

DPA UPScale RI 10 – 80 kW

➤ The modular
UPS for
customised
solutions.

DPA UPSCALE™ RI (Rack-Independent) Technical Specifications

DPA UPScale™ highlights at a glance

- DPA UPScale™ 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

**Safe-Swap modular
power protection**
Power range: 10-80kW per rack

Specifications are subject to change without notice



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10.1 DPA UPScale RI 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 centralization, resilient and easily adaptable power protection concepts are required. DPA UPScale is the foundation for continuous power protection availability of network-critical infrastructures in enterprise data centers where business continuity has paramount importance and in process control environment where manufacturing continuity is essential.

NEWAVE DPA UPScale's is a third 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.

DPA UPScale's 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.

DPA UPScale's (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 DPA UPScale model types that can support to give answers to tender and end-user requirements. The DPA UPScale family was designed to respond to the most stringent safety, EMC and other important UPS standards. DPA UPScale family is offered in two types of solutions:

DPA UPScale RI is a rack independent modular design offering 7-types of Rack Independent Subracks. Those can accommodate DPA UPScale Rack based Modules for a wide range of power requirements:

DPA UPScale RI (rack independent) Subracks:

- DPA UPScale RI 10 (20kW)
- DPA UPScale RI 11 (20kW)
- DPA UPScale RI 12 (20kW)
- DPA UPScale RI 20 (40kW)
- DPA UPScale RI 22 (40kW)
- DPA UPScale RI 24 (40kW)
- DPA UPScale RI 40 (80kW)

DPA UPScale Modules types:

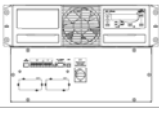

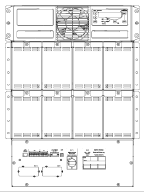
- UPScale M 10 (kW)
- UPScale M 20 (kW)

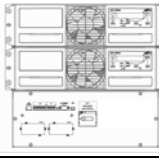


Key Features of DPA UPScale RI:

- | | |
|---|---|
| • Highest Availability
Modular, Decentralized Parallel Architecture (DPA) | <i>Near-zero down time</i> |
| • High Power Density (up to 122kW / m ²),
Small Footprint | <i>Space-saving of expensive floor space</i> |
| • Unity Output Power Factor
Full power for loads with unity PF | <i>No de-rating for loads with Unity PF</i> |
| • Highest Efficiency even with partial loads
Efficiency = 94.5 - 95.5% for loads 25-100%
(depending on Module power and type of load) | <i>Energy cost saving during UPS-life-cycle</i> |
| • Very low input current distortion THDi
THDi = < 3@ 100 % load | <i>Gen-set power and installation cost saving</i> |

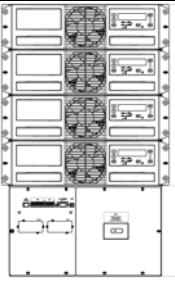
10.2 TECHNICAL CHARACTERISTICS DPA UPScale RI

10.2.1 MECHANICAL CHARACTERISTICS DPA UPScale RI (Rack Independent) Subracks

DPA UPScale RI		UPSscale RI 10	UPSscale RI 11	UPSscale RI 12
DPA UPScale RI Subrack				
Configuration accommodates:	Max.	1 module (10 or 20kW)	1 module (10 or 20kW) with 40 x 7/9Ah batteries	1 module (10 or 20kW) With 80 x 7/9Ah batteries
Max. Subrack connection	kW	20	20	20
Dimensions (WxHxD)	mm	448x310x565 (7 HU) 488*x310x565 (7 HU)	448x487x735 (11 HU) 488*x487x735 (11 HU)	448x665x735 (15 HU) 488*x665x735 (15 HU)
Weight of Empty Frame w/o modules and w/o batteries	kg	20	40	56
Weight of Frame with modules and w/o batteries	kg	39 up to 42 (with 1 Module)	59 up to 62 (with 1 Module)	75 up to 78 (with 1 Module)

