

# Technical Specification

## PowerWAVE 3000T

7.5, 10 and 12kVA - single phase input and output

7.5, 10, 15 and 20kVA - three phase input, single phase output

### GENERAL DATA

Output Rated Power	kVA	7.5	10	12	15	20
Output Power Factor		0.7				
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 φ = 0.8ind)	%	93.5/93.5/92/89		94/94/92.5/90		94.5/94.5/93/91
- 100%/75%/50%/25% linear load (resistive cos φ = 1)	%	93/93/91.5/88.5		93.5/93.5/92/89.5		94/94/92/90
Eco-mode efficiency at 100% load (load on by-pass)	%	98				
Heat Dissipation						
- with 100% load (cos φ = 0.8ind)	W	380	500	550	700	800
- with 100% load (resistive cos φ = 1)	W	400	550	600	750	960
Recommended airflow (25 - 30°C)	m <sup>3</sup> /h	110			150	200
Audible noise with 100% / 50% load	dBA	50/47			53/49	
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						
- Safety		EN 62040-1-1:2003 ; EN60950-1:2001/A11:2004				
- Electromagnetic Compatibility		EN 50091-2:1995 ; EN61000-3-2:2000 ; EN6100-3-3:1995/A1:2001 ; EN61000-6-2:2001 ; EN61000-6-4:2001				
- 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	12	15	20
Input voltage 1 : 1	V	1x220V+N, 1x230V+N, 1x240V+N			N/A	
Input voltage 3 : 1	V	3x380/220V+N 3x400V/230V+N 3x415/240V+N		N/A	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		single-phase input: 0.98 at 100% load three-phase input: 0.95 at 100% load, 0.98 (optional)				
Input current form		single-phase input THDi <7 - 9% at 100% load three-phase input THDi <25% at 100% load; <7 - 9% (optional)				
Inrush current		Limited by soft start				
Input power with rated output power and charged battery	kW	5.6	7.4	9.4	11.1	14.8
Maximum input power with rated output power and discharged battery	kW	6.1	8.1	10.3	12.1	16.2

## 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	22-50 blocks for 7.5kVA ; 26-50 blocks for 10 kVA 30-48 blocks for 12 kVA ; 32-50 blocks for 15-20 kVA

## INVERTER DATA

Output Rated Power	kVA	7.5	10	12	15	20
Output rated voltage	V	1 x 220V, 1 x 230V, 1 x 240V				
Output power factor		0.7				
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				
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.

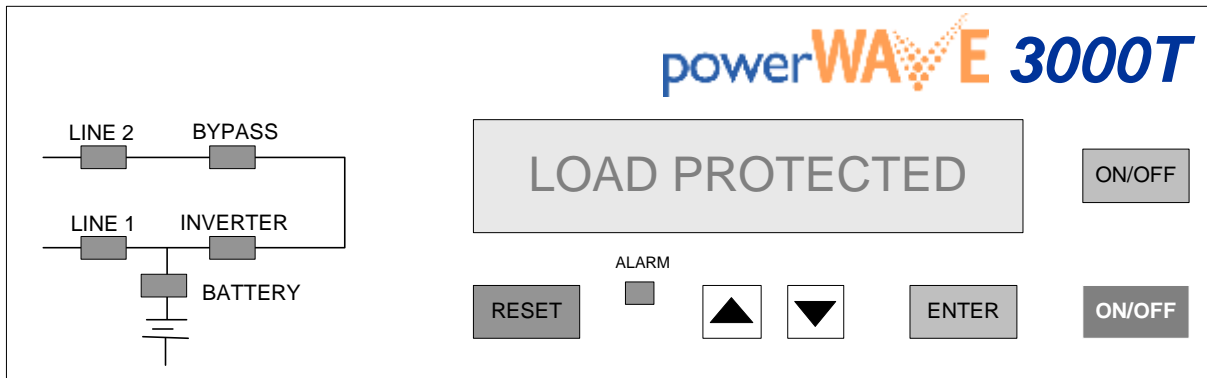
- The 2 ON/OFF buttons start up or shut down the UPS if pressed simultaneously
- The UP and DOWN buttons allow working through the PMD-menu
- The RESET button cancels the audible alarm in the event of a disturbance. If the alarm condition was only transient the LED-indicator ALARM would also extinguish, 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 (3ph input only)

## ON REQUEST

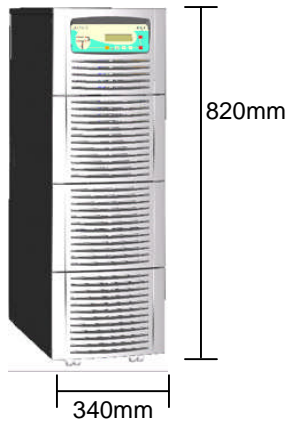
Input or Output Isolation Transformer	For special voltages or for galvanic isolation
Customized UPS- and Battery Frames	On request (for OEM-Projects only)

