

Technical Specification

Kohler PW 9000DPA

1 x 8 kW to 5 x 40 kW UPS Modules per Cabinet

Three phase input and output
Single / Triple / Upgrade cabinets



- N+n UPS Modular Redundancy
For integration into TIER II, III & IV topology
- DPA with Safe-Swap Modules (SSM)
For premium power protection availability
- Low total Cost of Ownership (TCO)
Cost saving during entire life-cycle
- Flexibility/Scalability
Ease of power upgrade, pay as you grow
- Enhanced Serviceability
Rapid fault recovery



KOHLER PW 9000DPA SYSTEM DESCRIPTION

In environments that demand zero downtime, continuous power protection availability is essential. In order to respond to today's dynamic IT and process-related environments that experience daily change through new server technologies, migration and centralisation, resilient and easily adaptable power protection concepts are required.

KOHLER PW 9000DPA is the foundation for continuous power protection availability of network-critical infrastructures in enterprise data centres where business continuity has paramount importance and in process control environment where manufacturing continuity is essential.

KOHLER PW 9000DPA is a second generation high-power-density (HPD), leading-edge double-conversion power protection technology that has standardized on a modular component approach which helps speed deployment, improve adaptability and increase system availability while reducing total cost of ownership.

KOHLER PW 9000DPA is a unique on-demand architecture that integrates the power rack, power distribution unit, back-up battery rack and monitoring and management solutions to allow easy selection of optimized configurations.

KOHLER PW 9000DPA (Distributed Parallel Architecture) provides highest availability, unmatched flexibility and at the same time lowest cost of ownership in IT environments.




This Technical Specification provides detailed technical information on the mechanical, electrical and environmental performance of the KOHLER PW 9000DPA. The KOHLER PW 9000DPA was designed to respond to the most stringent safety, EMC and other important UPS standards.


KOHLER PW 9000DPA is a rack-mountable modular design. It offers 6 types of cabinets and 7 types of modules to accommodate a wide range of power requirements.

Key Features of Kohler PW 9000 DPA:




- | | |
|---|---|
| • Highest availability modular, Decentralized Parallel Architecture (DPA) | <i>Near-zero down time</i> |
| • High power density (up to 342kW/m ²), small footprint | <i>Saving expensive floor space</i> |
| • Unity output power factor ($KW=KVA$); full power for loads with unity PF | <i>No de-rating for loads with unity PF</i> |
| • Blade-server-friendly power; full power from 0.9 lead to 0.8 lag | <i>No de-rating with leading PF loads</i> |
| • Highest efficiency even with partial loads; efficiency = 94 - 96% for loads 25-100% (DPA 50 module) | <i>Cost saving during UPS-life-cycle</i> |
| • Very low input current harmonic distortion THDi; THDi = < 2 - 3% for loads of 100 – 25 % | <i>Gen-set power and installation cost saving</i> |

MECHANICAL CHARACTERISTICS - MD CABINETS AND UPS MODULES

CABINETS		SINGLE DPA-25	TRIPLE DPA-75	UPGRADE DPA-125
Maximum Load	kVA	25	75	125
MD FRAME				
Accommodates	Max.	1 UPS module 10-25kVA Internal batteries	3 UPS modules 10-25kVA each Internal batteries	5 UPS modules 10-25kVA each External batteries
Dimensions (wxdxh)	mm	550 x 780 x 1650	550 x 780 x 1975	550 x 780 x 1975
Weight of cabinet - with modules, w/o batteries	kg	233 (with 1 UPS module)	maximum 319 (with 3 UPS modules)	maximum 325 (with 5 UPS modules)
Colours		Front - RAL 9007 + Black Louvres; Sides - Graffito Grey		

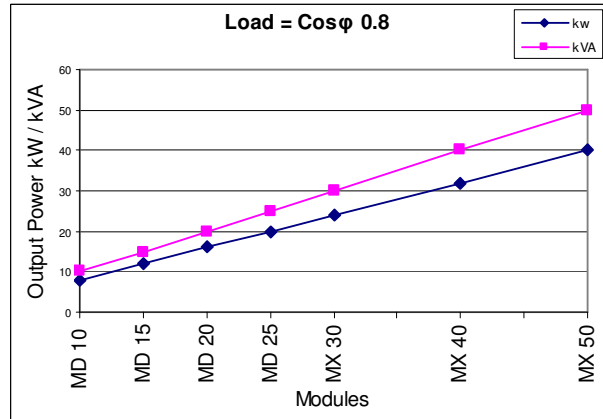
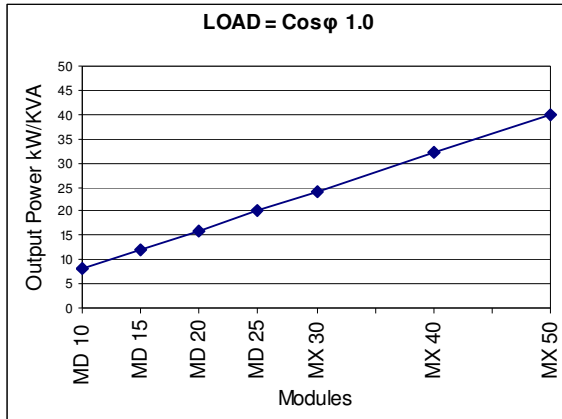
MD MODULES		DPA10	DPA15	DPA20	DPA25
					
Output Apparent Rated Power	kVA	10	15	20	25
Output Active Rated Power	kW	8	12	16	20
Dimensions (w x d x h)	mm	483 x 700 x 225 (5U)			
Weight	kg	24		33	
Colour		Front RAL 9007			

