

# POWERMAN

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## The FR On-Line UPS Range

The FR on-line UPS is based on the ferroresonant principal. The incoming mains goes straight into a constant voltage transformer (CVT). The CVT creates an AC storage chamber, which isolates the input from the output. No matter what happens to the incoming mains the output will remain constant. Once the mains fails the input of the CVT is fed from a battery powered inverter. There is no break on the output during the transfer from mains supply to inverter supply or vice versa. The use of ferroresonant technology reduces the component count on the machines, which will automatically increase reliability.

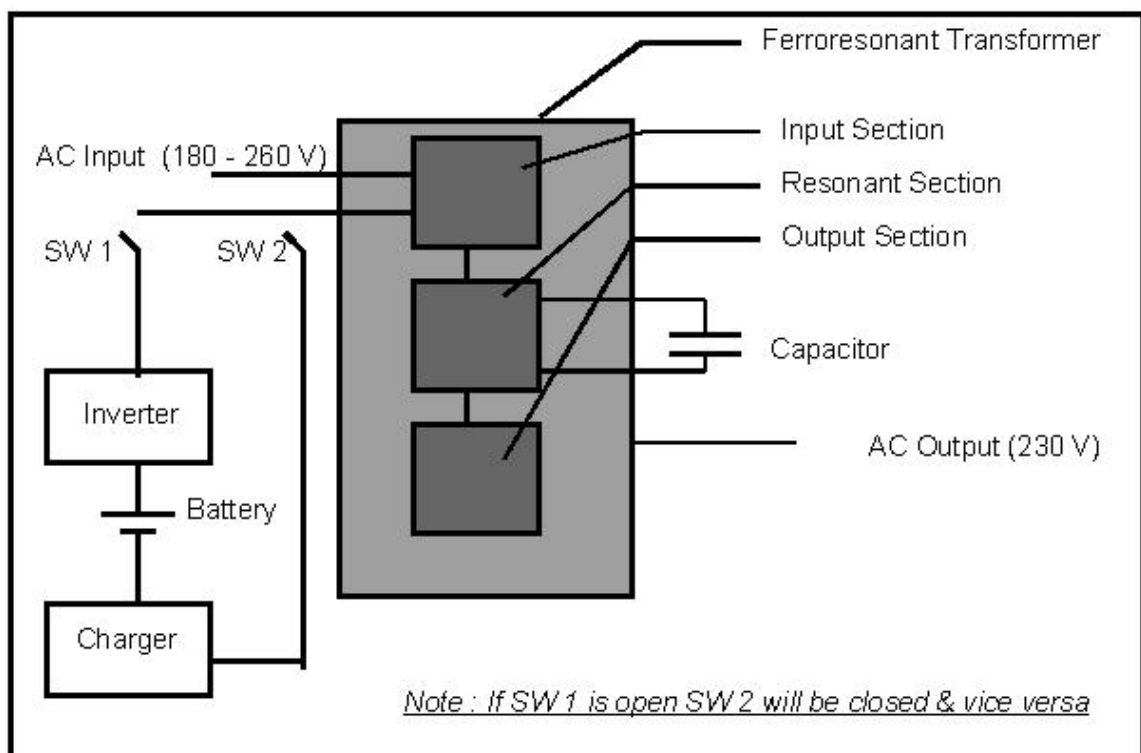


Figure 1 - UPS Block Diagram

## **Features.**

**1. On-Line Technology :** The on-line UPS is the best protection available for sensitive electronic equipment. Computer equipment is protected from typical commercial power problems such as spikes, surges, dips or failures due to the isolation of the input from the output.

**2. Ferroresonant Design :** This technology has been tried and tested over the years and has proven itself to be supremely reliable in Africa's harsh conditions.. The use of ferroresonant technology reduces the component count on the machines, which will automatically increase reliability.

**3. No Transfer Time :** There is no break on the output during the transfer from mains supply to inverter supply or vice versa.

**4. Generator Compatible Input :** The on-line UPS has a generator compatible filter section on its input, this allows the UPS to synchronise with a poor input frequency as is common with smaller generators.

**5. Short Circuit Protection :** A direct short circuit can be applied to the output of the UPS without causing any damage to the unit. Once the short circuit is removed the unit will carry on operating as usual.

**6. DC Start Capability :** Units are able to start and run with no mains input. Essentially the units can be run as a straightforward inverter if necessary.

**7. Unlimited Run Time :** Due to the versatility of the design of the UPS's the battery run time can be adapted to suit any requirements. Cost implications suggest that it would be impractical to extend the available time by more than 8 hours.

**8. Communication Port :** All units are fitted with a communication port. This can be connected to the comm. port of a computer, and in conjunction with various software packages can supply information on the status of the UPS. (See software section).

**9. The Load Level Indicator** gives users an indication of the percentage of resistive load being run from the UPS. From this information overloading can be avoided as well as enabling the user to calculate a fairly accurate run time during a power outage.

**10. The battery Level Indicator** will give the user a percentage capacity in the battery both during discharge and recharge.



**FR1000 – 1 KVA UPS**



**FR10000 – 10 KVA UPS**

## Specifications

Model No.	FR1000	FR2000	FR3000	FR5000
Capacity VA (Watts)	1000 (700)	2000 (1400)	3000 (2100)	5000 (3500)
Input Voltage	230 V AC $\pm$ 15 %			
Input Frequency	50 Hz $\pm$ 10 %			
Transfer Time	Zero			
Output Voltage On Inverter	230 V AC $\pm$ 5 %			
Frequency on Inverter	50 Hz Crystal Controlled			
Inverter Wave Form	Sine			
Total Harmonic Distortion (THD)	< 3 %			
Efficiency At Full Load	Approximately 90 %			
Overload Capability	120 % for 10 minutes			
Batteries	Sealed lead acid - 3 to 5 year life			
Re-Charge to 90 %	8 Hours			
Backup Time With Computer Load	20 min	20 min	20 min	20 min
Backup Time With Resistive Load	8 min	8 min	8 min	8 min
Ambient Operation	3000 M Max Elevation, -10 To 40 C, 0 To 90 % Humidity			
Audible Noise At 1 M	< 50 dBA			
Mains Fail Alarm	Slow beep ( $\pm$ 0.5 Hz)			
Low Battery Alarm	Continuous beep			
Mains On Indicator	Yes			
Charging Indicator	Yes			
Battery Level Indicator	Yes			
Inverter Level Indicator	Yes			
Inverter On Indicator	Yes			
Load Level Indicator	Yes			
By-Pass On Indicator	Yes			
Short Circuit Protection	Yes			
Low Battery Shutdown	Yes			
Dimensions (w x d x h) mm	240 x 530 x 295	240 x 530 x 295	330 x 600 x 620	330 x 600 x 620
Weight	45 Kg	60 Kg	80 Kg	110 Kg



FR2000-RM - 2 KVA 19" Rack Mount UPS

FR5000 - 5 KVA On-Line UPS

FR1000 - 1 KVA On-Line UPS

Model No.	FR5000	FR8000	FR10000	FR15000
Capacity VA (Watts)	5 000 (3500)	8 000 (5600)	10 000 (7000)	15 000 (10500)
Input Voltage	230 V AC $\pm$ 15 %			
Input Frequency	50 Hz $\pm$ 10 %			
Transfer Time	Zero			
Output Voltage On Inverter	230 V AC $\pm$ 5 %			
Frequency on Inverter	50 Hz Crystal Controlled			
Inverter Wave Form	Sine			
Total Harmonic Distortion (THD)	< 3 %			
Efficiency At Full Load	Approximately 90 %			
Overload Capability	120 % for 10 minutes			
Batteries	Sealed lead acid - 3 to 5 year life			
Re-Charge to 90 %	8 Hours			
Backup Time With Computer Load	20 min	20 min	10 min	As per batt. pack
Backup Time With Resistive Load	8 min	8 min	5 min	As per batt. pack
Ambient Operation	3000 M Max Elevation, -10 To 40 C, 0 To 90 % Humidity			
Audible Noise At 1 M	< 50 dBA			
Mains Fail Alarm	Slow beep ( $\pm$ 0.5 Hz)			
Low Battery Alarm	Continuous beep			
Mains On Indicator	Yes			
Charging Indicator	Yes			
Battery Level Indicator	Yes			
Inverter Level Indicator	Yes			
Inverter On Indicator	Yes			
Load Level Indicator	Yes			
By-Pass On Indicator	Yes			
Short Circuit Protection	Yes			
Low Battery Shutdown	Yes			
Dimensions (w x d x h) mm	330 x 600 x 620	330 x 600 x 620	330 x 600 x 620	330 x 650 x 680
Weight	115 Kg	160 Kg	180 Kg	195 Kg

### Installation Information.

Unit	Start Up Current	Max Running Current	Circuit Breaker	Cable size
FR1000	8 Amps	3.2 Amps	16 Amp	1 mm
FR2000	16 Amps	6.5 Amps	20 Amp	2.5 mm
FR3000	24 Amps	9.5 Amps	25 Amp	4 mm
FR5000	40 Amps	15.9 Amps	40 Amp	6 mm
FR6500	52 Amps	20.6 Amps	63 Amp	10 mm
FR8000	64 Amps	25.5 Amps	63 Amp	10 mm
FR10000	80 Amps	31.8 Amps	80 Amp	16 mm
FR15000	120 Amps	47.7 Amps	120 Amp	25 mm

### Optional Extras.

**Extended Run Time** - All **PowerMan** on-line UPS's can have their run time extended to suit each customers specific needs.

**External Charger** – Units with external run time can have their own independent charger installed per battery pack to ensure the fastest, safest re-charge time.

**Rack Mount UPS** - A number of the units in the **PowerMan** range have been adapted to mount in a standard nineteen-inch rack.