PowerWAVE EL 300DSP

(10–160 kVA)

Technical Specification

KOHLER POWER
uninterruptible

1. GENERAL SPECIFICATIONS

Model	EL 310	EL 320	EL 330	EL 340	EL 360	EL 380	EL 3100	EL 3120
Nominal Output Rating (CosØ : 0,8) kVA	10	20	30	40	60	80	100	120
Nominal Output Rating (CosØ : 1) kW	9	18	27	36	54	72	90	108
Audible Noise	<57 dB	<62dB		<64dB		<68dB		
Efficiency (Load Dependant)	Upto 94% Inverter Mode / Upto 98% Changeover Mode							
Operating Temperature (Ambient)	0-40 °C							
Altitude	<1000 meters (Above See level)							
Ventilation	Forced							
Relative Humidity	< 90%							
Protection Degree	IP 20							
Standards	EN 62040-1,EN 62040-2, EN62040-3, EN 60950-1 EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,EN 61000-4-8, EN 60529, EN50171, ICEL1009							
Transport	Packaged and On Pallet							

2. RECTIFIER SPECIFICATIONS

Model	EL 310	EL 320	EL 330	EL 340	EL 360	EL 380	EL 3100	EL 3120
Nominal Input Voltage	380 / 400 VAC 3 phase + N,+20 - 25%							
Max Input current (A) per phase @100% resistive load, No charge current.	31	46	62	92	123	154	185	246
Max Input current (A) per phase @100% resistive load, Full charge current.	34	49.6	66.8	99.8	134	167	200	264
Input Frequency Range	50 Hz, +/- 5%							
Input Power Factor	>0.99							
Input Voltage distortion	<10 %							
Input THDi	<5%							
Input Protection	Fuses, Voltage & Frequency tolerance, Input power limit, Input PFC							

3. BATTERY SPECIFICATIONS

Model	EL 310	EL 320	EL 330	EL 340	EL 360	EL 380	EL 3100	EL 3120
Battery Type	Sealed Lead Acid - maintenance Free							
Number of Blocks	60 Batteries (+/-30)							
Number of Cells	360							
Float voltage	810Vdc (+/-405 Vdc)							
Battery Cut Off voltage	600Vdc (+/-300 Vdc)							
Charger Max (A)	5.5	13	14	20	27	40.5	54	72
Battery Installation	External							
Battery Test Automatic	Standard every 72 Hours (Adjustable)							
Battery Protection	Polarity Protection/ Short Circuit Protection /Automatic Circuit Breaker / Fuses							

4. INVERTER SPECIFICATIONS

Model	EL 310	EL 320	EL 330	EL 340	EL 360	EL 380	EL 3100	EL 3120
Inverter Bridge	IGBT Technology							
Nominal Output Voltage	380 / 400 VAC 3 phase + N							
Output Frequency	50 Hz (60 Hz On Request)							
Output Frequency Tolerance - Free Running - Line Synchronized	± 0.2 % ± 2 %							
Overload Capability	120% Load: Continuous 125-150% Load: 1 min >150% Load: By pass							
Harmonic Distortion - Linear Load - Non Linear Load	< 2 % < 5 %							
Crest Factor	3/1							
Output Waveform	Sine Wave							
Short Circuit Protection	Electronic Short Circuit Protection							

5. BYPASS SPECIFICATIONS

Primary Components	Electronic SCR Switch
Nominal Voltage -V	380 / 400 VAC 3 phase + N
Nominal Frequency - Hz	50 Hz ± 5%
Retransfer : Static By-Pass to Inverter	Automatic and Manual
Overload Capability	150 – 200 % Continuously
Manual By-Pass	Without Interruption

6. OPTIONAL EXTRAS

Input/output voltage	110/208 VAC 3 Phase
Input transformer	Galvanic isolation transformer at the input & output
Adaptors	SNMP, MODBUS, Remote Monitoring Panel, RS485
Communication	RS232 & DRY Contacts
Software	T-Mon UPS Management (Standard for 3 Clients + 1 Server)

