

# Technical Specification

## PowerWAVE 5000T 7.5, 10, 15, 20, 30 and 40kVA

Three phase input and output

### GENERAL DATA

Output Rated Power	kVA	7.5	10	15	20	30	40
Output Power Factor		0.8					
Topology		On-Line, double conversion, VFI, with static and maintenance bypass					
Technology		Third generation, transformerless					
Double Conversion AC-AC efficiency							
- 100%/75%/50%/25% linear load (cos $\varphi$ =0.8ind)	%	93.5/93.5/92/89		94/94/92.5/90	94.5/94.5/93/91	95/95/93.5/92	
- 100%/75%/50%/25% linear load (resistive cos $\varphi$ = 1)	%	93/93/91.5/88.5		93.5/93.5/92/89.5	94/94/92/90	94/94/92.5/91	
Eco-mode efficiency at 100% load (load on by-pass)	%	98					
Heat Dissipation							
- with 100% load (cos $\varphi$ =0.8ind)	W	380	500	700	800	1200	1600
- with 100% load (resistive cos $\varphi$ = 1)	W	400	550	750	960	1450	2000
Recommended airflow (25 - 30°C)	m <sup>3</sup> /h	110		150	200	300	600
Audible noise with 100% / 50% load	dBA	50/48		53/49		59/51	63/53
Ambient temperature for UPS	°C	0 to 40					
Ambient temperature for batteries (recommended)	°C	20 to 25					
Storage temperature	°C	-25 to +70					
Battery storage time at ambient temperature		Maximum 6 months					
Cooling		Fan-assisted					
Relative Air-humidity		Maximum 95% (non-condensing)					
Standards		EN 62040-1-1:2003 ; EN60950-1:2001/A11:2004					
- Safety		EN 50091-2:1995 ; EN61000-3-2:2000 ; EN6100-3-3:1995/A1:2001 ; EN61000-6-2:2001 ; EN61000-6-4:2001					
- Electromagnetic Compatibility							
- Performance		EN62040-3:2001					
Transportation pallet		Provided with UPS					
Packaging		Cardboard (standard)					
Accessibility		Rear side access for cabinet A, front side access for cabinets B&C					
Positioning		Minimum 10cm rear space required for fan					
Input and Output Power Cabling		From bottom rear (Cabinet A) and bottom front (Cabinets B and C)					
Dry Port (Volt-free contacts) standard		For remote signalling and automatic computer shutdown					
Smart Port (RS 232)		For monitoring and integration in network management					

## RECTIFIER DATA

Model	kVA	7.5	10	15	20	30	40
Input voltage	V	3x380/220V+N, 3x400V/230V+N, 3x415/240V+N					
Input voltage window (@ 3x400/230V)	V (%)	For loads <100% (-23%, +15%) <80% (-30%, +15%) <60% (-40%, +15%)					
Input frequency window	Hz	35 – 70					
Input power factor		0.95 ; 0.98 (optional)					
Input current form		THDi < 25% at 100% load; THDi < 7-9% (optional)					
Inrush current		Limited by soft start					
Input power with rated output power and charged battery	kW	6.5	8.6	12.9	17.2	25.8	35
Maximum input power with rated output power and discharged battery	kW	7.2	9.6	13.8	19.2	28.2	39

## BATTERY DATA

Maximum battery charger current (standard)	6 A
Battery charging curve	IU (DIN 41773)
Temperature controlled battery charger	Yes
Battery charger ripple	< 1%
Battery test	Automatic and periodic (adjustable)
Battery type	Lead-acid, maintenance-free and NiCd
Variable number of 12V battery blocks	22-44 blocks for 7.5kVA ; 26-46 blocks for 10 kVA 30-50 blocks for 15-20 kVA ; 40-50 blocks for 30-40 kVA

## INVERTER DATA

Output Rated Power	KVA	7.5	10	15	20	30	40
Output rated voltage	V	3 x 380/220V, 3 x 400/230V, 3 x 415/240V					
Output power factor		0.8					
Output voltage stability							
- Static	%	< ± 1					
- Dynamic (with load step 0-100%, 100-0%)	%	< ± 4					
Output voltage distortion							
- With linear load	%	± 1					
- With non-linear load (EN 62040-3:2001)	%	< ±3					
Recovery time after load jump (0-100%, 100-0%)	msec	20					
Permissible unbalanced load	%	100% (all 3 phases regulated independently)					
Output waveform		sinewave					
Output frequency	Hz	50 or 60					
Output frequency tolerance		sinewave					
- Free-running, quartz oscillator	%	± 0.1					
- Synchronized with mains (adjustable)	%	± 4					
Overload capability	%	125 for 10 min. and 150 for 1 min.					
Crest - Factor		3 : 1					

## POWER MANAGEMENT DISPLAY (PMD)

The user-friendly PMD consists of three parts: - MIMIC DIAGRAM, CONTROL KEYS and LCD DISPLAY - that provide the necessary monitoring information about the UPS.