DPA UPScale RI		UPSscale RI 20	UPSscale RI 22	UPSscale RI 24
DPA UPScale RI Subrack				
Configuration accommodates:	Max.	2 modules (10 or 20kW)	2 modules (10 or 20kW) with 80 x 7/9Ah batteries	2 modules (10 or 20kW) with 160 x 7/9Ah batteries
Max. Subrack connection	kW	40	40	40
Dimensions (WxHxD)	mm	448x440x565 (10 HU) 448*x440x565 (10 HU)	448x798x735 (18 HU) 448*x798x735 (18 HU)	448x1153x735 (26 HU) 448*x1153x735 (26 HU)
Weight of Empty Frame w/o modules and w/o batteries	kg	25	66	93
Weight of Frame with modules and w/o batteries	kg	44 up to 47 (with 2 Modules)	104 up to 110 (with 2 Modules)	131 up to 137 (with 2 Modules)

Note : *488 mm is the width including the wings in the front.

DPA UPScale RI		UPSscale RI 40
DPA UPScale RI Subrack		
Configuration accommodates:	Max.	4 modules (10 or 20kW)
Max. Subrack connection	kW	80
Dimensions (WxHxD)	mm	448x798x735 (18 HU) 448*798x735 (18 HU)
Weight of Empty Frame w/o modules and w/o batteries	kg	50
Weight of Frame with modules and w/o batteries	kg	124 up to 136 (with 4 Modules)

MODULES		UPSscale M 10	UPSscale M 20
Output Active Rated Power	KW	10	20
Variable Number of 12V Battery Blocks	No.	20-50 **	30-50 **
Dimensions (WxHxD)	mm	448 x 132 x 540 (3 HU) 448* x 132 x 540 (3HU)	
Weight UPS Module	kg	18.6	21.5
Colors		Front : RAL 9005	

Note : * 488 mm is the width including the wings in the front.

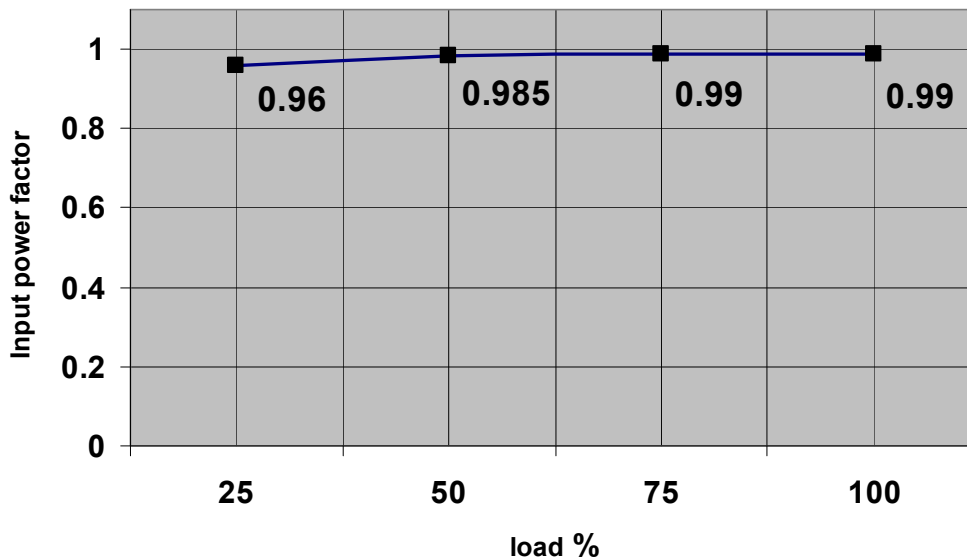
** Depending of the effective load in kW used by the module (see table Section 10, Chapter 10.5 Battery Characteristics).

