

# PowerWAVE EL

(Single-phase 500 VA–30 kVA)

Three-phase 10–160 kVA)

## Technical Specification



# PowerWAVE EL 100

Model	EL104	EL105	EL106	EL108	EL110	EL112
Power rating kVA/kW	4/2.8	5/3.5	6/4.2	8/5.6	10/7	12.5/8.75
Power factor	0.7					
<b>Input</b>						
Voltage/tolerance	230 VAC single phase, +/-15%					
Bypass voltage	230 VAC single phase					
Input frequency	50 Hz +/-5%					
Max RFI	EN50091-2 Class A					
<b>Output</b>						
Voltage	230 VAC single phase					
Voltage stability	Static (balanced load) +/-1%, static (unbalanced load) +/-2%, dynamic (step load 0–100%) +/-5%					
Voltage recovery time	After step load 0–100% max. 20 ms					
Frequency	50 Hz					
Frequency tolerance	Line synchronised +/-1% / free running +/-0.2%					
Efficiency at 100% load	>87–91%					
Crest factor	3:1					
Short circuit protection	Electronic short circuit					
Overload capacity	120% continuous, 120–150% load 10 min. 150–180% 1 min					
Total Harmonic Distortion (THD)	Linear load <3%					
<b>Batteries</b>						
Type	Sealed lead acid – maintenance free					
Number of 12 V blocks	16	18			20	
Float charging voltage	216 Vdc	243 Vdc			270 Vdc	
End of discharge voltage	160 Vdc	180 Vdc			200 Vdc	
Battery ambient temperature	20°C					
Battery protection	Circuit breaker					
Battery test	Automatic battery test once a week					
<b>General</b>						
Serial communication	Dry contacts plus RS232					
Software	T-Mon standard / SNMP module optional					
Protection degree	IP41					
Ambient operating temperature / altitude	0–40°C/<1000 m (above sea level)					
Standard	Emergency lighting EN 50171					
Ventilation	Forced air cooling					
Acoustic noise at 1 m distance	<56 dB					
Weight (kgs)	85	95	110	125	150	155
Dimensions (mm) W x D x H	570 x 370 x 1210					

# PowerWAVE EL 100XA

Model	EL1005XA	EL1012XA	EL1030XA
Power rating VA/W	500/400	1250/1000	3000 /240
Power factor	0.8		
<b>Input</b>			
Voltage/tolerance	230 VAC single phase / 184V~285V		
Frequency	50 Hz +5%		
Max. RFI	EN50091 -2 CLASSA		
<b>Output</b>			
Voltage	230 VAC Single phase		
Voltage stability	Changeover mode +10% / battery mode +3%		
Voltage recovery time	After step load 0–100%. Max. 20 ms.		
Frequency	50 Hz		
Frequency tolerance	±1% in battery mode		
Efficiency at 100% load	>97%		
Crest factor	3:1		
Short circuit protection	Electronic short circuit		
Overload capacity	120% continuous		
<b>Batteries</b>			
Type	Sealed lead acid – maintenance free		
Number of 12 V blocks (internal)	4	4	4 or 8
Float charging voltage	54 VDC	54 VDC	54 VDC
End of discharge voltage	42 VDC	42 VDC	42 VDC
Battery ambient temperature	20°C	20°C	20°C
Battery protection	Double pole DC circuit breaker		
Battery test	Automatic battery test/smart battery management		
<b>General</b>			
Serial communication	Dry contacts plus RS232		
Software	Optional monitoring and shutdown/optional SNMP module		
Protection degree	IP21		
Ambient operating temperature/ altitude	0–40°C/<1000 m above sea level		
Standard	Emergency lighting EN50171		
Ventilation	Forced air cooling		
Acoustic Noise at 1 m distance	<56 dB		
Dimensions (mm) W x D x H	750 x 250 x 850	750 x 250 x 1250	750 x 400 x 1250

# PowerWAVE EL MOD

Model	ELMOD 11						ELMOD 31	
Power rating kVA	4	8	12	16	20	24	12	24
<b>Mains input</b>								
Input mode	1-phase +N +E						3-phase +N +E	
Input voltage	220 V / 230 V / 240 V ±25%							
Input frequency	50 Hz ± 10%, 60 Hz ± 1%							
Maximum input current	20 A	40 A	60 A	80 A	100 A	120 A	60 A	120 A
Power walk-in (seconds)	60 secs							
THDi (%)	< 3%							
Input PF	≥ 0.99							
<b>Bypass input</b>								
Input voltage	220 V / 230 V / 240 V ± 20%							
Input frequency	50 Hz, 60 Hz							
Range of frequency synchro	50 Hz ± 4%, 60 Hz ± 4%							
<b>DC input</b>								
Rated Input voltage	±240 VDC							
Max DC current	10 A	20 A	30 A	40 A	50 A	60 A	30 A	60 A
<b>Battery charging</b>								
Charging current limited	Yes							
Charging ability	12 hours (3 hours back-up)							
Stability of charging voltage	±1%							
<b>AC output</b>								
Output power factor	0.9							
Output voltage	220, 230, 240 VAC							
Output frequency	±4%; ±0.2% (battery supply)							
Output current	15.6 A	31.3 A	46.9 A	62.6 A	78.2 A	93.9 A	46.9 A	93.9 A
Output voltage stability	±1%							
Output voltage recovering time	20 ms (load 0–100% change)							
Overload ability	120% continuous, 150% for 10 minutes, 175% for 1 minute							
Transfer from mains to battery supply	0 ms							
Transfer from changeover to inverter supply	<1 ms							
Peak factor	3:1							
Waveform distortion	≤ 1% ( linear load ), ≤ 3%( non-linear load )							
Overall efficiency	≥ 93% inverter mode, ≥ 98% changeover mode							
Load share precision	≤5%							
<b>Environment</b>								
Operating temperature	-5°C–40°C							
Maximum operation altitude	≤ 1000 m							
Relative humidity	≤ 93% non-condensing							
Protection degree	IP30							
Cooling	Forced cooling front to back							
Applicable safety standards	EN62040-1-1:2003 IEC60950-1:2001 EN50171							
Electromagnetic compatibility	EN62040-2:2006							
Acoustic noise	≤ 55DB							
<b>Other</b>								
Interface	RS232, RS485, 4 dry contact, TCP/IP adapter							
Dry ports	Mains failure/common alarm/on battery/battery low							
Dimensions (mm) W x D x H	850 x 510 x 1340							