7. HEAT DISSIPATION (At nominal load and voltage)

Model	**EF 310**	**EF 320**	**EF 330**	**EF 340**	**EF 360**	**EF 380**	**EF 3100**	**EL 3120**
kW	1.15	1.7	2.3	3.4	4.6	5.7	6.9	9.19
kcal (x1000)	0.99	1.49	1.98	2.96	3.95	4.9	5.9	7.9
BTU (x1000)	3.9	5.9	7.8	11.8	15.7	19.6	23.5	31.4

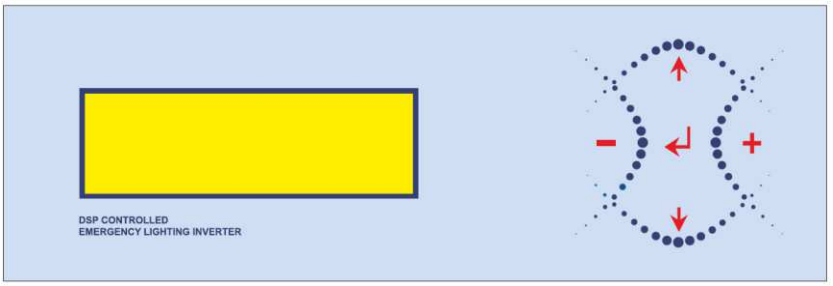
8. MECHANICAL SPECIFICATIONS

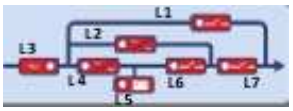
Model	**EL 310**	**EL 320**	**EL 330**	**EL 340**	**EL 360**	**EL 380**	**EL 3100**	**EL 3120**
Dimension (h x w x d)	1035 x 400 x 855		1450 x 515 x 855					
Weight (without battery) kgs	91	101	175	180	195	244	259	300
Protection Level	IP20							
Colour	Black							

9. MAXIMUM OUTPUT MCB

Model	**EL 310**	**EL 320**	**EL 330**	**EL 340**	**EL 360**	**EL 380**	**EL 3100**	**EL 3120**
Maximum MCB size to be used in Final Distribution	B4	B6	B6	B10	C10	C10	C10	C10

10. DISPLAY





L1 **Maintenance bypass switch**
L2 **Load in Changeover Mode indicator lamp**
L3 **Input voltage indicator lamp**
L4 **Rectifier run pilot lamp**
L5 **Battery operation indicator lamp**
L6 **Load on Inverter indicator lamp**
L7 **Output switch on indicator lamp**

There are 5 control buttons on the UPS Front panel

ENTER button provides selection deceleration
Up and down buttons provide ability to surf menu
(+) and (-) buttons are used for adjustments or option selection.

Front Panel Menu Descriptions:
At the end of each menu <ENTER> EXIT message will be showed, if you press enter you will exit to upper menu. All menus have 3 or 4 levels.

	Menu	Description
1	STATUS	Enter Status menu
2	MEASUREMENTS	Enter Measurements menu
3	ALARM LOGS	Enter Alarm logs menu
4	INFORMATION	Enter Information menu
5	OPTIONS	Enter Options menu
6	COMMAND	Enter Command menu
7	TIME	Enter Time menu
8	SERVICE	Enter Service menu
9	PASSWORD	Enter Password screen
10	ADJUST	Enter Adjust menu

Level 1	Level 2
STATUS	Status of the UPS
MEASUREMENTS	INPUT
	BYPASS
	INVERTER
	OUTPUT
	DC
	GENERAL
	ENTER - EXIT
ALARM LOGS	UPS LOG RECORD