10.3 INPUT CHARACTERISTICS

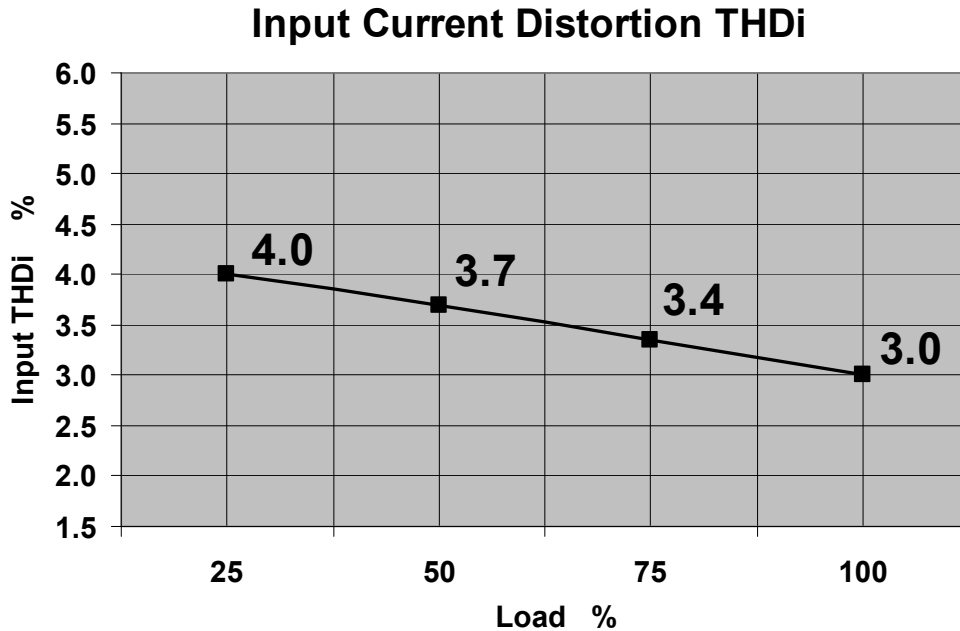
Module Range		UPScale M 10 or M 20	
Module Type		UPScale M 10	UPScale M 20
Output Rated Power per Module $\cos\phi$ 0.8	kVA	10	20
Output Rated Power per Module $\cos\phi$ 1.0	KW	10	20
Nominal Input Voltage	V	3x380/220V+N, 3x400V/230V+N, 3x415/240V+N	
Input Voltage Tolerance (ref to 3x400/230V) for Loads in %:	V	(-23%/+15%) 3x308/177 V to 3x460/264 V for <100 % load (-30%/+15%) 3x280/161 V to 3x460/264 V for < 80 % load (-40%/+15%) 3x240/138 V to 3x460/264 V for < 60 % load	
Input Frequency	Hz	35 – 70	
Input Power Factor		PF=0.99 @ 100 % load	
Inrush Current	A	max. In	
Input Distortion THDI		Sine-wave THDi = < 3 % @ 100% load	
Max. Input Power with rated output power and charged battery per Module (output $\cos\phi$ = 1.0)	kW	10.5	21
Max. Input Current with rated output power and charged battery per Module (output $\cos\phi$ = 1.0)	A	15.2	30.4
Max. Input Power with rated output power and discharged battery per Module (output $\cos\phi$ = 1.0)	kW	11.5	23
Max. Input Current with rated output power and discharged battery per Module (output $\cos\phi$ = 1.0)	A	16.6	33.3

10.3.1 GRAPH: INPUT PF VERSUS % LOAD

Input power factor versus load (Leading)



10.3.2 GRAPH: INPUT DISTORTION THDI VERSUS % LOAD



10.4 BATTERY CHARACTERISTICS

Module Range		UPScale M 10 or M 20	
Module Type		UPScale M 10	UPScale M 20
Variable Number of 12V Battery Blocks	No.	20-50 *1)	30-50 *1)
Maximum Battery Charger Current	A	4 A (optional 6 A)	4 A (optional 6 A)
Battery Charging Curve		Ripple free ; IU (DIN 41773)	
Temperature compensation		Standard (temp. sensor optional)	
Battery Test		Automatic and periodically (adjustable)	
Battery Type		Maintenance free VRLA or NiCd	

Note : * 1) Depending of the effective load in kW used by the module (see table below)