<b>Model</b>	<b>ELM-04</b>
Capacity	4 KVA
Input/Output mode	1/1
Input PF	≥ 0.99
THDi (%)	≤ 3%
Overload ability	Comply to system overload requirement
Charging power	1600 W
Weight (kg)	7

#### Heat dissipation at 100% load and fully charged battery

<b>Configuration</b>	<b>1 Module</b>	<b>2 Modules</b>	<b>3 Modules</b>	<b>4 Modules</b>	<b>5 Modules</b>	<b>6 Modules</b>
Changeover mode	120 W	240 W	360 W	480 W	600 W	720 W
Inverter mode	280 W	560 W	840 W	1120 W	1400 W	1680 W
Non-maintained mode	120 W	240 W	360 W	480 W	600 W	720 W

# PowerWAVE EL 200

Model	EL210	EL215	EL220
Power rating kVA/kW	10/7	15/10.5	20/14
Power factor	0.8		
<b>General</b>			
Serial communication	Dry contacts plus RS232		
Software	T-Mon standard/SNMP module optional		
Protection degree	IP41		
Ambient operating temperature/ altitude	0–40°C/ <1000 m (above sea level)		
Standard	Emergency lighting EN 50171		
Ventilation	Forced air cooling		
Relative humidity	10–90% max (non-condensing)		
Acoustic noise at 1 m distance	<60 dB		
<b>Input</b>			
Voltage / tolerance	230/400 VAC 3 phase, 4 wires, + ground, +/-15%		
Bypass voltage	230 VAC single phase		
Input frequency	50Hz +/-5%		
Max RFI	EN50091-2 Class A		
<b>Output</b>			
Voltage	230 VAC single phase		
Voltage stability	Static (balanced load) +/-1%, Static (unbalanced load) +/-2%, Dynamic (stop load 0–100%) +/-5%		
Voltage recovery rime	After step load 0–100% max. 20 ms		
Frequency	50 Hz		
Frequency tolerance	Line synchronised +/-1%; free running +/-0.2%		
Efficiency at 100% load	>87–91%		
Crest factor	3:1		
Short circuit protection	Electronic short circuit		
Overload capacity	120% continuous, 120–150% load 10min. 150–180% 1min		
Total Harmonic Distortion (THD)	Linear load <3%		
<b>Batteries</b>			
Type	Sealed lead acid – maintenance free		
Number of 12 V blocks	30		
Float charging voltage	405		
End of discharge voltage	300 VDC		
Battery ambient temperature	20°C		
Battery protection	Circuit breaker		
Battery test	Automatic battery test once a week		
<b>Weight/Dimensions</b>			
Weight (kg) excluding batteries	250		
Dimensions (mm) W x D x H	545 x 730 x 1250		

# PowerWAVE EL 300 DSP

Model	EL310 DSP	EL320 DSP	EL330 DSP	EL340 DSP	EL360 DSP	EL380 DSP	EL3100 DSP	EL3120 DSP	EL3160 DSP	
Power rating kVA/kW	10/9	20/18	30/27	40/36	60/54	80/72	100/90	120/108	160/144	
Power factor	0.99									
<b>General</b>										
Serial communication	Dry contacts plus RS232									
Software	T-Mon standard/SNMP module optional									
Protection degree	IP41									
Ambient operating temperature / altitude	0–40°C / <1000 m (above sea level)									
Standard	Emergency lighting EN 50171									
Ventilation	Forced air cooling									
Relative humidity	10–90% (non-condensed)									
Acoustic noise at 1 m distance	<62 dB				<64 dB		<68 dB			
<b>Input</b>										
Voltage / tolerance	380/400/415 VAC (3PH + N + PE)									
Bypass voltage	230/400 VAC three phase									
Input frequency	50 Hz +/-5%									
Max RFI	EN50091-2 Class A									
Harmonic distortion	<5% @ 100% load									
<b>Output</b>										
Voltage	230/400 VAC three phase									
Voltage stability	Static (balanced load) +/-1%, Static (unbalanced load) +/-2%, Dynamic (stop load 0-100%) +/-5%									
Voltage recovery time	After step load 0–100% max. 20 ms									
Frequency	50 Hz									
Frequency tolerance	Line synchronised +/-1% / free running +/-0.2%									
Efficiency at 100% load	>87–91%									
Crest factor	3:1									
Short circuit protection	Electronic short circuit									
Overload capacity	120% continuous, 120–150% load 10 min. 150–180% 1 min									
Total Harmonic Distortion (THD)	Linear load <3%									
<b>Batteries</b>										
Type	Sealed lead acid – maintenance free									
Number of 12 V blocks	30									
Float charging voltage	405									
End of discharge voltage	300 VDC									
Battery ambient temperature	20°C									
Battery protection	Circuit breaker									
Battery test	Automatic battery test once a week									
<b>Weight/Dimensions</b>										
Weight (kg) excluding batteries	91	100	173	197	209	220	232	265	482	
Dimensions (mm) W x D x H	400 x 815 x 1040				515 x 855 x 1440				880 x 775 x 1900	

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