	ENTER CLEAR LOG
INFORMATION	RS232 Comm 1:--
	RS232 Comm 2:--
	Maximum UPS power
	Nominal voltage and frequency
	Inverter firmware version
	PFC firmware version
	Panel firmware version
	UPS Model
	Communication protocol
	Chassis nr
OPTIONS	LCD OPTIONS
	COMMUNICATION OPTIONS
	ALARM OPTIONS
	BYPASS OPTIONS
COMMAND	By-pass transfer
	Boost charge start
	Short battery test start
	Relay check
	Dialup modem programming
	Alarm sound ON/OFF
	Warning sound interval
	ENTER - EXIT
TIME	Current time
	Current date
	Set hour
	Set minute
	Set day

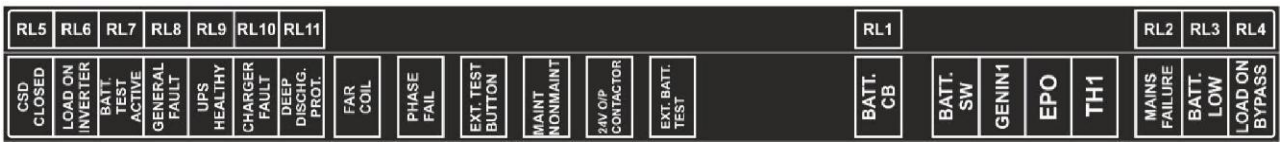
Level 1	**Level 2**
	Set month
	Set year
	Update time and date
	ENTER - EXIT
SERVICE	Operating hourmeter
	Maximum load
	ENTER Fault reset
	Fan maintenance hourmeter
	Batt.maintenance hourmeter
	General maintenance hourmeter
	Logout command
	ENTER - EXIT
PASSWORD	Getting service code
	Type service password
	Type user password
	ENTER - EXIT
ADJUST	Group adjustments
	Inverter factory options
	Rectifier factory options
	Panel adjustments
	AC input adjustments
	AC Bypass adjustments
	AC output adjustments
	DC adjustments
	Power adjustments
	ENTER - EXIT

Metering:

The following parameters shall be displayed:

- Input AC voltage line-to-neutral
- Input AC voltage line-to-line
- Input AC current for each phase
- Input frequency
- Battery voltage
- Battery charge/discharge current
- Bypass input AC voltage line-to-neutral
- Bypass input AC frequency
- Inverter output AC voltage line-to-neutral
- SI output AC voltage line-to-neutral
- SI output AC voltage line-to-line
- Output AC current for each phase
- Output frequency
- Output load percentage
- Load crest factor
- Apparent power
- Active power
- Battery time left during battery operation
- Internal or external Battery ambient temperature
- Battery, Fan and general maintenance hourmeters
- Operating hourmeter

11. DRY PORT CONTACTS & COMMS



Some important events of the SI can be monitored or controlled by the available dry port connections. These functions are listed below:

Terminal	ALARM CONTACTS
FAR COIL	24Vdc Input – supply of 24Vdc holds the external contactor closed
PHASE FAIL	Connection for external monitor – if loop is broken load is connected via OP contactor
EXT.TEST BUTTON	Connection for external test - if loop is broken load is connected via OP contactor and discharge of batteries started.
MAINT / NON MAINT	Control of the external contactor to provide maintained or non-maintained output
24V OP CONT	Protected 24Vdc OP for feed coil of external output contactor
EXT BATT TEST	External connection for completing battery system testing
BATT.SW	Connection for battery MCCB
GEN IN 1	Generator connection
EPO	Emergency Power Off Connection
TH1	External Temperature Probe Connection
RL1	Interactive battery circuit breaker drive output or programmable alarm relay output
RL2	Mains Failure Dry Port
RL3	Battery Low Dry Port
RL4	Load on Changeover mode
RL5	External Non-Maintained Contactor Closed
RL6	Load On Inverter
RL7	Battery Test is Active
RL8	General Fault Dry Port
RL9	System Healthy
RL10	Charger Is Faulty
RL11	For External Deep Discharge Protection