1-6 kVA OPP Series



Specification

Input

Input Voltage (full load without using battery)	 115 VAC version: 80-138 VAC 208 VAC version: 176-276 VAC 230 VAC version: 176-276 VAC 	Input Rece Output Re
Input Frequency	• 46-64 Hz	Display/Al
Input Power Factor	 >0.98 at full load 	Interface (
Input Protection	Fuse/breaker. See notes next page	,
Output		Software
Output Voltage	• 115 VAC nominal - 100/110/115/120 VAC	Fitted Fus
	selectable 208 VAC nominal - 208/220/230/240 VAC	Ratings
	selectable	
	230 VAC nominal - 208/220/230/240 VAC selectable	
Output Regulation	• ±2 of nominal	
Output Waveform	Sine wave	
Output THD	 3%, linear load 	NEFU
Crest Factor	• 3:1	
Output Protection	 Electronic overload protection (ultimately by fuse/breaker) 	
Efficiency (AC-AC)	• 86% up to 1.5 kVA, 90% up to 6 kVA	
Overload Capacity	 See overload characteristics 	Enviror
Output Frequency	 50/60 Hz dependent on input 	Operating
Battery		Storage Te
Internal Battery Type	 VRLA 5 year design life. For 10 year option add suffix 'X' to model number 	Operating Operating Acoustic N
Battery Replacement	 Hot-swap all models 	Ingress
Recharge	 <4 hours to 90%, standard battery only 	9
Battery String Voltage	 48 VDC up to 1.5 kVA 	EMC &
	96 VDC 2.5 kVA to 3 kVA 192 VDC 4 kVA to 6 kVA	Emissions
Autonomy	See tables	
Battery Module	• 2 x 48 VDC OPP BP per battery module (BM)	ESD Immu
Temperature	 Autonomy, recharge and battery life based on 25 °C ambient 	Radiated I EFT/Burst

- True On-Line UPS
- Rack-Mount/Standalone Format
- Universal Battery Design (Patent Pending)
- Dual Mains Input
- Dual Position Backlit LCD
- LCD Load Segment Control 2.5 kVA & 3 kVA (European Models)
- Optional 10 Year Batteries
- General

Safety Approvals

	Input Receptacles Output Receptacles Display/Alarm Interface (Rear Panel)	•	See rear panel drawings See rear panel drawings Front panel LCD menu-driven, audible alarms. See front panel layout 1 x RS232 and 1 x USB (fitted in
	Software	•	option slot) Supplied bundled to support Windows 95, 98 MF 2000 XP & NT
	Fitted Fuse/Breaker Ratings	•	OPP1000/OPP1500 - 10 A OPP2500/OPP3000 - 15 A OPP4000-OPP6000 - 30 A OPP1500L CE - 15 A OPP1500L - 15 A OPP3000L (208 VAC) - 15 A OPP3000L120 - 30 A OPP6000L - 32 A
	REPO	•	Remote emergency power off, must be fitted for unit to function. Connector on rear of unit. Remove link to shut down output in AC mode or shut down unit in battery mode
	Environmental		
n	Operating Temperature Storage Temperature Operating Humidity Operating Altitude Acoustic Noise Ingress		0 °C to +40 °C -15 °C to +50 °C 0-95% RH, non-condensing 3000 m without derating <45 dBA at 1 metre IP20
	EMC & Safety		
	Emissions	•	EN55022 level B EN50091-2, level B FCC Class B
(BM) d	ESD Immunity Radiated Immunity EFT/Burst	•	EN61000-4-2, level 3 EN61000-4-3, level 2 EN61000-4-4, level 2
	Surge	•	EN61000-4-5, level 3

- EN61000-4-5, level 3
 EN50091-1-1, EN60240-1-1, I
- EN50091-1-1, EN60240-1-1, EN60950, CE L versions: UL1778

Models and Ratings

OPP (UL) Models

Output Power		Output Current @ 115 VAC	Output Current @ 208 VAC	Autonomy (Full Load)	Model Number
1500 VA	1050 W	13.0 A	N/A	5 Minutes	OPP1500L
3000 VA	2100 W	N/A	14.4 A	5 Minutes	OPP3000L
3000 VA	2100 W	26.0 A	N/A	5 Minutes	OPP3000L120*
6000 VA	4200 W	N/A	28.8 A	5 Minutes	OPP6000L