## MECHANICAL CHARACTERISTICS

MODEL	kVA	7.5	10	12	15	20
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	

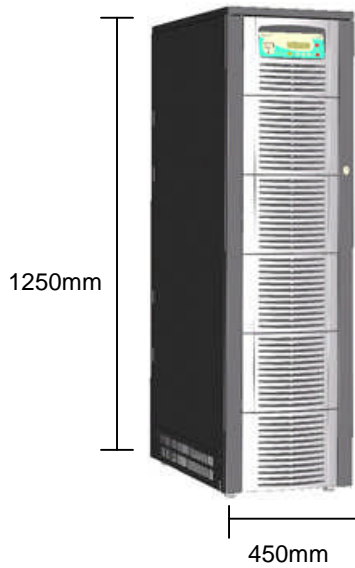
## DIMENSIONS & WEIGHTS

### Cabinet A



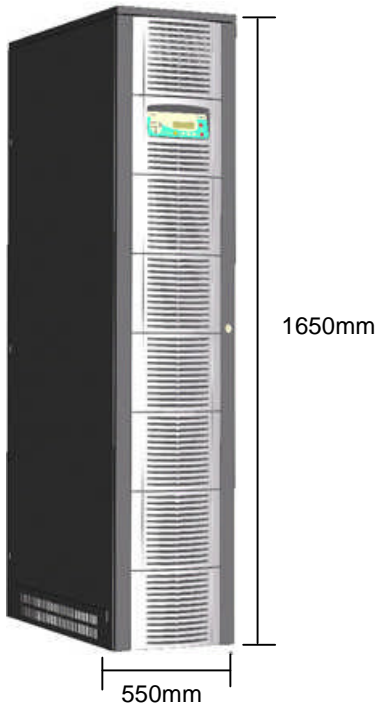
800mm Deep

### Cabinet B



860mm Deep

### Cabinet C



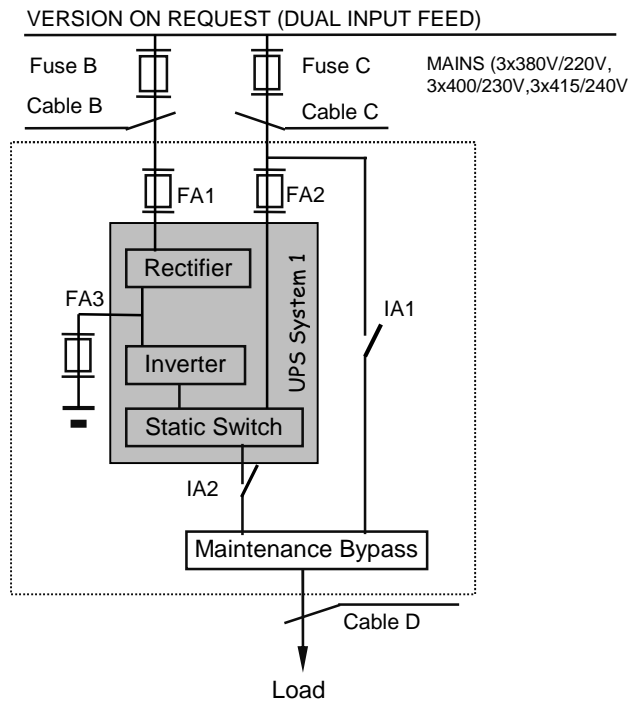
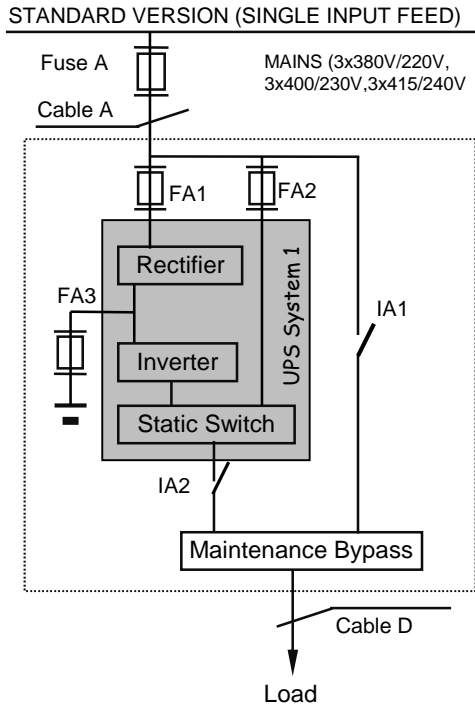
890mm Deep

Rating (kVA)	Maximum Autonomy @ full load (mins)	Cabinet
7.5	17	A
10	10	
12	7	
15	4	B
7.5	70	
10	55	
12	42	
15	28	C
20	20	
7.5	210	
10	170	
12	150	
15	105	
20	65	

\* 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**



**RECOMMENDED CABLE SECTIONS AND FUSE RATINGS**

Power (kVA)	1ph / 1ph			3ph / 1ph						
	SINGLE FEED			SINGLE FEED			DUAL INPUT FEED			
	Fuse A (A)	Cable A mm <sup>2</sup>	Cable D mm <sup>2</sup>	Fuse A (A)	Cable A mm <sup>2</sup>	Cable D mm <sup>2</sup>	Fuse B (A)	Cable B mm <sup>2</sup>	Fuse C (A)	Cable C mm <sup>2</sup>
<b>7.5</b>	1 x 40	3 x 6	3 x 6	3 x 40	5 x 6	3 x 10	3 X 25	5 x 2.5	1 x 40	3 x 6
<b>10</b>	1 x 63	3 x 6	3 x 6	3 x 63	5 x 10	3 x 10	3 x 25	5 x 5.2	1x 63	3 x 10
<b>12</b>	1 x 63	3 x 10	3 x 10	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>15</b>	n/a	n/a	n/a	3 x 80	5 x 16	3 x 16	3 x 40	5 x 6	1 x 80	3 x 16
<b>20</b>	n/a	n/a	n/a	3 x 100	5 x 25	3 x 25	3 x 40	5 x 6	1 x 100	3 x 25