MECHANICAL CHARACTERISTICS - MX CABINETS AND UPS MODULES

CABINETS		SINGLE DPA-50	TRIPLE DPA-150	UPGRADE DPA-250
Maximum load	kVA	50	150	250
MX Frame				
Accommodates	Max.	1 UPS module 30-45kVA Internal batteries	3 UPS modules 30-45kVA each Internal batteries	5 UPS modules 30-45kVA each External batteries
Dimensions (w x d x h)	mm	730 x 800 x 1650	730 x 800 x 1975	730 x 800 x 1975
Weight of cabinet - with Modules, w/o batteries	kg	310 (with 1 UPS module)	Maximum 450 (with 3 UPS modules)	Maximum 490 (with 4UPS modules)
Colours		Front - RAL 9007 + Black Louvres; Sides - Graffito Grey		

MX MODULES		DPA 30	DPA 40	DPA 50
				
Output Apparent Rated Power	kVA	30	40	50 *
Output Active Rated Power	kW	24	32	40
Dimensions (w x d x h)	mm	663 x 720 x 225 (5U)		
Weight	kg	50	57	60
Colour		Front RAL 9007		
* Static Bypass mode 45 kVA/40kW				

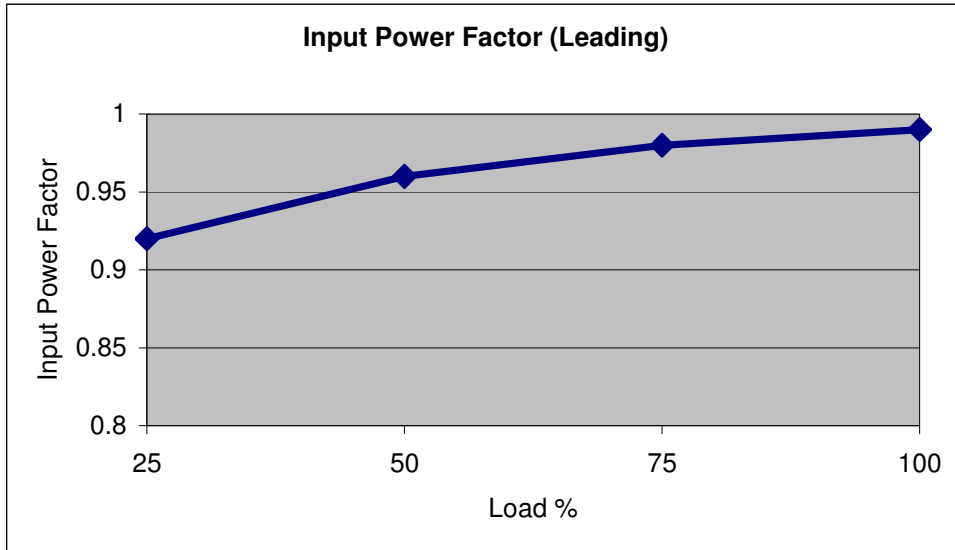
POWER SELECTION TABLE: Power Modules DPA 10 - DPA 50



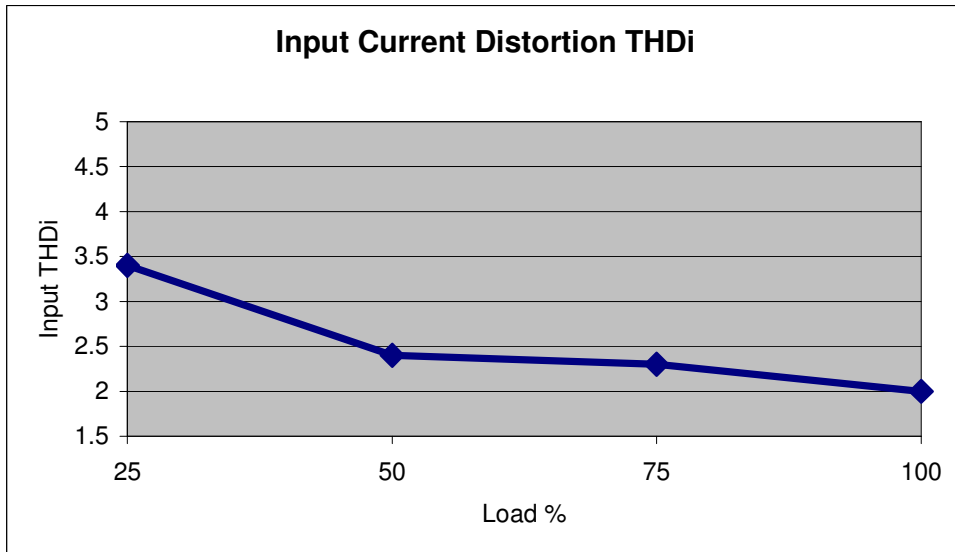
INPUT CHARACTERISTICS

Module Range		MD				MD		
		DPA 10	DPA 15	DPA 20	DPA 25	DPA 30	DPA 40	DPA 50
UPS Module Type								
Output rated power per module cosφ 0.8		10	15	20	25	30	40	50 *
Output rated power per module cosφ 1.0		8	12	16	20	24	32	40
Nominal Input Voltage	V	3 x 380/220V+N, 3 x 400V/230V+N, 3 x 415/240V+N						
Input Voltage Tolerance (ref to 3 x 400/230V) for loads in %:	V	(-23%/+15%) 3 x 308/177 V to 3 x 460/264 V for <100 % load (-30%/+15%) 3 x 280/161 V to 3 x 460/264 V for < 80 % load (-40%/+15%) 3 x 240/138 V to 3 x 460/264 V for < 60 % load						
Input Frequency	Hz	35 – 70						
Input Power Factor		PF=0.99 @ 100 % load						
Inrush Current	A	Limited by soft start / Max. In						
Input Current Distortion THDi		Sine-wave THDi = < 2 % @ 100% load						
Max. input power with rated output power and charged battery per module (output cosφ = 1.0)	kW	8.5	12.8	17.0	21.3	25.4	33.9	42.9
	A	12.3	18.5	24.7	30.8	36.8	49.1	62.1
Max. input power with rated output power and discharged battery per module (output cosφ = 1.0)	kW	9.3	14.0	18.6	23.3	27.8	37.1	46.9
	A	13.5	20.2	27.0	33.7	40.3	53.7	68.0

INPUT PF VERSUS % LOAD



INPUT DISTORTION THDi VERSUS % LOAD



BATTERY CHARACTERISTICS

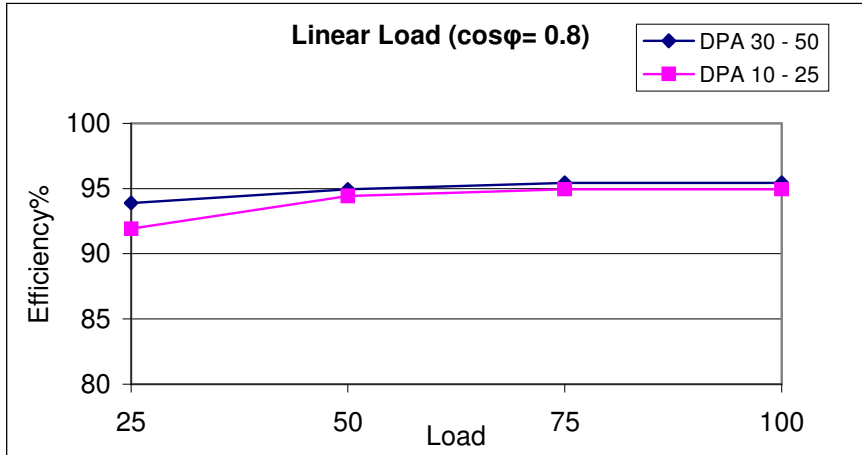
Module Range		MD				MX		
UPS Module Type		DPA 10	DPA 15	DPA 20	DPA 25	DPA 30	DPA 40	DPA 50
Variable Number of 12V Battery Blocks	30-50	30-50	30-50	30-50	40-50	40-50	40-50	40-50
Maximum Battery Charger Current	A	6A Standard (10 A optional)				10A Standard (15 A optional)		
Battery Charging Curve		Ripple free ; IU (DIN 41773)						
Temperature compensation		Standard (temperature sensor optional)						
Battery Test		Automatic and periodically (adjustable)						
Battery Type		Maintenance free VRLA or NiCd						

OUTPUT CHARACTERISTICS

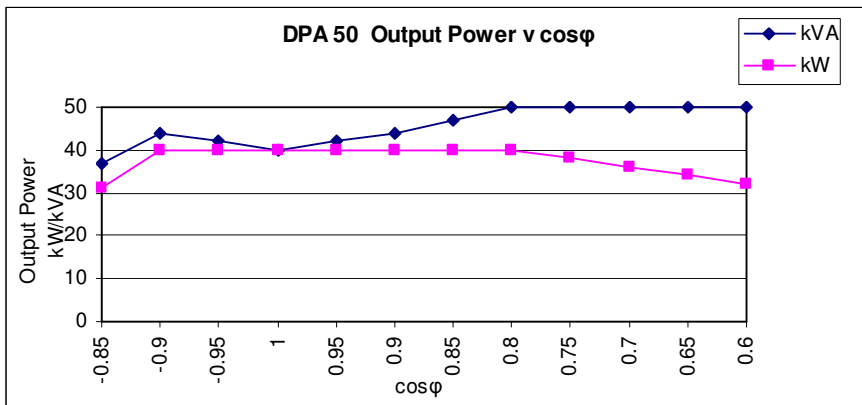
Module Range		MD				MX			
UPS Module Type		DPA 10	DPA 15	DPA 20	DPA 25	DPA 30	DPA 40	DPA 50	
Output Rated Power per Module	kVA	10	15	20	25	30	40	50 *	
Output Rated Power per Module	kW	8	12	16	20	24	32	40	
Output Current In @ cosφ 1.0 (400 V)	A	11.6	17.4	23.2	29	35	46.5	58	
Output Rated Voltage	V	3 x 380/220V or 3 x 400/230V or 3 x 415/240V							
Output Voltage Stability	%	Static: Dynamic (Step load 0%-100% or 100%-0%)						< +/- 1 < +/- 4	
Output Voltage Distortion	%	With Linear Load With Non-linear Load (EN62040-3:2001)						< +/- 2 < +/- 4	
Output Frequency	Hz	50 Hz or 60 Hz							
Output Frequency Tolerance	%	Synchronized with mains (selectable for bypass operation)					or	< +/- 2 < +/- 4	
Bypass operation		Free running At nominal input voltage of 3 x 400 V or 190 V to 264 V ph-N						+/- 0.1 +/- 15%	
Permissible Unbalanced Load (All 3 phases regulated independently)	%	100%							
Phase Angle Tolerance (With 100 % Unbalanced load)	Deg.	+/- 0 deg.							
Overload capability on inverter	%	125 % load 150 % load					10 min. 60 sec.		
Output short capability (RMS)	A	Inverter : Bypass :					2 x In for 250 ms 10 x In for 10 ms		
Crest - Factor		3 : 1							
* Static Bypass mode 45 kVA/40kW									

AC – AC EFFICIENCY with linear load @ cos 0.8 ind

Efficiency up to 1 % lower with output PF cosφ 1.0
 For details refer to Environmental Characteristics



Output Power in KW and KVA VERSUS cos



Load Power Factor De-Rating Table

Load cosφ		MD Module Range								MX Module Range					
		DPA 10		DPA 15		DPA 20		DPA 25		DPA 30		DPA40		DPA 50 *	
		kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA
Cap	0.85	6.2	7.3	9.3	11	12.3	14.5	15.4	18.1	18.5	21.8	24.6	29	31	36.5
	0.90	8	8.9	12	13.3	16	17.8	20	22.2	24	26.7	32	35.6	40	44.4
	0.95	8	8.4	12	12.6	16	16.8	20	21.1	24	25.3	32	33.7	40	42.1
	1.00	8	8	12	12	16	16	20	20	24	24	32	32	40	40
Ind	0.95	8	8.4	12	12.6	16	16.8	20	21.1	24	25.3	32	33.7	40	42.1
	0.90	8	8.9	12	13.3	16	17.8	20	22.2	24	26.7	32	35.6	40	44.4
	0.85	8	9.4	12	14.1	16	18.8	20	23.5	24	28.2	32	37.6	40	47.1
	0.80	8	10	12	15	16	20	20	25	24	30	32	40	40	50 *
	0.75	7.6	10	11.4	15	15.3	20	19.1	25	22.9	30	30.5	40	38	50 *
	0.70	7.2	10	10.8	15	14.5	20	18.1	25	21.7	30	28.9	40	36	50 *
0.60	6.3	10	9.5	15	12.7	20	15.9	25	19	30	25.4	40	32	50 *	

* DPA 50: Static Bypass Mode 45 kVA/40kW @ cosφ 0.8 ind

ENVIRONMENTAL CHARACTERISTICS

UPS Module Range		MD				MX		
Module Type		DPA 10	DPA 15	DPA 20	DPA 25	DPA 30	DPA 40	DPA 50
Audible Noise with 100% / 50% Load	dBA	55/49	57/49	57/49	57/49	59/51	65/55	65/55
Operation temperature	°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						
Max. altitude (above sea level)	m	1000m (3300ft) without de-rating						
De-rating factor for use at altitudes above 1000m sea level according (IEC 62040-3)		Meter above sea level (m / ft)				De-Rating Factor for Power		
		1500 / 4850				0.95		
		2000 / 6600				0.91		
		2500 / 8250				0.86		
		3000 / 9900				0.82		
Relative Air-humidity		Maximum 95% (non-condensing)						
Accessibility		Totally front accessibility for service and maintenance (no need for side, top or rear access)						
Positioning		Minimum 200mm rear space (required for cooling)						
Input and Output Power Cabling		To the bottom, at the front						
Efficiency AC-AC (at cosφ 0.8 ind) (depending on module power)	%	Load	100	75	50	25		
		DPA 30-50 :	95.4	95.4	94.0	93.0		
		DPA 10-25 :	95.0	95.0	94.5	92.0		
Efficiency with Linear Load at cosφ 1.0 Efficiency Non-linear Load (EN 62040-1-1 :2003)		Typically up to 1 % lower than above values Typically up to 2 % lower than above values						
Eco-Mode efficiency at 100% load	%	98 %						

STANDARDS

Safety	EN 62040-1-1:2003, EN 60950-1:2001/A11:2004
Electromagnetic Compatibility	EN 62040-2:2005, EN61000-3-2:2000, EN6100-3-3:1995/A1:2001, EN61000-6-2:2001, EN61000-6-4:2001
EMC Classes C2 domestic or industrial In <16A C3 industrial In >16A	C2, (C3)
Performance	EN62040-3:2001
Product Certification	CE
Degree of Protection	IP 20

COMMUNICATION

Power Management Display (PMD)	1 x LCD display for each module
Serial ports RS232 on Sub-D9	2 per system cabinet + 1 per each module (Smart Port) For monitoring and integration in network management
USB	1 x For monitoring and software management
Customer Interfaces : Inputs DRY PORT X 1	1 Remote shut down [EMERGENCY OFF (normally closed)] 1 GEN-ON (normally open) 2 Programmable customer's Inputs (normally open) 1 Temperature sensor for battery control
Customer Interfaces : Outputs DRY PORT X 2 , X 3, X 4	10 voltage free contacts For remote signalling and automatic computer shutdown
Slot for SNMP	SNMP card (optional) For monitoring and integration in network management
Slot for WaveWATCH	WaveWATCH card (optional) for premium power protection

POWER MANAGEMENT DISPLAY (PMD)

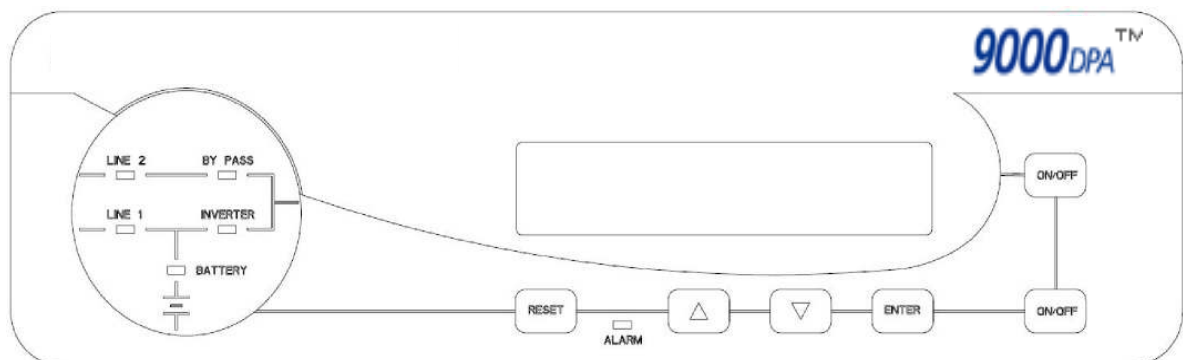
The user-friendly PMD consists of three sections; the MIMIC DIAGRAM, CONTROL KEYS and LCD that provides all the necessary monitoring information regarding the UPS.