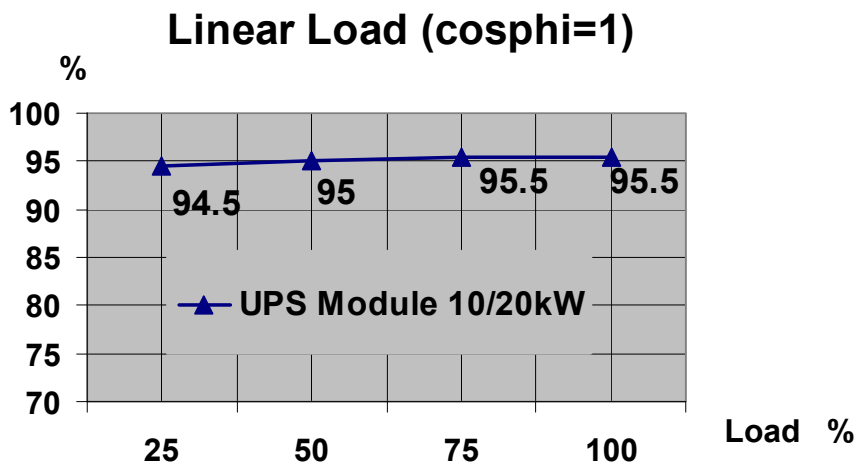
Description	UPScale Module M 10					UPScale Module M 20					
	Number of battery blocks	20	24	28	30	34-50	30	34	36	40	40
Max. Power in KW	6	8	8	10	10	12	12	16	20	16	20
Max. autonomy (min.)	5	5	5	5	999	5	999	5	5	999	999

10.5 OUTPUT CHARACTERISTICS

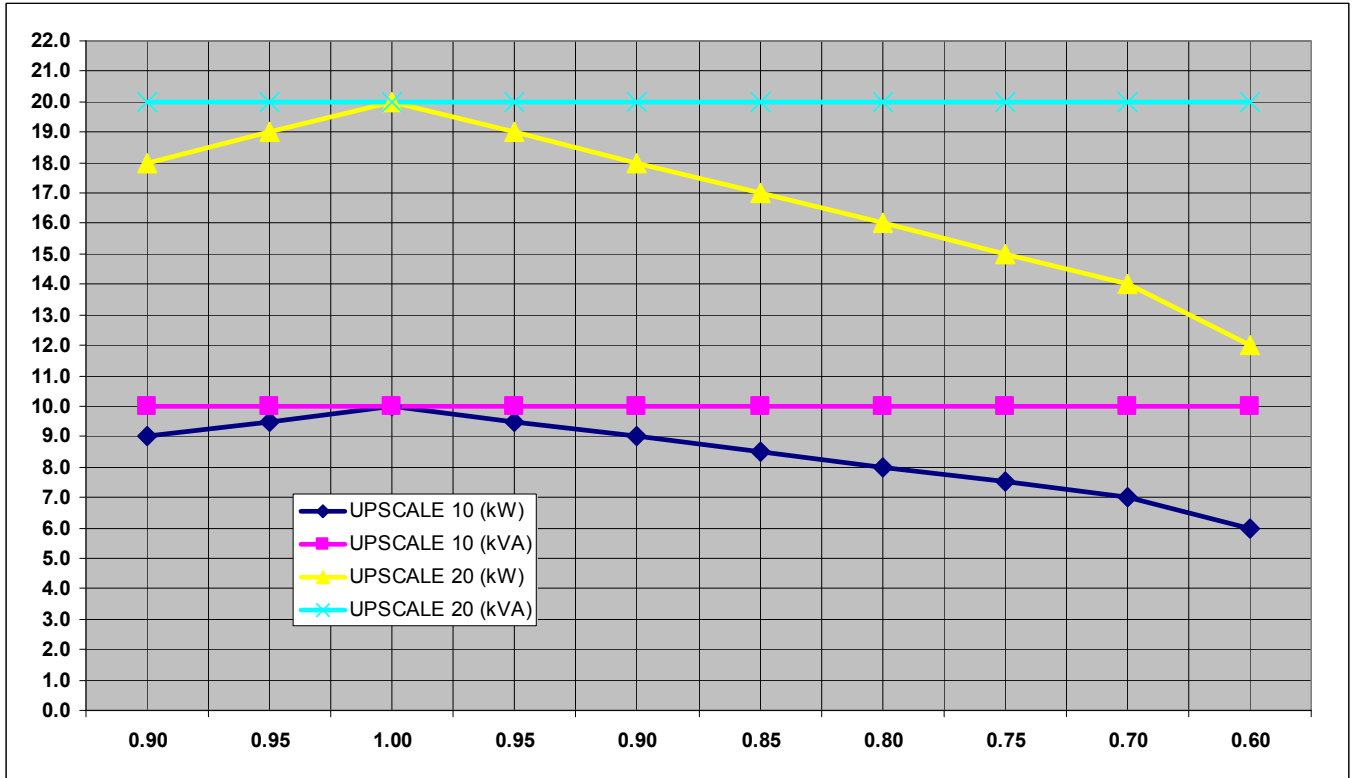
Module Range		UPScale M 10 or M 20	
Module Type		UPScale M 10	UPScale M 20
Output Rated Power per Module $\cos\phi$ 0.8	kVA	10	20
Output Rated Power per Module $\cos\phi$ 1.0	KW	10	20
Output Current In @ $\cos\phi$ 1.0 (400 V)	A	14.5	29
Output Rated Voltage	V	3x380/220V or 3x400/230V or 3x415/240V	
Output 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)	< 1.5% < 3%
Output Frequency	Hz	50 Hz or 60 Hz	
Output Frequency Tolerance	%	Synchronized with mains (selectable for bypass operation) Free running	< +/- 2% or < +/- 4% +/- 0.1%
Bypass operation		At Nominal Input voltage of 3x400 V 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 150 % load	10 min. 60 sec.
Output short capability (RMS)	A	Inverter : Bypass :	3 x In during 40 ms 10 x In during 20 ms
Crest - Factor		3 : 1	