### MIMIC DIAGRAM

The mimic diagram gives the general status of the UPS. The LED-indicators show the power flow status and in the event of mains failure or load transfer from inverter to bypass and vice-versa the corresponding LED-indicators will change colour from green (normal) to red (warning).

- LINE 1 (rectifier) and LINE 2 (bypass) indicate the availability of the mains power supply
- INVERTER and BYPASS, if green, indicate which of the two are supplying power to the critical load
- BATTERY, when lit, indicates that, due to mains failure, the battery is supplying the load
- ALARM is a visual indication of any internal or external alarm condition; at the same time the audible alarm will be activated.

### CONTROL KEYS

The pushbuttons manage the UPS by performing commands.

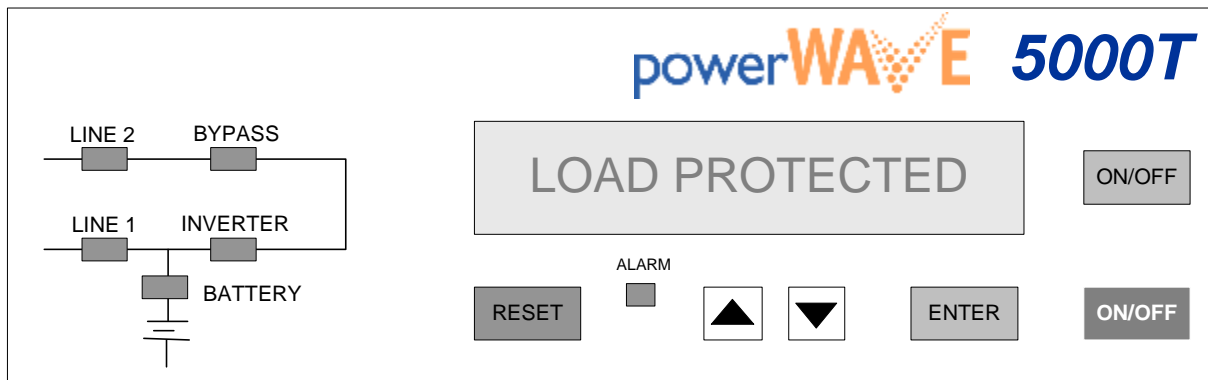
- The 2 ON/OFF buttons start up or shut down the UPS if pressed simultaneously
- The UP and DOWN buttons allow working through the PMD-menu
- The RESET button cancels the audible alarm in the event of a disturbance. If the alarm condition was only transient the LED-indicator ALARM would also extinguish, otherwise it will remain on (red)

### LCD DISPLAY

The 2 x 20 character LCD simplifies communication with the UPS. The menu-driven LCD enables:

- Access to the EVENT REGISTER
- Monitoring the input and output V, I, f, P, autonomy time and other measurements
- Start-up and shut-down of INVERTER or load transfer from INVERTER to BYPASS and vice-versa
- Access to DIAGNOSIS (SERVICE MODE) for adjustments and testing

For more details see the User Manual



## OPTIONS

Remote Signalling Panel (RSP) including contact relay card	For UPS-Status indication
Wavemon Software	For automatic shut-down and monitoring
SNMP – Card/Adapter	For network management and remote monitoring
Input Filter for THDI<7-9%	For input harmonics reduction

## ON REQUEST

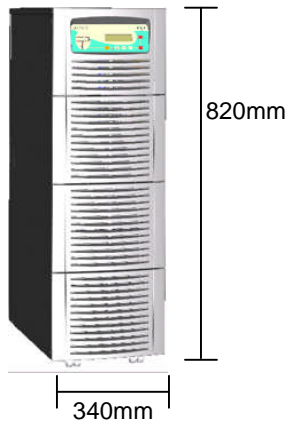
Input or Output Isolation Transformer	For special voltages or for galvanic isolation
Customized UPS- and Battery Frames	On request (for OEM-Projects only)

## MECHANICAL CHARACTERISTICS

MODEL	kVA	7.5	10	15	20	30	40
Dimensions (W x D x H)	mm	<b>Cab A</b> 340 x 800 x 820			<b>Cab B</b> 450 x 860 x 1250		
		<b>Cab C</b> 550 x 890 x 1650					
Protection Degree		IP 20					
Ventilation		Fan assisted					
Colour		RAL 9011					
Foot Print	m <sup>2</sup>	0.25			0.37		

## DIMENSIONS & WEIGHTS

**Cabinet A**



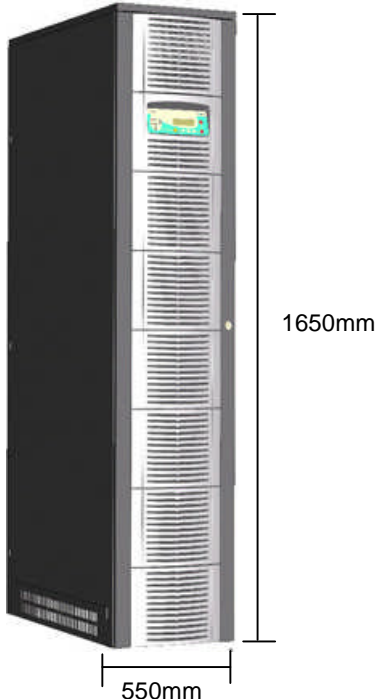
800mm Deep

**Cabinet B**



860mm Deep

**Cabinet C**



890mm Deep

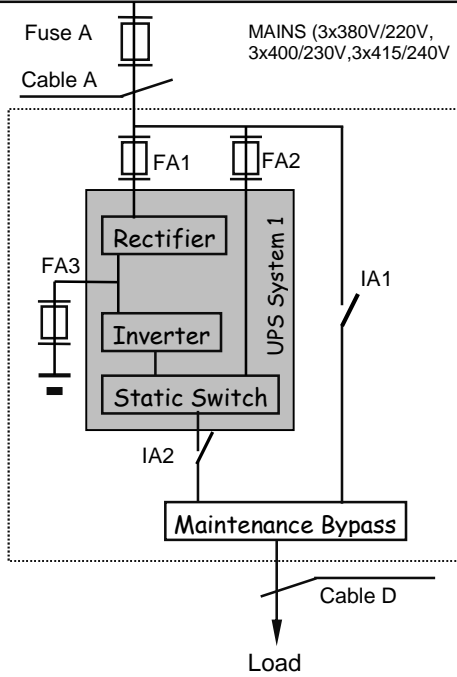
Rating (kVA)	Maximum Autonomy @ full load (mins)	Cabinet
7.5	14	A
10	8	
7.5	65	B
10	45	
15	25	
20	15	
30	7.5	C
10	155	
15	90	
20	50	
30	35	
40	24	

\* Autonomy calculated @ output power factor = 0.8 using internal batteries.  
Longer autonomies are available using external batteries

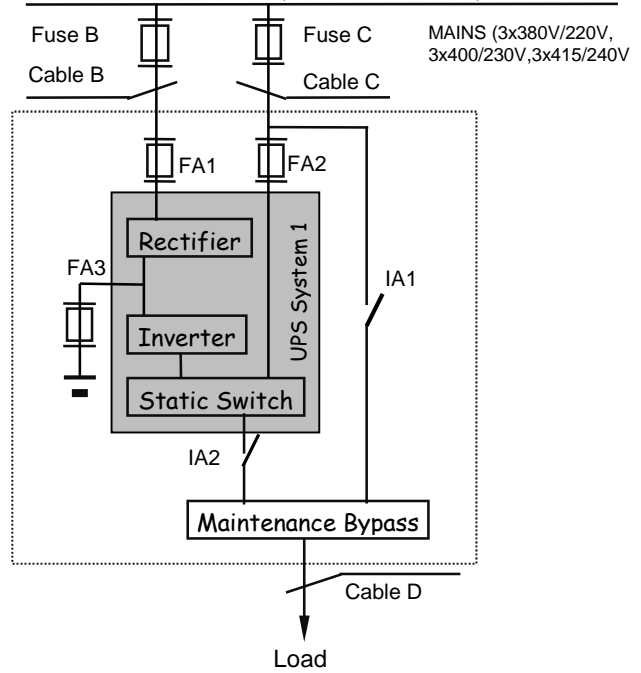
\*Please note that cabinet C is for non-standard autonomies

## BLOCK DIAGRAM

STANDARD VERSION (SINGLE INPUT FEED)



VERSION ON REQUEST (DUAL INPUT FEED)



## RECOMMENDED CABLE SECTIONS AND FUSE RATINGS

STANDARD SINGLE FEED INPUT VERSION			
Power (kVA)	Fuse A (A)	Cable A mm <sup>2</sup>	Cable D mm <sup>2</sup>
7.5	3 x 20	5 x 2.5	5 x 2.5
10	3 x 20	5 x 2.5	5 x 2.5
15	3 x 25	5 x 4	5 x 4
20	3 x 40	5 x 6	5 x 6
30	3 x 63	5 x 10	5 x 10
40	3 x 80	5 x 25	5 x 25

DUAL FEED INPUT VERSION (ON REQUEST)					
Power (kVA)	Fuse B (A)	Cable B mm <sup>2</sup>	Fuse C (A)	Cable C mm <sup>2</sup>	Cable D mm <sup>2</sup>
7.5	3 x 20	5 x 2.5	3 x 20	4 x 2.5	5 x 2.5
10	3 x 20	5 x 2.5	3 x 20	4 x 2.5	5 x 2.5
15	3 x 25	5 x 4	3 x 25	4 x 4	5 x 4
20	3 x 40	5 x 6	3 x 40	4 x 6	5 x 6
30	3 x 63	5 x 10	3 x 63	4 x 10	5 x 10
40	3 x 80	5 x 25	3 x 80	4 x 25	5 x 25