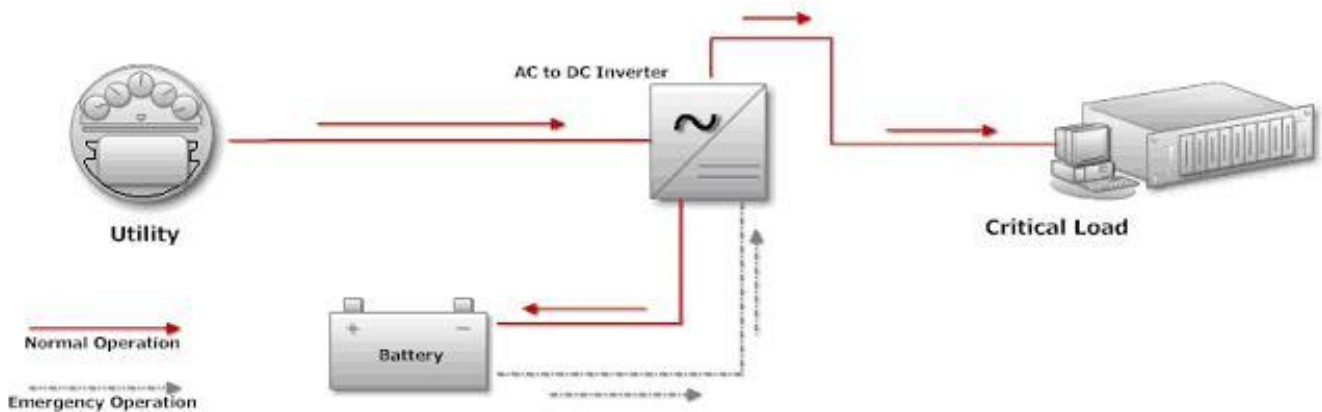


## Line Interactive

This type of UPS is found in both PC workstation as well as Network and Server applications. They operate much the same as the Standby UPS with the exception that the load is always connected to the output of the UPS and switches on upon utility failure. As a result of this design switching transients are reduced when the switch over from normal operation to emergency operation occurs. Another added benefit to the line interactive UPS is that it incorporates an internal transformer, which adjusts line voltage variation.

### Benefits:

- Reliability
- Efficiency
- Voltage regulation



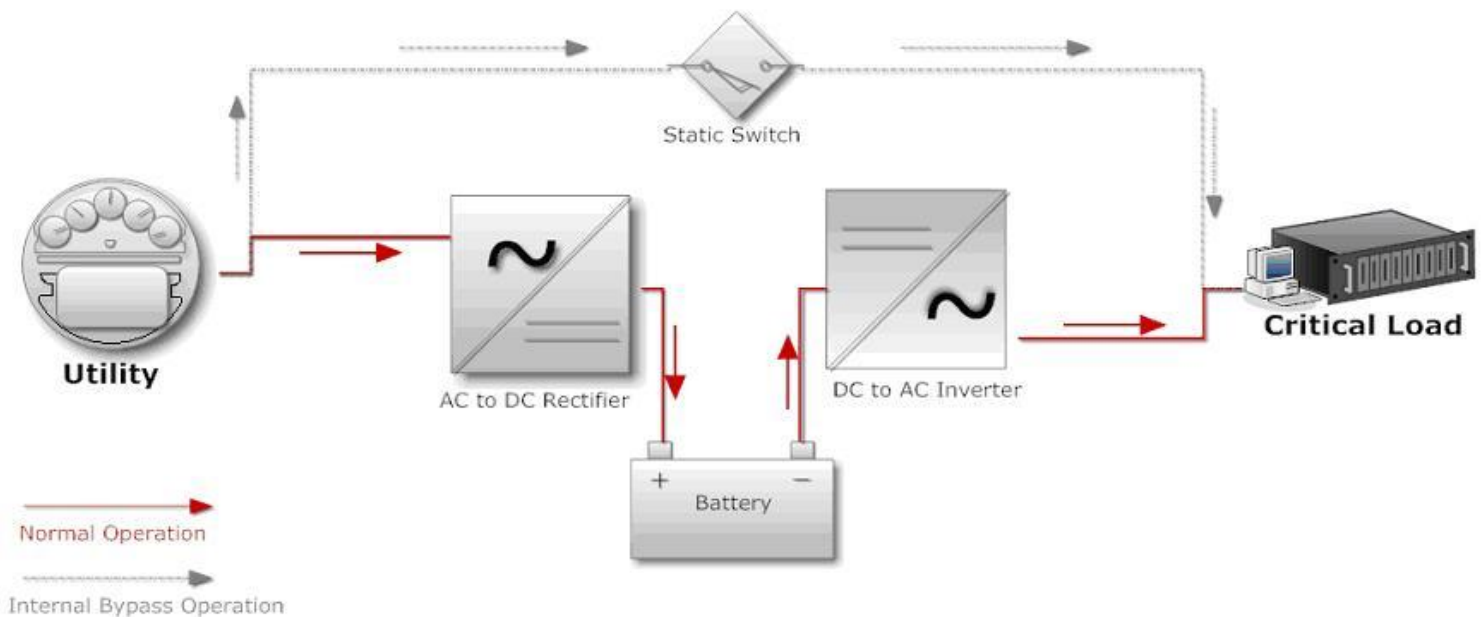
## On-line

Often referred to as an On-line Double Conversion UPS, these systems are commonly used in the Network/Server Room and Data Center environments. The normal operation is for the utility power to always be running through the UPS, where it is then connected to the critical load. The difference with this compared to standby and line interactive system is that when the utility power cuts off, the UPS does not need to switch over since the normal operation has the power fed through the UPS and Battery buss, which then feeds the power to the critical load. One major benefit to the On-line UPS is that in the event of a catastrophic failure at the utility end the UPS sacrifices itself, preserving the protected equipment. In the event the UPS fails the static switch will transfer the power from the utility to the load, which also protects the equipment.

### Benefits:

- Better Voltage regulation\*
- Paralleling
- Good design for redundancy designs

\* Compared to line interactive UPS'



### Modular/Redundant/Scaleable

Though it may seem like a complex system, this type of UPS is simply a parallel, redundant online system. There is still a static switch, which monitors over currents as well as transfers the unit into bypass when needed. The most noticeable difference is that packed into the UPS there are power modules, which contain the same AC to DC rectifier and DC to AC inverter as the on-line UPS. These power modules are what make the unit modular, as well as scaleable and redundant. The swap in, swap out design of the power modules also allows the user to add more power to a unit, should the critical load increase. Since this design also allows for redundancy, it is the simplest form of insurance in case a power module fails during operation.

#### Benefits:

- Hot swappable
- Redundancy
- Allows room for growth
- Pay as you grow architecture
- Higher level of system availability