10.5.1 GRAPH: AC – AC EFFICIENCY with Linier load @ $\cos\phi$ 1

Efficiency up to 1 % higher with output PF $\cos\phi$ 0.8
Details refer to paragraph 10.7 Environmental Characteristics



10.5.2 GRAPH: Output Power in KW and KVA VERSUS cosphi



cosφ		UPScale Module M 10		UPScale Module M 20	
		kW ◇	kVA □	kW △	kVA X
unity	0.9	9	10	18	20
	0.95	9.5	10	19	20
	1	10	10	20	20
Ind.	0.95	10	10	19	20
	0.9	9	10	18	20
	0.85	8.5	10	17	20
	0.8	8	10	16	20
	0.75	7.5	10	15	20
	0.7	7	10	14	20
	0.6	6	10	12	20

Changes of this table without notice – modifications reserved

10.6 ENVIRONMENTAL CHARACTERISTICS

Module Range		UPScale M 10or M 20	
Module Type		UPScale M 10	UPScale M 20
Audible Noise with 100% / 50% Load	dBA	55 / 49	57 / 49
Operation temperature	°C	0 – 40	
Ambient Temperature for Batteries (recommended)	°C	20 – 25	
Storage Temperature	°C	-25 - +70	
Battery Storage Time at Ambient Temperature		Max. 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		Max. 95% (non-condensing)	
Accessibility		Totally front accessibility for service and maintenance Rear access is needed for cable connections	
Positioning		Min. 900 mm rear space	
Input and Output Power Cabling		From the rear	
Efficiency AC-AC up to (at cosphi 1.0) (depending on Module power)	%	<i>Load</i> : 100 % 75 % 50% 25% M 20 : 95.5% 95.5% 95% 94.5% M 10 : 95.5% 95.5% 95% 94.5%	
Efficiency with Linear Load at $\cos\phi = 0.8$ and Efficiency Non-linear Load (EN 62040-1-1:2003)		Typically up to 1 % higher of above values Typically up to 1 % lower of above values	
Eco-Mode efficiency at 100% load	%	98 %	

10.7 STANDARDS

Safety	EN 62040-1-1, EN 60950-1	
Electromagnetic Compatibility	EN 61000-6-4 Prod.standard: EN 62040-2 EN 61000-6-2 Prod.standard: EN 62040-2 EN 61000-4-2, EN 61000-4-3 - EN 61000-4-4 - EN 61000-4-5 - EN 61000-4-6	
EMC Classification for	M 10	M 20
Emission Class	C2	C2
Immunity Class	C3	C3
Performance	EN62040-3	
Product certification	CE	
Degree of protection	IP 20	