MIMIC DIAGRAM

The mimic diagram serves to give 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). The LED's LINE 1 (rectifier) and LINE 2 (bypass) indicate the availability of the mains power supply. The LED's INVERTER and BYPASS if green indicate which of the two are supplying power to the critical load. When the LED-indicator BATTERY is lit it means that the battery due to mains failure is supplying the load. The LED-indicator ALARM is a visual indication of any internal or external alarm condition. At the same time the audible alarm will be activated.

DISPLAY

The 2 x 20 character LCD simplifies the communication with the UPS. The menu driven LCD enables the access to the EVENT REGISTER, or to monitor the input and output U, I, f, P, Autonomy Time and other Measurement's, to perform commands like start-up and shut-down of INVERTER or load transfer from INVERTER to BYPASS and vice-versa. It also serves for the DIAGNOSIS (SERVICE MODE) for adjustments and testing by trained personnel.



CUSTOMER INTERFACES (Terminals X1... X4)

CUSTOMER INPUTS DRY PORTS: Terminal block X1

Connection of remote shut down facilities, generator operation, customers specials

CUSTOMER OUTPUTS DRY PORTS: Terminal blocks X2, X3, X4

Provision of signals for the automatic and orderly shutdown of servers, AS400 or automatic building systems

All voltage free contacts are rated 60 VAC maximum and 500 mA maximum

All the interfaces are connected to Phoenix Spring terminals with wires: 0.5 mm²

Phoenix Spring Terminals (X1... X4) connection

Block	Terminal	Contact	Signal	On Display	Function
X1	X1 / 1		+ 3.3 Vdc		Remote Shut down
	X1 / 2		GND		(Do not remove the factory mounted bridge until external Remote Shutdown is connected)
	X1/3		+ 3.3 Vdc		Generator Operation
	X1 / 4		GND		(NC = Generator ON)
	X1 / 5		+ 3.3 Vdc		Customer IN 1
	X1 / 6		GND		(Function on request, to be defined)
	X1 / 7		+ 3.3 Vdc		Customer IN 2
	X1 / 8		GND		(Function on request, to be defined)
	X1 / 9		+ 3.3 Vdc		Battery Temperature
	X1 / 10		GND		(battery charger current compensation dependant on battery temperature)
X2	X2 / 1		ALARM	MAINS_OK	Mains Present
	X2 / 2				Mains Failure
	X2 / 3				Common
	X2 / 4		Message	LOAD_ON_INV	Load on Inverter
	X2 / 5				(Load on Mains bypass)
	X2 / 6				Common
	X2 / 7		ALARM	BATT_LOW	Battery Low
	X2 / 8				Battery OK
	X2 / 9				Common
	X3	X2 / 10		Message	LOAD_ON_MAINS
X3 / 1					(Load on Inverter)
X3 / 2				Common	
X3 / 3			ALARM	COMMON_ALARM	Common Alarm (System)
X3 / 4					NO Alarm Condition
X3 / 5					Common
X3 / 6			ALARM	MODUL_ALARM1	Module 1 Alarm
X3 / 7					NO Alarm Condition
X3 / 8					Common
X3 / 9			ALARM	MODUL_ALARM2	Module 2 Alarm
X3 / 10				NO Alarm Condition	
X4 / 1				Common	
X4	X4 / 2		ALARM	MODUL_ALARM3	Module 3 Alarm
	X4 / 3				NO Alarm Condition
	X4 / 4				Common
	X4 / 5		ALARM	MODUL_ALARM4	Module 4 Alarm
	X4 / 6				NO Alarm Condition
	X4 / 7				Common
	X4 / 8		ALARM	MODUL_ALARM5	Module 5 Alarm
	X4 / 9				NO Alarm Condition
	X4 / 10				Common

OPTIONS

- Modem/Ethernet card or Modem/GSM card for WaveWATCH management software
- SNMP card and WAVEMON management software, Modbus protocol
- External battery cabinets
- Parallel bus for additional cabinets
- In/output transformer for special voltages and galvanic isolation
- Higher capacity battery charger for large Ah batteries and long autonomies
- Temperature sensor for battery temperature control

MODEM/ETHERNET CARD / WaveWATCH MANAGEMENT SOFTWARE

WaveWATCH is a redundant remote monitoring and management service which is a part of the Premium Power Protection Concept. It offers peace-of-mind protection for mission critical applications by providing a continuous 24/7 monitoring service by our control centre. There are two different solution cards, Modem/Ethernet or Modem/GSM, to connect the UPS to the outside world.

Continuous monitoring is an affordable insurance policy to detect and warn of problems before they become a crisis.

Acquire key performance parameters in real-time to empower our engineer with the necessary details to better understand machine performance and troubleshoot downtime events faster.

Early warning system, so problems can be addressed before they become a real threat to the load.

Professional experts, your virtual remote service technician.

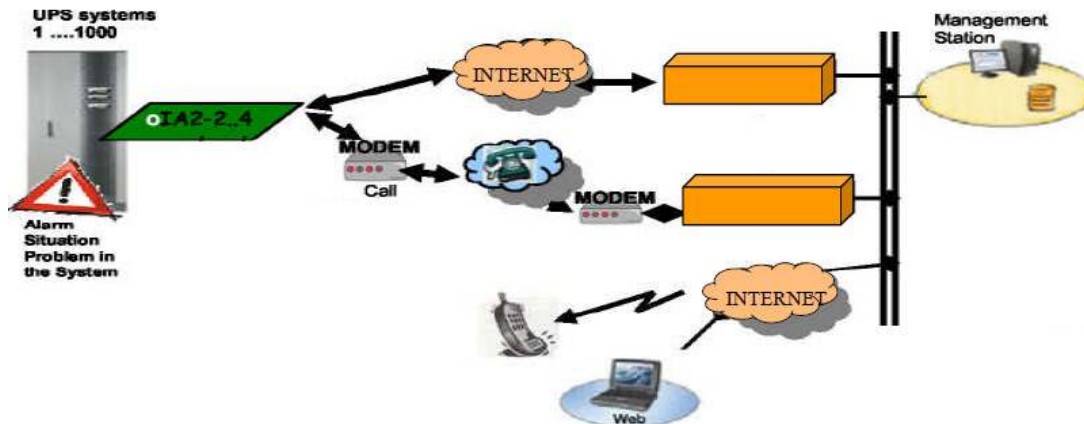
Total transparency of information and actions performed like notification of all critical status changes, coordination of equipment service, reporting of all alarms with priorities.

What are the features?

- Redundant and secure communication
- Alarm acknowledgment
- Priority driven management (with escalation) **Comprehensive Management System**
- Reception and management of alarm calls from UPS
- Storage of UPS Data in a database e x portable in a CVS-format for easy handling in Excel
- Unlimited number of UPS that can be managed
- User administration with passwords and permission-level
- Administration of log file
- Data logging with statistical analysis and diagnostics, report

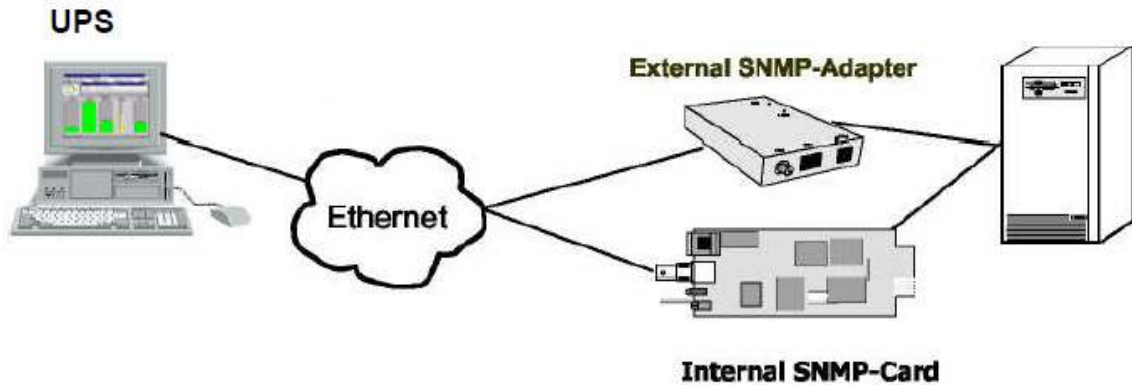
Visualization of the UPS data:

- Current status ('single' and 'parallel' operation)
- Measured values for single or three phase
- Recording function including graphs with zooming capabilities for selected measured values
- Display of event log file
- Display of UPS Parameters
- Web Server functionality, for data access from any web browser




SNMP card / WAVEMON Management Software

The Simple Network Management Protocol (SNMP) is a worldwide-standardized communication-protocol. It is used to monitor any device in the network via simple control language. The UPS-Management Software WAVEMON also provides its data in this SNMP format with its internal software agent. The operating system you are using must support the SNMP protocol. We offer our WAVEMON software with SNMP functionality for Novell, OS/2, and all Windows running on INTEL and ALPHA, DEC VMS, Apple. Two types of SNMP interfaces with identical functionality are available: an external SNMP-Adapter (Box) and an internal SNMP-Card. Both can manage a parallel system (N modules) and return either global values - which are consistent for the whole parallel system - or specific values from the single modules.



BATTERY CABINETS

		CBAT-DPA-120	CBAT-DPA-200
S Type – for separate battery per module C Type – for common battery			
Dimensions (w x d x h)	mm	730 x 800 x 1975	1200 x 800 x 1975
Weight w/o trays and w/o batteries	kg	150	250
Configuration accommodates:	Max.	120 battery blocks x 24Ah on 8 shelves 3 x 5=15 blocks/shelf	200 battery blocks x 24Ah on 7 shelves 6 x 5=30 blocks/shelf

BATTERY AUTONOMIES

Battery Type and Configuration INTERNAL BATTERIES			MD UPS MODULE			MX UPS MODULE			
			10kVA/ 8kW	15kVA 12kW	20kVA 16kW	25kVA 20kW	30kVA 24kW	40kVA 32kW	50kVA 40kW
Allowable Number of 12v Battery Blocks - even numbers only			30 to 50			40 to 50			
Config	Weight (kg)	Notes	Standby Time at Full Load per UPS Module Rating (minutes)						
40 x7Ah	106	INTERNAL Batteries for use in Single and Triple frames DPA-25 DPA-50, DPA-75 DPA-150	5						
50 x7Ah	133		7						
(2 x 30) x 7Ah	159		11	5			N/A	N/A	N/A
(2 x40)x 7Ah	212		18	8	5				
(2 x 50) x 7Ah	265		25	16	8				
(3 x 30) x 7Ah	239		26	13	7	N/A	N/A	N/A	N/A
(3x40)x7Ah	318		35	18	11	6	5		
(3x50)x7Ah	398		46	27	17	9	8		
(4x50)x7Ah	530		75	36	22	16	13	6	
(5 x 50) x 7Ah	663		N/A*	N/A*	N/A*	N/A*	17	10	6

*** Not applicable for internal batteries within DPA-25 frame**

Battery Type and Configuration EXTERNAL BATTERIES			MD UPS MODULE			MX UPS MODULE			
			10kVA/ 8kW	15kVA 12kW	20kVA 16kW	25kVA 20kW	30kVA 24kW	40kVA 32kW	50kVA 40kW
Allowable Number of 12v Battery Blocks - even numbers only			30to50			40to50			
Config	Weight (kg)	Notes	Standby Time at Full Load per UPS Module Rating (minutes)						
30x24Ah	279	Allowable number of battery blocks for use in EXTERNAL battery cabinets CBAT-DPA-120 and CBAT-DPA-200	38	23	13	N/A	N/A	N/A	N/A
40x24Ah	372		55	35	23	17	11	6	4
50 x 24Ah	465		80	42	32	25	17	10	6
(2 x 30) x 24Ah	558		100	70	48	N/A	N/A	N/A	N/A
(2 x 40) x 24Ah	744		150	90	55	46	35	25	17
(2x50)x24Ah	930		>180	125	80	57	42	34	25
(3 x 30) x 24Ah	837		170	105	60	N/A	N/A	N/A	N/A
(3x40)x24Ah	1116		>180	150	110	75	50	41	32
(3x50)x24Ah	1395	Number of battery blocks requires EXTERNAL battery cabinet CBAT-DPA-200	>180	180	140	105	80	50	41
(4x40)x24Ah	1488		>180	>180	147	115	86	57	44
(4x50)x24Ah	1860		>180	>180	180	145	120	79	56

INSTALLATION AND PLANNING

Minimum Clearances

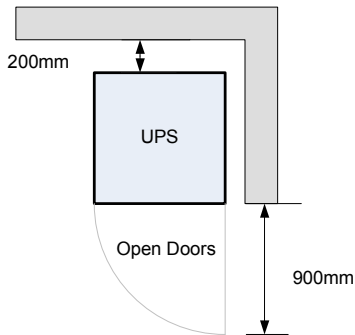


Figure 1: UPS space recommendation

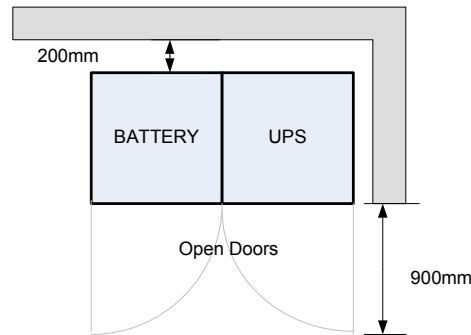


Figure 2: UPS + Battery space recommendation

UPS Cabinet type (25kVA up to 125 kVA)	SINGLE DPA-25	TRIPLE DPA-75	UPGRADE DPA-125
Dimensions (w x d x h) mm	550 x 780 x 1650	550 x 780 x 1975	550 x 780 x 1975
UPS Cabinet type (50kVA up to 250 kVA)	SINGLE DPA-50	TRIPLE DPA-150	UPGRADE DPA-250
Dimensions (w x d x h) mm	730 x 800 x 1650	730 x 780 x 1975	730 x 800 x 1975
Battery Cabinet type		CBAT DPA-120	CBAT DPA-200
Dimensions (w x d x h) mm		730 x 800 x 1975	1200 x 800 x 1975
Accessibility	Totally front access for service and maintenance (no need for side, top or rear access)		
Positioning	Min. 200mm rear space (required for cooling)		
Input and Output Power Cabling	To the bottom, at the front		

MAXIMUM HEAT DISSIPATION PER MODULE WITH NON LINEAR LOAD

Module size		MD				MX		
UPS Module Type		DPA 10	DPA 15	DPA 20	DPA 25	DPA 30	DPA 40	DPA 50
Heat Dissipation with 100% Non-linear Load per Module (EN 62040-1 -1:2003)	W	600	900	1200	1500	1670	2225	2780
Heat Dissipation with 100% Non-linear Load per Module (EN 62040-1 -1:2003)	BTU	2047	3070	4094	5118	5698	7592	9485
Airflow (25° - 30°C) with Non-linear Load per Module (EN 62040-1-1:2003)	m ³ /h	150	150	150	150	380	380	380

WIRING AND BLOCK DIAGRAMS FOR ALL CABINETS AND MODULES

Kohler UPS can offer a full ‘turnkey’ electrical installation service for the Kohler PW 9000DPA. All work is undertaken in accordance with local electrical standard.

Alternatively a comprehensive installation manual is included with the UPS, which provides detailed electrical information to enable the customer’s electrician or nominated electrical subcontractors to cable and connect the UPS.

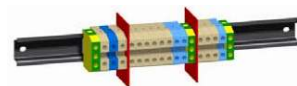
The following is general information regarding the recommended cable and fuse sizes for the Kohler PW 9000DPA.

NOTE: The installation and connection of the batteries and the supply of the DC cabling (excluding the provision and laying of cable trays) is undertaken by our own trained service personnel.

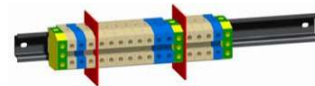
TERMINAL CONNECTIONS OVERVIEW

CABINET TYPE Terminals (T) Connection Bar (B)	Input Bypass 3+N	Input Rectifier 3+N+PE	Output load 3+N+PE
SINGLE DPA-25	4 x 10/16mm ² (T)	5 x 10/16mm ² (T)	5 x 10/16mm ² (T)
TRIPLE DPA-75	4 x 35/50mm ² (T)	4 x 5/50mm ² (T) +PE 50 mm ² (T)	4 x 35/50mm ² (T) +PE 50 mm ² (T)
UPGRADE DPA-125	4 x 70/95mm ² (T)	4 x 70/95mm ² (T) + PE 50mm ² (T)	4 x 70/95mm ² (T) + PE 50mm ² (T)
SINGLE DPA-50	4 x 16/25mm ² (T)	5 x 16/25mm ² (T)	5 x 16/25mm ² (T)
TRIPLE DPA-150	3 x M10(B) + PE 1 x M10 (B)	4 x M10 (B) + PE 1 x M10 (B)	4 x M10 (B) + PE 1 x M10 (B)
UPGRADE DPA-250	3 x M12 (B) + PE 1 x M12 (B)	4 x M12 (B) + PE 1 x M12 (B)	4 x M12 (B) + PE 1 x M12 (B)

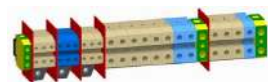
SINGLE DPA-25



SINGLE DPA-50



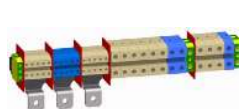
TRIPLE DPA-75



TRIPLE DPA-150



UPGRADE DPA-125



UPGRADE DPA-250



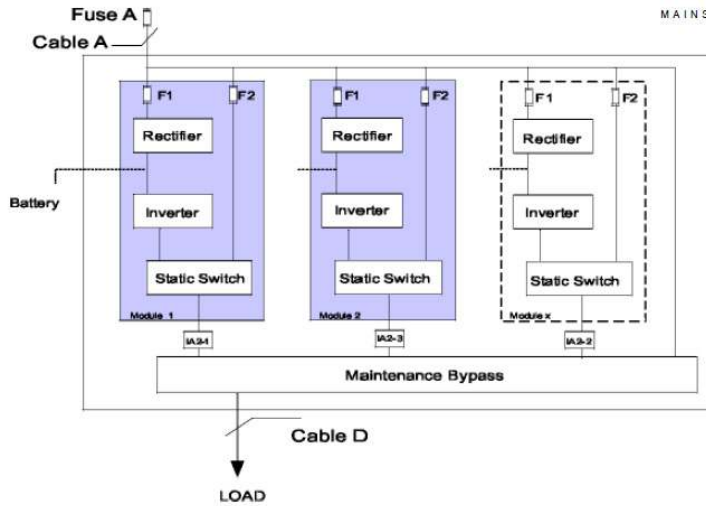
Dual Feed Input

Single Feed input

SINGLE FEED INPUT

Recommended Cable Sections and Fuse Ratings

SINGLE INPUT FEED - STANDARD VERSION

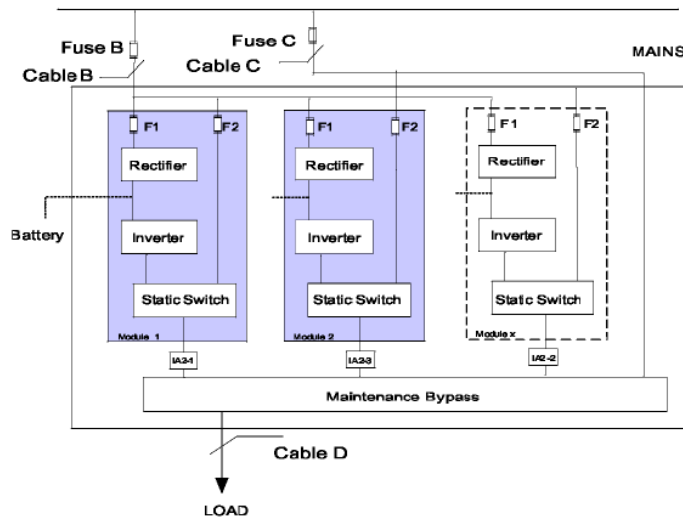


Cabinet type	Maximum Load kVA cosφ 0.8	In put 3 x 400V			Output 3 x 400V cosφ 0.8	
		Fuse A	Cable A (mm ²) (IEC 60950- 1:2001)	Maximum input current with battery charging (A)	Cable D (mm ²) (IEC 60950-1:2001)	I nom (A)
SINGLE DPA-25	25	3 x 63 A	5 x 1 0	34	5 x 1 0	36
TRIPLE DPA-75	75	3 x 125 A	5 x 5 0	101	5 x 5 0	108
UPGRADE DPA-125	125	3 x 225A	5 x 95	169	5 x 95	181
SINGLE DPA50	50	3 x 100A	5 x 25	67	5 x 25	72
TRIPLE DPA-150	150	3 x 250A	5 x 120 or 5 x (2 x 50)	202	5 x 120 or 5 x (2 x 50)	218
UPGRADE DPA-250	250	3 x 400A	5 x (2 x 95)	337	5 x (2 x 95)	362

DUAL FEED IN PUT

Recommended Cable Sections and Fuse Ratings

DUAL INPUT FEED



Cabinet type	Maximum Load kVA cosφ 0.8	Input 3 x 400V			Bypass 3 x 400V		Output 3 x 400V cosφ 0.8	
		Fuse B	Cable B (mm ²) (IEC60950-1:2001)	Maximum input current with battery charging (A)	Fuse C	Cable C (mm ²) (IEC60950-1:2001)	Cable D (mm ²) (IEC60950-1:2001)	I nom (A)
SINGLE DPA-25	25	3x63A	5x10	34	3x63A	4x10	5 x 10	36
TRIPLE DPA-75	75	3x125A	5x50	101	3x125A	4x50	5x50	108
UPGRADE DPA-125	125	3x225A	5x95	169	3x225A	4x95	5x95	181
SINGLE DPA50	50	3x100A	5x25	67	3x100A	4x25	5x25	72
TRIPLE DPA-150	150	3x250A	5 x 120 or 5x(2x50)	202	3x250A	4x120 or 4x(2x50)	5 x 120 or 5x(2x50)	218
UPGRADE DPA-250	250	3 x 400A	5 x (2 x 95)	337	3 x 400A	4 x (2 x 95)	5 x (2 x 95)	362