Accessory Products

Model Number	Description
OPP 232	RS232 option card giving second RS232 function.
OPP BM	Battery module for OPP series UPS - fitted with 2 x OPP BP.
OPP BP	Battery pack - contains 4 x 7Ah VRLA 5 year design life batteries.
OPP BB3KL(1)	Make before break dual input bypass module for OPP2500L and OPP3000L. Provides safety interlock when used with OPP V.
OPP BB6KL(1)	Make before break dual input bypass module for OPP4000L to OPP6000L. Provides safety interlock when used with OPP V.
OPP V	AS400 Volt Free Contact option card . See options/accessories.
OPP S	SNMP Network adaptor option card. See options/accessories.
OPP R	Telescopic rack guides for UPS and battery modules. (1 set of guides per 2U module - i.e. OPP2500L needs 2 sets OPP R).

Notes

1. Unit can be used without OPP V. However, there is no automatic protection against bypass operation while the unit is on inverter. Units must operate with common neutral. Contact sales office for details.

Option Order Codes



E.G. OPP1500LRX OPP Series, 1500 VA With telescopic rail guides and 10 year design life batteries fitted

Options (Examples)

Add suffix 'R' to Model Number - Adds rack guides to unit for 19" rack mounting.

Add suffix 'S' to Model Number - Adds internal SNMP to UPS. (in place of USB port).

Add suffix 'V' to Model Number - Adds AS400 VFC to UPS for utility fail, bypass, batt low and UPS fault (in place of USB port).

Add suffix 'X' to Model Number - Replace 5 year design life batteries with 10 year.

(1) Options should be listed in alphabetical order.

Option Card &REPODetail

Option card details

OPP S option card

The OPP S card provides network connectivity and SNMP management protocol capability to the OPP series of UPS.

Supplied with the option card is a CD which contains all relevant software including Manual and MIB. The card can be factory-fitted with this option on request – please contact sales for assistance.



OPP V option card

The OPP V card provides true volt free contact indication of the following key parameters: Mains Fail

Battery Low Bypass UPS fault

These are 250VAC/2A rated contacts.



REPO Details (must be fitted for UPS to operate)

The REPO feature shuts down the protected equipment immediately and does not follow the orderly shutdown procedure initiated by any power management software. This occurs when the link between pins 1 and 2 is broken.

Any devices which are operating on battery are also shut down immediately. When the REPO switch is closed, the equipment will not return to battery power until the UPS input is re-cycled.

This can be done by shutting down the UPS and re-starting it.



REPO Connector

Run Time Charts

ONLINE POWER PROTECTION

1100				STANDA	RD RUN TI	ME IN MIN	UTES. Aut	onomy vs	Load ^{(1) (2)}			
UPS Model	200 VA	400 VA	600 VA	800 VA	1000 VA	1500 VA	2000 VA	2500 VA	3000 VA	4000 VA	5000 VA	6000 VA
MOUEI	(140 W)	(280 W)	(420 W)	(560 W)	(700 W)	(1050 W)	(1400 W)	(1750 W)	(2100 W)	(2800 W)	(3500 W)	(4200 W)
OPP1000	59	32	18	12	8							
+1BM	260	134	83	58	50							
+2BM	466	247	166	124	91							
+3BM	-	358	250	183	146							
OPP1500(L)	63	34	19	13	9	5						
+1BM	274	142	88	62	53	31						
+2BM	491	260	175	131	96	60						
+3BM	-	377	264	193	154	92						
OPP2500	167	85	59	47	34	15	9	6				
+1BM	371	212	152	107	78	46	29	20				
+2BM	589	337	244	179	144	66	54	41				
+3BM	-	478	334	255	198	104	68	58				
OPP3000(L)	140	66	51	38	26	15	10	6	5			
+1BM	313	175	121	83	63	46	29	21	16			
+2BM	-	285	196	153	118	67	54	42	31			
+3BM	-	391	280	211	169	106	69	59	49			
OPP4000	-	130	88	63	54	37	23	16	13	8		
+2BM	-	290	214	166	137	84	57	50	40	26		
+4BM	-	467	339	269	221	149	104	76	60	48		
+6BM	-	-	479	374	305	208	151	119	93	61		
OPP5000	-	133	90	65	56	38	24	17	13	8	6	
+2BM	-	297	219	170	140	86	59	51	41	26	19	
+4BM	-	477	346	275	226	152	106	78	61	49	37	
+6BM	-	-	489	382	311	212	154	121	96	62	54	
OPP6000(L)	-	140	95	68	59	40	25	18	14	9	6	5
+2BM	-	313	231	179	148	91	62	54	44	28	20	15
+4BM	-	503	365	290	238	161	112	82	65	52	39	28
+6BM	-	-	515	403	328	224	163	128	101	66	57	46
		•			•				•			

