

Xtra VFI: maximum efficiency – even when under loaded.

When an uninterruptible power supply (UPS) is operating at significantly under capacity, its energy efficiency can be negatively impacted. With PowerWAVE 9500DPA, featuring Xtra VFI, this problem is solved. Xtra VFI mode is a smart way to minimize losses and improve efficiency when running in double conversion mode.



How does it work?

With Xtra VFI mode enabled, the PowerWAVE 9500DPA automatically adjusts the number of active modules according to the load requirements. Modules that are not needed are switched to standby but remain in state of readiness, primed to kick in and transfer to active mode if the load increases or the mains fails. The efficiency improvements achieved by this mode of operation are especially significant when the load is less than 25 percent of full UPS system capacity.

In addition, Xtra VFI has the added benefit of rotating modules between active and standby, therefore extending the service life of the UPS.

The figure below shows how the Xtra VFI operating mode can enhance efficiency when running at a low load level for a PowerWAVE 9500DPA modular UPS system, with 10 UPS modules (100 kW) and total available capacity of 1 MW.



Example:

- Maximum load = 800kW
- Redundancy = N+2
- 2 x 500kW frames (10 x 100 kW)
- Load power = 200kW
- No. of active modules = 4
- UPS active capacity = 400kW
- UPS standby capacity = 600kW

Xtra VFI Mode

Xtra VFI scales the UPS module active capacity according to the load to maximise efficiency

The system calculates the optimal % value for maximum efficiency, taking into account desired redundancy

The redundancy level for active capacity and the highest expected load step can be configured by the user to guarantee highest protection level

In case of mains failure or alarm, Xtra VFI gets deactivated automatically → all modules switch to 'Active' status

Module rotation between active and standby extends the service life and stabilises aging



The UPS module is operating in double conversion mode and supplying the load with the other active modules. Each module equally shares the load



The UPS module is on standby, with the inverter switched off, ready to transfer to active double conversion operation when the load increases

Xtra VFI Mode:

