

PowerWAVE 9000DPA

(30–50 kVA)

Parallelable up to 1.5 MVA

Technical Specification



DOCUMENT CONTROL

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POWERWAVE 9000DPA (S2) SYSTEM DESCRIPTION

Using a unique modular construction, the PowerWAVE 9000DPA S2 model range represents a completely new generation of medium power 3-phase UPS systems that incorporates the latest technological developments in power engineering. High reliability, upgrade ability, low operating costs and excellent electrical performance are just some of the highlights of this innovative UPS solution. The system’s advanced double conversion, Voltage and Frequency Independent (VFI) topology fully satisfies the highest availability and environmentally-friendly requirements compliant with the most stringent safety, EMC and other important UPS standards. It is certified to International Standard ISO 9001/EN 29001 and ISO 14001.

PowerWAVE 9000DPA S2 model range

The PowerWAVE 9000DPA S2 is a truly modular system based on 30kVA, 40kVA or 50kVA UPS modules contained in a purpose-designed cabinet. Depending on the model, the UPS cabinet can contain up to five UPS modules connected in parallel to operate as either a redundant (n+1) or capacity system.

Three cabinets are available in the PowerWAVE 9000DPA S2 model range, each being rated according to the maximum number of 50kVA modules that it can house – i.e. DPA-50 (50kVA), DPA-150 (150kVA), and DPA-250 (250kVA). The DPA-50 and DPA-150 cabinets are designed to house the UPS batteries but the DPA250 cabinet requires the batteries to be installed in a separate enclosure, usually in a matching battery cabinet or battery rack positioned adjacent to the UPS cabinet.

System expansion

If a cabinet is not fully populated, additional UPS modules can be installed at any time to increase the system capacity without having to power-down the system or in any way disrupt the load supply. For example, if a DPA-250 cabinet is initially purchased with only 2x 50kVA UPS modules fitted (100kVA), a further three modules can be installed at a later date if required to take the cabinet’s total capacity up to 250kVA. Depending on the system redundancy and existing load demand, this ‘hot-swappable’ design also allows individual UPS modules to be exchanged while the equipment is fully operational without having to transfer the load to the bypass supply. Further expansion is made possible by connecting up to six UPS cabinets in parallel to provide a total system output of up to 1500kVA. The table below shows the maximum system rating for a number of fully populated cabinets.

No Cabinets		1	2	3	4	5	6
DPA-50	30kVA Modules	30 kVA	60 kVA	90 kVA	120 kVA	150 kVA	180 kVA
	40kVA Modules	40 kVA	80 kVA	120 kVA	160 kVA	200 kVA	240 kVA
	50kVA Modules	50 kVA	100 kVA	150 kVA	200 kVA	250 kVA	300 kVA
DPA-150	30kVA Modules	90 kVA	180 kVA	270 kVA	360 kVA	450 kVA	540 kVA
	40kVA Modules	120 kVA	240 kVA	360 kVA	480 kVA	600 kVA	720 kVA
	50kVA Modules	150 kVA	300 kVA	450 kVA	600 kVA	750 kVA	900 kVA
DPA-250	30kVA Modules	150 kVA	300 kVA	450 kVA	600 kVA	730 kVA	900 kVA
	40kVA Modules	200 kVA	400 kVA	600 kVA	800 kVA	1000 kVA	1200 kVA
	50kVA Modules	250 kVA	500 kVA	750 kVA	1000 kVA	1250 kVA	1500 kVA




This Technical Specification provides detailed information concerning the mechanical, electrical and environmental performance of the PowerWAVE 9000DPA S2, intended to support and give answers to tender and end-user requirements.

Key features summary

- *Decentralised Parallel Architecture (DPA)* – highest availability, with near zero down time
- *Truly modular design* – the PowerWAVE 9000DPA S2 is designed around 30kVA, 40kVA, or 50kVA UPS modules
- *Hot-swappable modules* – enables system expansion and module replacement in a live system
- *Compact size, small foot print* – up to 342kW/m² saving on expensive floor space
- *Flexible battery management* – advanced management of battery charging and preventive-failure diagnostics
- *High ac-ac efficiency (up to 95.5%) even with partial loads* – results in energy and operational cost savings (TCO)
- *Full power available from 0.9 lead to 0.8 lag* – no de-rating required with leading power factor loads
- *Very low input current distortion (THDi <3% @ 100% load)* – savings in generator-set power and installation costs

GENERAL SPECIFICATION

UPS Cabinet

		CLASSIC DPA-50	TRIPLE DPA-150	UPGRADE DPA-250
				
UPS module capacity	Max	1 module (30-50kVA)	3 modules (30-50kVA)	5 modules (30-50kVA)
Battery capacity		280 x 7/9Ah batteries	240x 7/9Ah batteries	External batteries
Maximum power connection	kVA	50	150	250
Weight of empty frame	kg	262	239	205
Colours	Black (RAL 9005)			

Cabinet+UPS Modules weight and dimensions

Cabinet Model	Number of Modules.	30kVA Modules w/o Battery (kg.)	40kVA Modules w/o Battery (kg.)	50kVA Modules w/o Battery (kg.)	Unpacked Dimensions (WxHxD)
DPA 50	1	305	307	309	730 x 1650 x 800
DPA150	1	282	284	286	730 x 1975 x 800
	2	325	330	333	730 x 1975 x 800
	3	368	375	379	730 x 1975 x 800
DPA250	1	248	250	252	730 x 1975 x 800
	2	291	296	299	730 x 1975 x 800
	3	334	341	345	730 x 1975 x 800
	4	377	386	392	730 x 1975 x 800
	5	421	432	439	730 x 1975 x 800
Individual Module		43.1	45.3	46.8	663 x 225 x 720

DPA S2 Power module

INPUT CHARACTERISTIC		DPA 30	DPA 40	DPA 50
Output Rated Power per Module $\cos\Phi$ 0.8	kVA	30	40	45 ¹
Output Rated Power per Module $\cos\Phi$ 1.0	KW	24	32	40
Input Voltage	V	3x380/220V+N, 3x400V/230V+N, 3x415/240V+N		
Input Voltage Tolerance (ref to 3x400/230V) for Loads in %:	V	(-23%/+15%) 3x308/184 V to 3x460/264 V for <100% load (-30%/+15%) 3x280/170 V to 3x460/264 V for < 80% load (-40%/+15%) 3x240/150 V to 3x460/264 V for < 60% load		

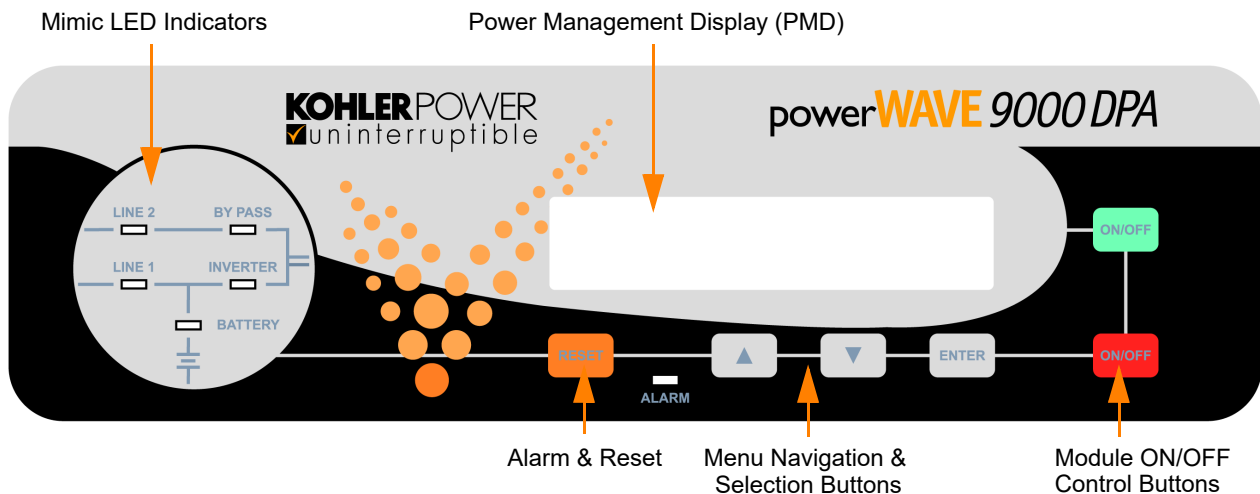
INPUT CHARACTERISTICS (cont.)		DPA 30	DPA 40	DPA 50
Input Frequency	Hz	35 - 70		
Input Power Factor		PF=0.99 @ 100% load		
Inrush Current	A	limited by soft start / max. In		
Input Distortion THDI		Sine-wave THDi = < 2% @ 100% load		
Max. Input power with rated output power and charged battery per module (output CosΦ = 1.0)	kW	25.5	34.0	42.6
Max. Input current with rated output power and charged battery per module (output CosΦ = 1.0)	A	36.8	49.1	62.1
Max. Input power with rated output power and discharged battery per module (output CosΦ = 1.0) 8A charger (optional 15A charger)	kW	27.8 (28.1)	36.3 (37.4)	44.9 (46.0)
Max. Input current with rated output power and discharged battery per module (output CosΦ = 1.0) 8A charger (optional 15A charger)	A	40.3 (40.7)	52.6 (54.2)	65.1 (66.7)
OUTPUT CHARACTERISTICS		DPA 30	DPA 40	DPA 50
Output Rated Power per Module	kVA	30	40	50 ¹⁾
Output Rated Power per Module	KW	24	32	40
Output Current In @ cosΦ 1.0 (400 V)	A	35	46.5	58
Output Rated Voltage	V	3x380/220V or 3x400/230V or 3x415/240V		
Output Voltage Stability	%	Static: < ± 1% Dynamic (Step load 0%-100% or 100%-0%) < ±4%		
Output Voltage Distortion	%	With Linear Load < ±2% With Non-linear Load (EN62040-3:2001) < ±4%		
Output Frequency	Hz	50 Hz or 60 Hz		
Output Frequency Tolerance	%	Synchronized with mains < ±2% or < ±4% (selectable) Free running ±0.1%		
Bypass operation		An input voltage of 3x400 V ±15% or 190 V to 264 V ph-N		
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 10 min. 150% load 60 sec.		
Output short capability (RMS)	A	Inverter: 2.2 to 2.4x In for 40 ms Bypass: 10 x In for 10 ms		
Crest - Factor (load supported)		3:1		
¹⁾ The bypass rated current is 63A with the following overload capabilities: 110% continuously, 125% for 60 minutes and 150% for 30 minutes.				

BATTERY		DPA 30	DPA 40	DPA 50
Permissible number of 12V Battery Blocks	No.	40 - 50 blocks		
Maximum Battery Charger Current	A	8A Standard (15 A optional on request)		
Battery Charging Curve		Ripple free; IU (DIN 41773)		
Temperature compensation		Standard (temperature sensor optional)		
Battery Test		Automatic and periodically (adjustable)		
Battery Type		Sealed VRLA		
ENVIRONMENTAL		DPA 30	DPA 40	DPA 50
Audible Noise with 100% / 50% Load	dBA	70 / 63	74 / 67	76 / 69
Operation temperature	°C	0 to +40		
Temperature for Batteries	°C	+20		
Storage Temperature	°C	-25 to +70		
Battery Storage Time		Max. 6 months		
Max. altitude (above sea level)	m	1000m (3300ft) without de-rating		
De-rating factor for use at altitudes greater than 1000m above sea level (IEC 62040-3)		0.95 @ 1500m / 4850ft ASL		
		0.91 @ 2000m / 6600ft ASL		
		0.86 @ 2500m / 8250ft ASL		
		0.82 @ 3000m / 9900ft ASL		
Relative Air-humidity		Max. 95% (non-condensing)		
Accessibility		Totally front accessibility for service and maintenance (no need for side, top or rear access)		
Positioning		Min. 200mm rear space (required for fan)		
Input and Output Power Cabling		From the bottom on the front		
Efficiency AC-AC up to (pf = 1.0) (depending on Module power)	%	Load: 100% 75% 50% 25% Efficiency: 94.5% 94.5% 94% 93%		
Efficiency Non-linear Load (EN 62040-1-1:2003)		Typically up to 1% lower of above values		
Eco-Mode efficiency at 100% load	%	98%		
Heat Dissipation with 100% Non-linear Load per Module (EN 62040-1-1)	W	1532	2043	2553
Heat Dissipation with 100% Non-linear Load per Module (EN 62040-1-1)	BTU	5227	6969	8712
Airflow (25° - 30°C) with Non-linear Load per Module (EN 62040-1-1:2003)	m ³ /h	380	380	380

STANDARDS	DPA 30	DPA 40	DPA 50
Safety	Product Standards: IEC/EN 62040-1 Standards: IEC/EN 60950-1		
Electromagnetic Compatibility	Product standards: IEC/EN 62040-2 Standards: IEC/EN 61000-6-2, IEC/EN 61000-6-4, IEC/EN 61000-4-2, IEC/EN 61000-4-3, IEC/EN 61000-4-4, IEC/EN 61000-4-5, IEC/EN 61000-4-6,		
Emission Class	C3		
Immunity Class	C3		
Performance	IEC/EN 62040-3		
Product Certification	CE		
Degree of Protection	IP 20		

MODULE CONTROL PANEL

A door-mounted module control panel is provided for each UPS module. The control panel is used to start and stop the module, command a load transfer between inverter and bypass, and monitor the module's operating status. It is also used to configure and interrogate the module during commissioning and troubleshooting.



Module ON/OFF control buttons

The UPS module is switched ON or OFF by simultaneously pressing both ON/OFF buttons (for less than 1s). Having to press both buttons helps prevent accidental operation.

Pressing the two ON/OFF buttons during normal operation will immediately shut down the UPS module.

- In a single module system, or non-redundant parallel system, this disconnects the UPS from the load unless the load is first transferred to the maintenance bypass.
- In a redundant module (n+1) parallel system the UPS module shuts down and is disconnected from the load; however, the load will remain connected to the on-line modules if a sufficient number is available.
- To shut down all the UPS modules in a parallel system you must press the ON/OFF buttons for every module.

Power Management Display (PMD)

The Power Management Display (PMD) comprises an LCD screen which displays two, 20-character alpha-numeric lines. The display is menu driven and provides access to:

- An 'event' history register which is used for fault diagnosis and troubleshooting
- Input and output voltage, current, frequency & power monitoring
- Battery voltage, charge/discharge current and run time monitoring
- UPS operating commands such as module load transfer between INVERTER and BYPASS
- Various diagnostics registers that are accessible to service engineers only
- UPS module configuration, adjustments and testing (service mode only)

Menu navigation and selection buttons

The UP, DOWN and ENTER buttons are used in conjunction with the LCD Display to select and enter data.

Mimic LED indicators

The single line mimic diagram includes multi-coloured LEDs that change between Green, Red and Off to indicate the UPS operational power flow.

- LINE 1 and LINE 2 indicate the availability of the input mains and bypass mains power supplies respectively, and are both Green during normal operation. If the input mains or bypass mains supply fail, or the supply falls outside a pre-settable tolerance range, these indicators change to flashing red.
- The INVERTER and BYPASS LEDs indicate which of the two power sources is connected to the UPS output, and thereby providing the critical load power. The active power source is signified by a Green LED with the inactive power source LED extinguished.
- The BATTERY LED illuminates solid green when the battery is being charged and flashes when the battery is discharging – e.g. when the battery is providing the load power during a mains failure. The LED changes to flashing red when the battery is nearing its end-of-discharge voltage.

Alarm and Reset

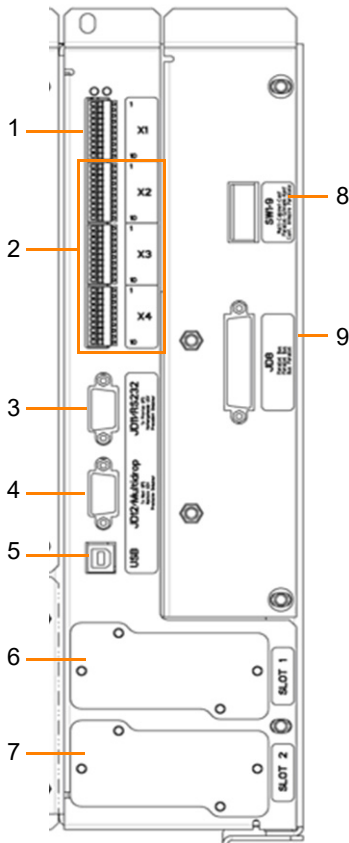
The ALARM LED, located at the lower-centre area of the module control panel, provides a visual indication of the presence of any monitored alarm condition. When activated, the alarm is accompanied by an audible warning which can be cancelled using the RESET button.

If the alarm condition is still present when the RESET button is pressed, the audible warning will cancel but the ALARM LED will remain on.

UPS INTERFACE FACILITIES

Customer Interface Board

The customer interface board provides a number of input/output connections that can be used by the customer to interface the UPS cabinet with a range of external monitoring and control systems – e.g. as part as a building management system (BMS). The available interfaces are shown in the table below. All the on-board relays connected to the terminal blocks are rated at 60VAC / 8A and the Phoenix terminals can accept cables of 0.5 mm².



Customer Interface Board		
1	X1	Customer inputs (terminal block)
2	X2-X4	Customer dry port output (terminal blocks)
3	JD11	RS232 PC interface (Sub D-9 Female)
4	JD12	RS232 Multidrop (Sub D-9 Male)
5	USB	PC Interface
6	SLOT 1	Slot for SNMP (CS141 adapter)
7	SLOT 2	Slot for optional Modem/Ethernet card
Parallel Interface Board (fitted in a parallel UPS cabinet only)		
8	SW1-9	Parallel cabinet configuration DIP switch
9	JD8	Parallel bus connector via Parallel Adapter Board

Customer dry-port interface terminal block – X1

Term	Contact	Signal	Function
X1/1	← ○	+3.3Vdc	Remote Shutdown (Do not remove the factory mounted bridge until external Remote Shut down is connected)
X1/2	● ○	GND	
X1/3	← ○	+3.3Vdc	Generator Operation (NC = Generator ON)
X1/4	● ○	GND	
X1/5	← ○	+3.3Vdc	Customer IN 1 (Customer defined)
X1/6	● ○	GND	
X1/7	← ○	+3.3Vdc	Customer IN 2 (Customer defined)
X1/8	● ○	GND	
X1/9	← ○	+3.3Vdc	Battery temperature sensor (If connected, the battery charger current depends on battery temperature)
X1/10	● ○	GND	

Customer interface output terminals – X2, X3, X4

The customer interface board contains ten relays whose volt-free changeover contacts are made available to terminal blocks X2, X3, and X4. The relays are controlled by circuits that monitor various UPS status events and can be used to interface with most forms of remote monitoring and alarm panels.



Key Point: In a parallel cabinet system ALL the outputs shown are available from the customer interface board fitted to the master cabinet. On those boards fitted to the slave cabinets only the 'summary alarm' outputs are active – i.e those outputs connected from X3/3 to X3/10 and X4/1 to X4/10.

Term	Contact	Signal	Display	Function
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 not on Inverter
X2/6				Common
X2/7		ALARM	BATT_LOW	Battery Low
X2/8				Battery OK
X2/9				Common
X2/10		Message	LOAD_ON_MAINS	Load on Bypass Mains
X3/1				Load not on Bypass Mains
X3/2				Common
X3/3		ALARM	COMMON_ALARM	Common Alarm
X3/4				No Common Alarm
X3/5				Common
X3/6		ALARM	MODUL_ALARM1	Module 1 Alarm
X3/7				No Alarm
X3/8				Common
X3/9		ALARM	MODUL_ALARM2	Module 2 Alarm
X3/10				No Alarm
X4/1				Common
X4/2		ALARM	MODUL_ALARM3	Module 3 Alarm
X4/3				No Alarm
X4/4				Common
X4/5		ALARM	MODUL_ALARM4	Module 4 Alarm
X4/6				No Alarm
X4/7				Common
X4/8		ALARM	MODUL_ALARM5	Module 5 Alarm
X4/9				No Alarm
X4/10				Common



Key Point: When the UPS cabinet is installed as part of a parallel system the customer interface board I/O is disabled in the 'slave' cabinets if the system 'Multidrop' application is enabled. Under such circumstances the required interface connections should be made to the board fitted in the 'master' module only.

RS232 Computer serial interface – JD11 & USB

JD11 is an intelligent RS 232 serial port which allows the UPS to be connected to a computer for monitoring purposes. Its connector is a 9-pin female D-type and it can be connected using a standard serial communications cable with a maximum length of 15m. When used in conjunction with suitable software, this port enables the computer to continuously monitor the input mains voltage and UPS status, and display messages if there are any system changes.

The USB port on the customer interface board is connected in parallel with JD11 and outputs the same data stream.

RS232 Interface for Multidrop – JD12

The optional 'Multidrop' feature, which is applicable only in a parallel cabinet system, allows the customer interface board in the master cabinet to collect data/messages from the other system cabinets via the cables connected to JD-12. The received data is then processed at a centralised point on the 'master' customer interface board and made available to the user directly on the RS232 port (JD11). It is also transmitted to the SNMP/CS141 card if inserted in the relevant slot.

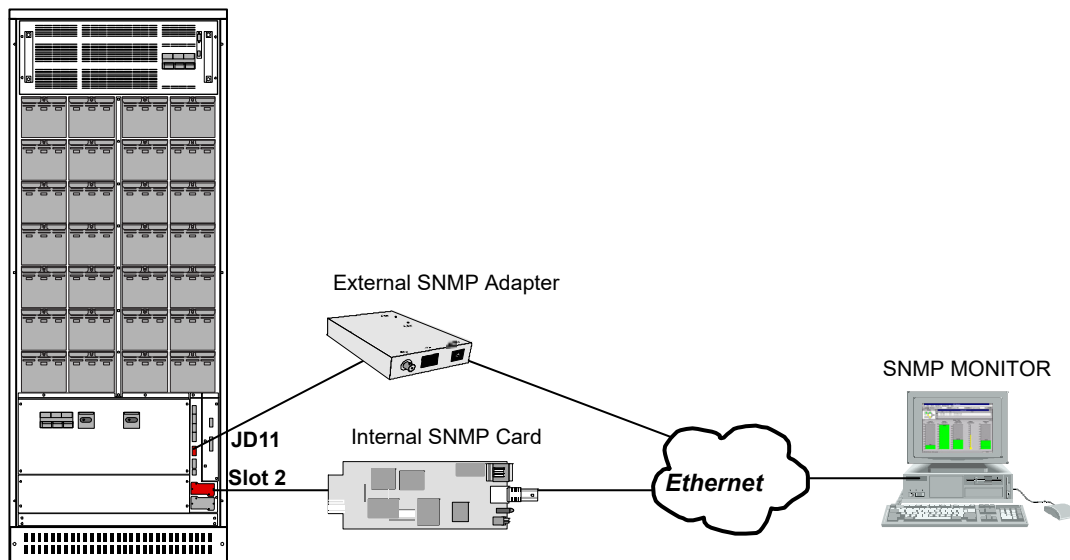
SNMP/ CS141 slots – SLOT 1/ SLOT 2

Simple Network Management Protocol (SNMP) is a world-wide, standardised communication protocol that can be used to monitor any network-connected device via a simple control language and display the results in an application running within a standard web browser.

The customer interface board contains two SNMP/CS141 slots; one is designed to house a Modem/Ethernet SNMP adapter card and the other a Modem/GSM adapter. SNMP connectivity can also be implemented using an external SNMP adapter connected to the UPS RS232 output (JD11), as shown.

An SNMP/Ethernet adapter contains an RJ-45 connector which allows it to be connected to the network using a standard CAT-5 network cable. Once connected, the UPS-Management software agent, which is already installed in the SNMP adapter, then monitors the UPS operation and outputs its data in SNMP format to the connected network. In a multi-module UPS system the SNMP interface can communicate 'system-wide' data or data for an individual UPS module.

The SNMP adaptor requires a PC with terminal connections, and for normal operation at least one Ethernet connection. The SNMP card enables event/alarm emails, server shut down (with optional licenses) and other tasks and can also be integrated with BMS software over a local area network (LAN) for SNMP or Modbus information over IP. An optional card is available to enable Modbus communications over RS485.



Parallel Interface Board

When several UPS cabinets are connected as a parallel system the modules' electronic control system communicate with each other by means of a parallel control bus which is connected between the cabinets and facilitates various parallel control functions such as load sharing, frequency synchronisation, and synchronised load transfer. The parallel control bus comprises a 25-way cable which is connected to an adapter board which is fitted to the parallel interface board.

INSTALLATION PLANNING

A certain amount of pre-planning will help provide a trouble-free installation process. You should consider the following guidelines when planning a suitable UPS location and operating environment.

Location considerations summary

- The route to the installation location must allow the equipment to be transported in an upright position.
- The floor at the proposed installation site and en-route from the off-loading point must be able to safely support the weight of the UPS and battery equipment, plus fork lift or trolley jack during transit.
- Cooling air enters the front and bottom of the UPS cabinet and is extracted by ventilation fans mounted on the cabinet rear. The UPS cabinet requires space to bottom/front, top and back to enable cooling airflow (see 'Clearances' below).
- The cabinet door must be opened by 115° in order to remove/fit the UPS modules, so the right-hand side of the cabinet cannot be positioned directly against a projecting wall
- All parts of the UPS required for maintenance, servicing and user operation are accessible from the front of the cabinet and require a minimum front clearance of 1000mm.
- Provision must be made for cabling the UPS. All cables enter through the bottom of the cabinet and connections are made from the cabinet front.

Environmental considerations summary

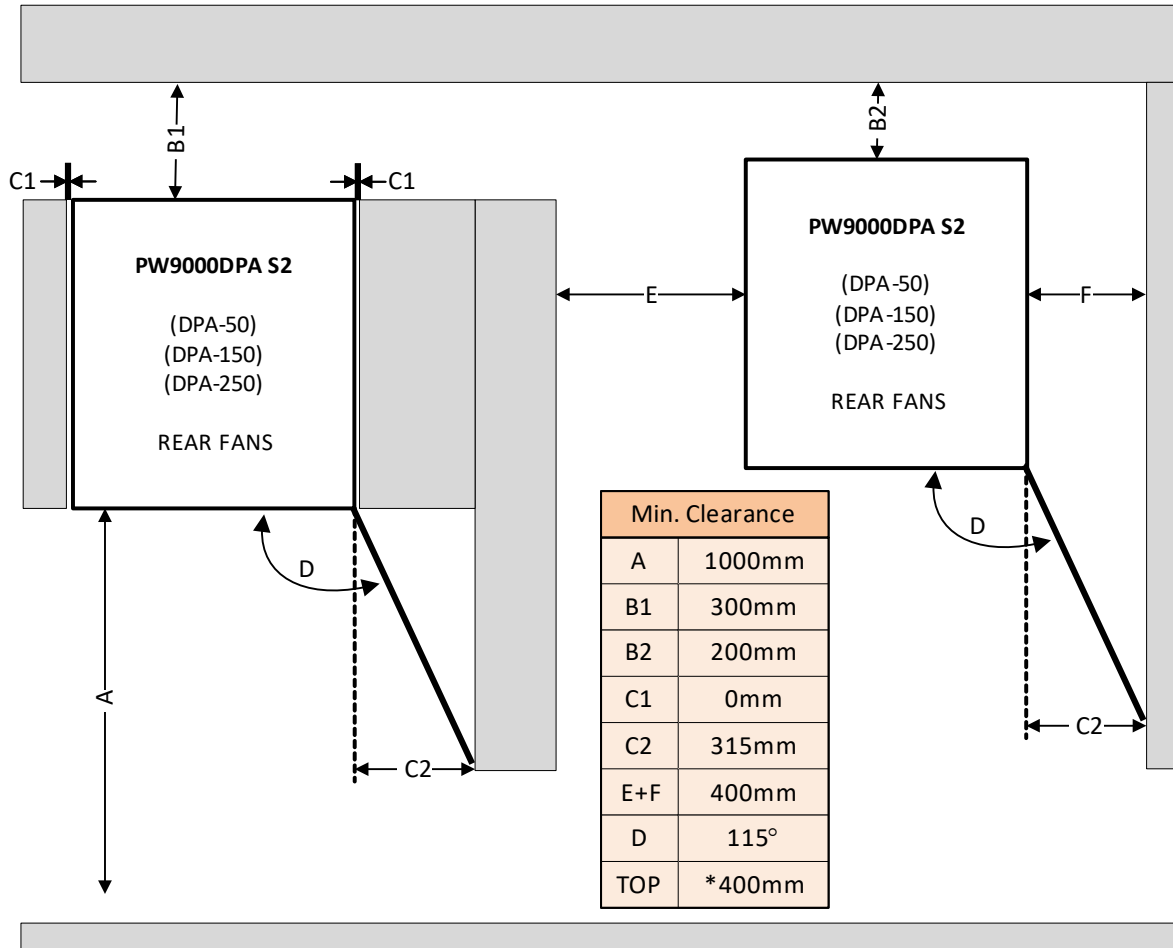
The immediate UPS environment should satisfy the following conditions:

- The UPS can operate with in a temperature range of 0-40°C
- A battery temperature of 20°C is recommended to maximise the battery life span.
- The air conditioning system must be able to provide a sufficient amount of air cooling to keep the room at, or below, the maximum desired temperature.
- Adequate cooling air flow must be available.
- Cooling air entering the UPS modules must not exceed +40°C.
- The humidity should be maintained at < 90% non-condensing.
- The floor material should be non-flammable and strong enough to support the heavy load.
- Fire protection standards must be respected.
- The location must be dust free and no corrosive/explosive gases present.
- The location is vibration free.

CLEARANCES

The diagram below illustrates the required clearances that must be provided around the UPS cabinet.

All parts of the UPS that require access for maintenance, servicing and user operation are accessible from the front of the cabinet. Ensure that all ventilation ports are kept clear



It is necessary to open the door fully to remove some internal assemblies during maintenance procedures. If the cabinet is placed against a wall ensure sufficient space is provided (C2).

If the cabinet is not positioned immediately adjacent to any other cabinet or battery enclosure, the clearance behind the unit can be reduced from 300mm (B1) to 200mm (B2) if the total combined side clearance (E+F) is at least 400mm.

*A TOP clearance of 400mm is only required if there is no other route at the rear of the UPS to dissipate the cooling air flow.

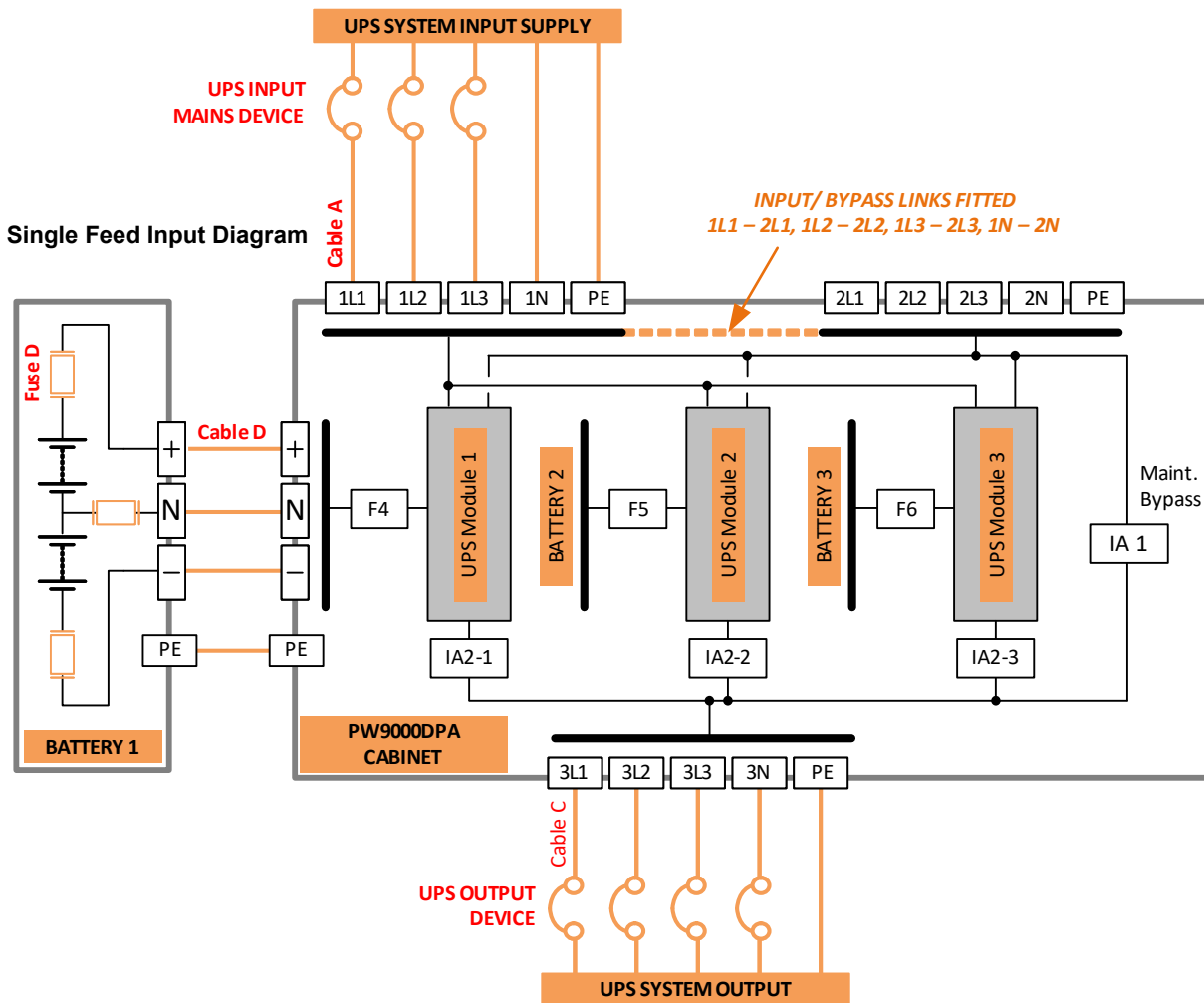
UPS POWER CABLING

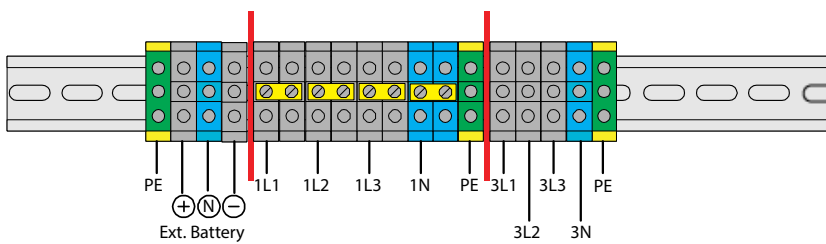
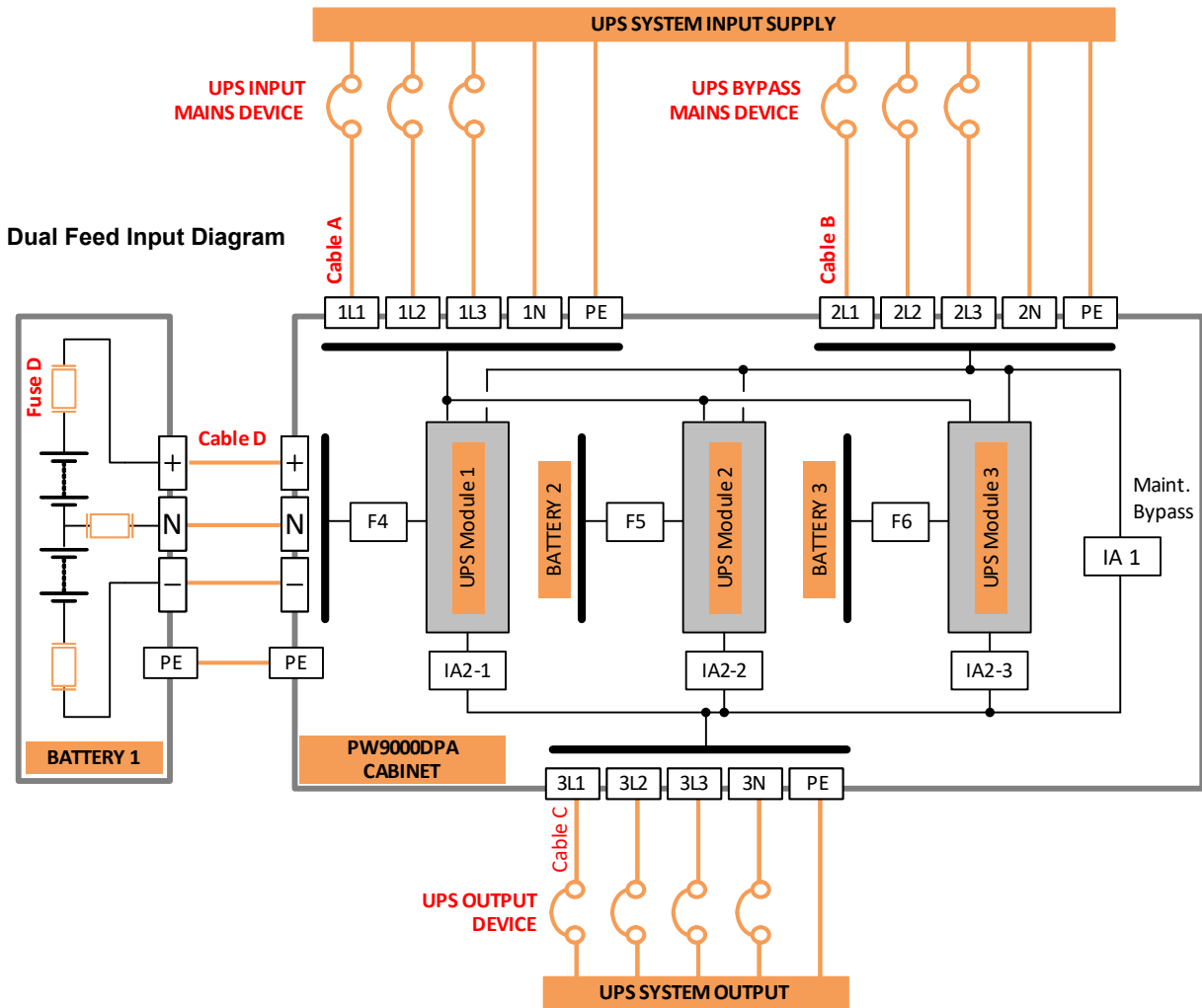
The UPS cabinet can be wired for a 'single feed' or 'dual feed' input. In a 'single feed' system (standard) the UPS input mains terminals and bypass mains terminals are internally linked together within the UPS cabinet, but in a 'dual feed' system the links are removed and the UPS bypass mains terminals are connected to a dedicated supply. The two configurations are shown in the following simplified diagrams. Note that for a dual feed system where the input mains and bypass mains are obtained from the same AC source, it is permissible to leave the 'single feed' neutral link fitted and only connect one the neutral from the input mains neutral.

All input mains and bypass mains cables should be connected through a LV switchgear panel and protected by circuit breakers or fuses to provide overload protection and a means of isolating the UPS from the mains supply when required. Similarly, the UPS output cables should be connected to the load equipment via a suitably fused output switchgear panel.

In the following diagrams all the cables and fuses identified as 'A', 'B', 'C' and 'D' are bespoke to the installation and must be provided by the customer. The required current ratings and cable termination details are shown in the ratings table on page 15. Internal battery cables are supplied with the cabinet.

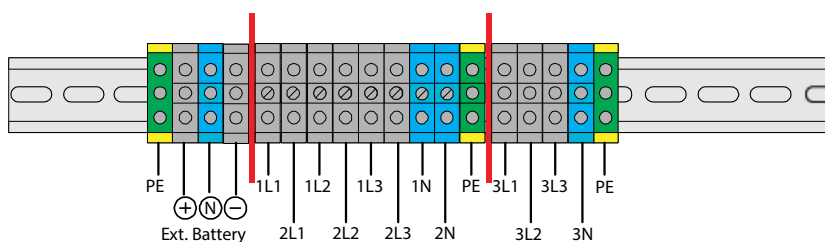
Note: The cabling diagrams show an external battery enclosure, which is standard for the DPA-250. The DPA-50 and DPA-150 models contain internal batteries complete with a fused battery isolator for each fitted power module but an external battery can also be used with these models if a long autonomy times is required.





DPA-50 Single Feed Power Connections

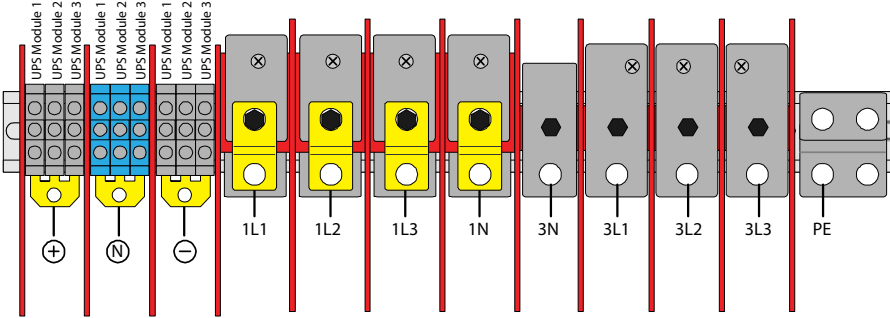
Links shown in yellow across top of input mains terminal blocks.



DPA-50 Dual Feed Power Connections

Links removed from top of mains input terminal blocks and dedicated bypass mains supply is connected.

UPS Module Batt. Connections

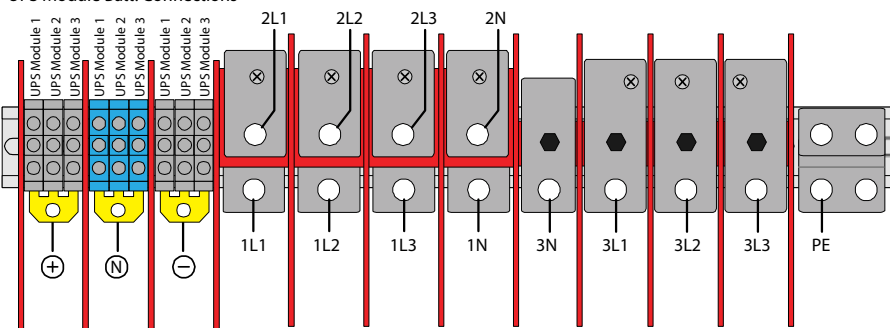


DPA-150 Single Feed Power Connections

Links shown in yellow linking the mains input terminals to the bypass input terminals. Common battery links shown in yellow can be removed for a separate battery installation.

External Batt. Connections

UPS Module Batt. Connections

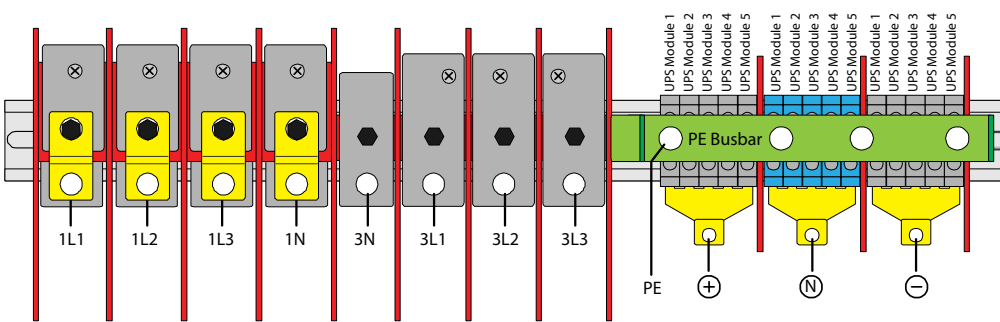


DPA-150 Dual Feed Power Connections

Links between the mains input and the bypass input terminals are removed and dedicated bypass mains supply is connected.

External Batt. Connections

UPS Module Batt. Connections

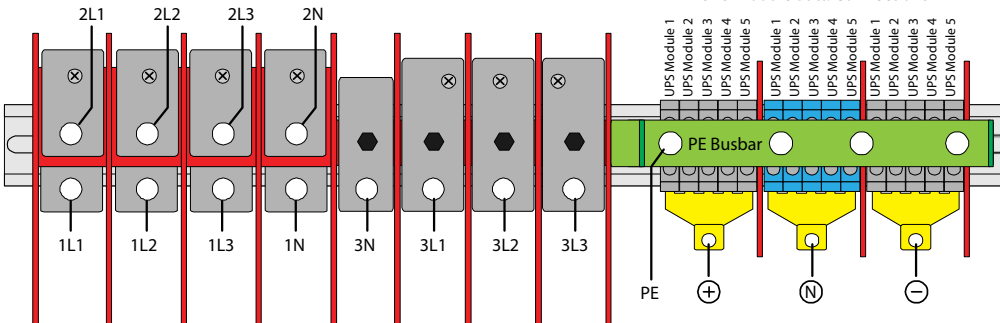


DPA-250 Single Feed Power Connections

Links shown in yellow linking the mains input terminals to the bypass input terminals. Common battery links shown in yellow can be removed for a separate battery installation.

External Batt. Connections

UPS Module Batt. Connections



DPA-250 Dual Feed Power Connections

Links between the mains input and the bypass input terminals are removed and dedicated bypass mains supply is connected.

External Batt. Connections

Cable sizing

The table below shows the maximum UPS input and output current carried by each set of power cables, together with cable termination details. This is provided to assist the customer to select appropriately rated power cables and external switchgear.



Key Point: This information is given for guidance only. All fuses, isolators and power cables must be rated and installed in accordance with the prescribed IEC standards or local regulations – e.g. BS7671:2008.

	INPUT MAINS (A)		BYPASS MAINS (B)		UPS OUTPUT (C)		BATTERY CONNECTIONS
	Max. Amps	Terminal	Max. Amps	Terminal	Max. Amps	Terminal	
DPA-50	67A	5x 16/25mm ² (T)	67A	4x 16/25mm ² (T)	72A	5x 6/25mm ² (T)	4x 16/25mm ² (T)
DPA-150	202A	4x M10 (B) +PE 1xM10 (B)	202A	3x M10(B) +PE 1xM10 (B)	218A	4x M10 (B) +PE 1xM10 (B)	10x 16/25mm ² (T) + 1xM10(B) S. Batts 4 x M10 (B) C. Batts
DPA-250	337A	4x M12 (B) +PE 1xM12 (B)	337A	3x M12 (B) +PE 1xM12 (B)	362A	4x M12 (B) +PE 1xM12 (B)	15x 16/25mm ² (T) +1x M12 (B) S. Batts 4 x M12 (B) C. Batts

(PE) = Protective Earth

(S.Batts) = Separate batteries – (C. Batts) = Common Batteries

(B) = Busbar connections with indicated bolt size. Cable must be terminated with a suitable lug.

(T) = Screwed terminal block with indicated maximum cable c.s.a. Cable ends must be suitably prepared.