Notes

1. Recharge time will be extended as additional BMs are added.

2. '-' indicates time not calculated. Contact sales for details.

LIDO	EXTENDED RUN TIME IN MINUTES. Autonomy vs Load ^{(1) (2) (3)}										
UPS Model	400 VA	800 VA	1000 VA	1500 VA	2000 VA	2500 VA	3000 VA	4000 VA	5000 VA	6000 VA	
Model	(280 W)	(560 W)	(700 W)	(1050 W)	(1400 W)	(1750 W)	(2100 W)	(2800 W)	(3500 W)	(4200 W)	
OPP1000 +5 BMC	540	270	210								
OPP1000 +6 BMC	720	330	252								
OPP1000 +7 BMC	840	390	300								
OPP1500 +5 BMC	550	280	220	132							
OPP1500 +6 BMC	740	350	270	150							
OPP1500 +7 BMC	860	420	315	198							
OPP2500 +5 BMC	600	270	210	138	100	70					
OPP2500 +6 BMC	750	330	240	168	120	90					
OPP2500 +7 BMC	850	378	300	198	150	110					
OPP3000 +5 BMC	570	250	195	128	95	65	55				
OPP3000 +6 BMC	730	300	230	160	115	85	70				
OPP3000 +7 BMC	825	348	270	190	140	105	85				
OPP4000 +8 BMC	960	450	354	210	192	150	110	60			
OPP4000 +10 BMC	1200	570	432	270	210	180	150	70			
OPP4000 +12 BMC	-	720	510	330	270	210	168	100			
OPP5000 +8 BMC	970	460	360	220	200	155	115	65	70		
OPP5000 +10 BMC	1220	580	440	280	220	190	155	75	75		
OPP5000 +12 BMC	-	-	740	520	340	280	220	175	105	80	
OPP6000 +8 BMC	980	470	370	230	210	160	120	70	72	50	
OPP6000 +10 BMC	1230	590	450	290	230	200	160	85	79	65	
OPP6000 +12 BMC	-	760	530	350	290	230	185	115	85	85	

- Notes -
- 1. Recharge as per standard battery pack.

3. Not available for 'L' versions.

Mechanical Format

ONLINE POWER PROTECTION

OPP1000 & OPP1500(L)

Standard unit with internal batteries 2U. Each additional battery adds 2U.

OPP2500 & OPP3000(L)

Standard unit with battery 4U. Each additional battery adds 2U.

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OPP4000 OPP5000 & OPP6000(L)





600

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Box Contents

OPP1000 & OPP1500 (L)	OPP2500 & OPP3000(L)	OPP4000, OPP5000, OPP6000(L)
Unit supplied in one box	Unit supplied in two boxes	Unit supplied in three boxes
Box 1	Box 1	Box 1
UPS unit with battery pack fitted (2U)	UPS electronics module (2U)	UPS electronics module (4U)
1 x input cable	1 x input cable	Input & output hard wired
1 x output cable	1 x output cable	REPO connector
REPO connector	REPO connector	RS232 cable/USB cable
RS232 cable/USB cable	RS232 cable/USB cable	Software CD
Software CD	Software CD	Manual
Manual	Manual	19" rack ears and screws
Mounting feet	19" rack ears and screws	2 x battery connection cables
19" rack ears and screws		
	Box 2	Box 2
	Battery module with 2 x OPP BP fitted (2U)	Battery module with 2 x OPP BP fitted (2U)
	Battery connection cable	Battery connection cable
	19" rack ears and screws	19" rack ears and screws
	1 x key lock kit	1 x key lock kit
		Box 3
		Battery module with 2 x Xi BP fitted (2U)
		Battery connection cable
		19" rack ears and screws
		1 x key lock kit

Front Panel Layout

ONLINE POWER PROTECTION



Number Description

1	Remove panel to access battery compartment (up to 1.5 kVA only - other models have separate battery module).
2	Top/bottom clips for releasing LCD display (to rotate through 90°) for standalone applications.
3	Backlit full function LCD display.
4	Keys for menu selection, bypass and menu select. See details below.
5	Input breaker.

OPP LCD —

To allow for use in either rack-mount or standalone format, the LCD can be rotated using the top/bottom clip as shown to the right.

A retaining screw is then used to fix the panel in place.

Never rotate panel while UPS is on.

Information available from LCD:

Input Voltage: VAC Output Frequency: Hz Output Voltage: VAC Battery Voltage: VDC Load: % Ambient Temperature: °C Heatsink Temperature: °C Output Current: A

OPP Front Panel Buttons



Turn on/off the inverter or force unit to bypass. Start UPS from battery when mains is not available.



Select the status shown on the second (bottom) row of the LCD. Used for setting the function or parameter.



Select the status shown in the first (top) row of the LCD or review parameters in the M menu.



Enter edit menu. Selects standard UPS parameters including output voltage, battery test, etc.

OPP (UL) Models

Rear Panel Layout

OPP1000L & OPP1500L



*Plug and play version also available - contact sales office.

Rear Panel Details

No.	Item	Description
1	Option Slot	Option slot allows user to fit AS400 dry contact card or SNMP internal network adaptor
2	Comms Port	Standard serial RS232 communications via 9 pin D type connector
3	Repo	Remote emergency power off (remove link to shutdown)
4	Input/Output Fuses	Overload protection
5	External Battery	Allows user to connect external battery packs
6	Maintenance Bypass	Allows unit to be isolated for maintenance
7	Input Breaker	Input breaker for 4, 5 & 6 kVA models
8	Hardware Terminals	For input, output and battery (if required)
9	Battery Breaker	Breaks DC voltage to/from battery module
10	Battery Connector	Remove plates to access battery connectors

UPS Topology

The **OPP** series of On line UPS provides a high integrity AC power source with zero transfer time on mains fail conditions to battery. This On line double conversion topology ensures that the load is protected against noise and transients.

The **OPP** series also offers dual input feeds ensuring that even if the main input fails, and the auxiliary supply is available, the load will continue to be protected against power failure.

The **OPP** series also incorporates (2.5 kVA and 3 kVA European models) load segment control - allowing the user to turn off (via the LCD front panel menu) any load that is surplus to the critical part of the system. This then ensures that any critical component connected can achieve the longest run time available.

OPP Series Schematic -



Weights and Dimensions

Model	U	nit Dimension	S	Unit Weight	Shi	pping Dimensi	ons	Shipping	Devee
Number	Height	Depth*	Width	kg (total kg)	Height	Depth	Width	Weight kg	Doxes
OPP1000	3.5 (88.9)	20.1 (510)	16.8 (426)	22 (22)	8.3 (210)	25.6 (650)	21.3 (540)	28.7	1 Box
OPP1500(L)	3.5 (88.9)	20.1 (510)	16.8 (426)	22 (22)	8.3 (210)	25.6 (650)	21.3 (540)	28.7	1 Box
OPP2500	7.0 (177.8)	20.1 (510)	16.8 (426)	20+25 (48)	8.3 (210)	25.6 (650)	21.3 (540)	17.9	1 of 2
					8.3 (210)	25.6 (650)	21.3 (540)	35.3	2 of 2
								53.2	2 Boxes
OPP3000(L)	7.0 (177.8)	20.1 (510)	16.8 (426)	20+28 (48)	8.3 (210)	25.6 (650)	21.3 (540)	18.6	1 of 2
					8.3 (210)	25.6 (650)	21.3 (540)	35.3	2of 2
								53.9	2 Boxes
OPP4000	14.0 (355.6)	20.1 (510)	16.8 (426)	28x3 (84)	13.4 (340)	27.6 (700)	23.6 (600)	30.5	1 of 3
					8.3 (210)	25.6 (650)	21.3 (540)	35.3	2 of 3
					8.3 (210)	25.6 (650)	21.3 (540)	35.3	3 of 3
								101.1	3 Boxes
OPP5000	14.0 (355.6)	20.1 (510)	16.8 (426)	28x3 (84)	13.4 (340)	27.6 (700)	23.6 (600)	30.5	1 of 3
					8.3 (210)	25.6 (650)	21.3 (540)	35.3	2 of 3
					8.3 (210)	25.6 (650)	21.3 (540)	35.3	3 of 3
								101.1	3 Boxes
OPP6000(L)	14.0 (355.6)	20.1 (510)	16.8 (426)	28x3 (84)	13.4 (340)	27.6 (700)	23.6 (600)	30.5	1 of 3
					8.3 (210)	25.6 (650)	21.3 (540)	35.3	2 of 3
					8.3 (210)	25.6 (650)	21.3 (540)	35.3	3 of 3
								101.1	3 Boxes
OPP BM	3.5 (88.9)	20.1 (510)	16.8 (426)	28 (28)	8.3 (210)	25.6 (650)	21.3 (540)	35.3	1 Box
OPP BMC	3.5 (88.9)	20.1 (510)	16.8 (426)	30 (30)	8.3 (210)	25.6 (650)	21.3 (540)	37.3	1 Box
OPP BP				12 (12)				15.0	1 Box
Notes —									

All measurements in inches (mm).

* Depth shown excludes front panel. Total depth is 21.65" (550 mm).

ONLINE POWER PROTECTION

XP

tomatically run

ROTECT

XProtect

mal Select UPS Remote UPS Help

Software Options

The **OPP** is supplied as standard with Xprotect software. However, the **OPP** has been designed to work with UPSilon software packages, which allow the user to use the **OPP** where MSXP UPS have previously been used.

UPSilon software must be used with the supplied RS232 cable. It will not function if used with the green UPSilon cable.

UPSilon is also available for Unix operating systems - please consult office for details.

XProtect -

- Simple installation & configuration
- Read/write function allows for engineer configuration of UPS
- Simple meter display of load battery capacity & temperature
- Complete data & event logging as standard
- Configurable tool bars

All models within the OPP range are provided as standard with shutdown & monitoring software.

This software is supplied on a CD and covers all Windows[®] based platforms. The software offers all of the functionality of standard shutdown packages with some additional features for remote monitoring and control.

Monitoring is achieved either locally through the RS232 cable (supplied) or remotely via a connected network. This can provide the user with information about major input and output parameters along with alarm information as and when it appears.

Control is via the console in the software and allows the user (again locally via serial connection or remotely via network connection) to schedule remote system shutdown (password controlled) and general UPS housekeeping.

In combination with its very flexible shutdown features, the software also lets the user know which programs were shutdown at last mains failure, to ensure that no saved files go unmissed.



XP

Schedule

File S

E





Overload Graphs





ONLINE POWER PROTECTION



Once the parameters shown are exceeded, the UPS will go to bypass mode. If the overload is greater than 160%, it will latch in bypass mode until mains is manually recycled. The UPS will support the load in bypass mode until fuse/breaker ratings are reached. At this point the unit will trip and shut down.

Modular Design &Key Lock Function

The **OPP** modular design makes for one man install up to 3kVA. 4-6kVA models require two men to install. The weight of each part of the system is no greater than 30kg. Part of the design concept is to allow 'one' unit to be created from a number of modules.

When the modules are used in free-standing mode, a key lock facility is provided. The basic principle of the key lock is illustrated below.

A key lock kit is provided with every battery module.