10.8 COMMUNICATION

Power Management Display (PMD)	1 LCD display for each module
RJ45 Plug (Not used)	RJ45 Plug (for future options)
Customer Interfaces : Outputs DRY PORT X 2	5 voltage free contacts For remote signaling and automatic computer shutdown
Customer Interfaces : Inputs DRY PORT X1	1 x Remote Shut down [EMERGENCY OFF (Normally closed)] 2 x Programmable Customer's Inputs (1 st default as GEN-ON (Normally open) (2 nd free Programmable Customer's Inputs (Normally open) 1 x Temp. Sensor for Battery Control 1 x 12 Vdc output (max. 200mA)
Serial ports RS232 on Sub-D9	1 x system frame For monitoring and integration in network management
USB	1x For monitoring and software management
Slot for SNMP	SNMP card (optional) For monitoring and integration in network management
Slot for Newavewatch™	Newavewatch™ card (optional) for Premium Power Protection

10.8.1 POWER MANAGEMENT DISPLAY (PMD)

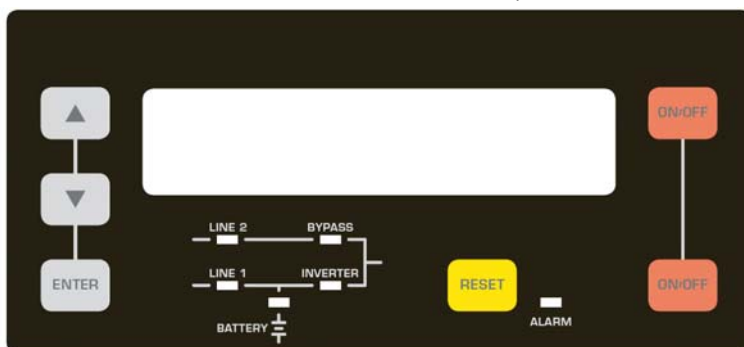
The user-friendly PMD consists of three parts the MIMIC DIAGRAM, CONTROL KEYS and LCD that provides the necessary monitoring information about the UPS.

10.8.2 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 color 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.

10.8.3 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 and finally it serves for the DIAGNOSIS (SERVICE MODE) for adjustments and testing (for more details see the USER MANUAL of DPA UPScale™).



Power Management Display (PMD) of DPA UPScale™

10.8.4 CUSTOMER INTERFACES Terminals X1...X2

10.8.5 CUSTOMER INPUTS DRY PORTs: Terminal block X2



















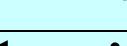

Connection of Remote Shut down facilities, Generator Operation, Customers specials
(see UM Section 9 / OPTIONS)

10.8.6 CUSTOMER OUTPUTS DRY PORTs : Terminal blocks X1

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

All voltage free contacts are rated 60 VAC max. and 500 mA max.:

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

Block	Terminal	Contact	Signal	On Display	Function
X2	X2 / 1	NO 	ALARM	MAINS_OK	Mains Present
	X2 / 2	NC 		Mains Failure	
	X2 / 3	C 		Common	
	X2 / 4	NO 	Message	LOAD_ON_INV	Load on Inverter
	X2 / 5	NC 		(Load on Mains bypass)	
	X2 / 6	C 		Common	
	X2 / 7	NO 	ALARM	BATT_LOW	Battery Low
	X2 / 8	NC 		Battery OK	
	X2 / 9	C 		Common	
	X2 / 10	NO 	Message	LOAD_ON_MAINS	Load on bypass (Mains)
	X2 / 11	NC 		(Load on Inverter)	
	X2 / 12	C 		Common	
	X2 / 13	NO 	ALARM	COMMON_ALARM	Common Alarm (System)
	X2 / 14	NC 		NO Alarm Condition	
	X2 / 15	C 		Common	
X1	X1 / 1	 IN	+ 12Vdc	Customer IN 1 (default as Generator Operation)	
	X1 / 2	GND	GND		(NC = Generator ON)
	X1 / 3	 IN	+ 12Vdc	Customer IN 2	
	X1 / 4	GND	GND		(Function on request, to be defined)
	X1 / 5	 IN	+ 3.3Vdc	Temperature Battery	
	X1 / 6	GND	GND		(If connected , the battery charger current if depending of the battery temp.)
	X1 / 7	 IN	+ 12Vdc	Remote Shut down	
	X1 / 8	GND	GND		(Do not remove the factory mounted bridge until external Remote Shut down is connected)
	X1 / 9	 IN	+ 12Vdc	12 Vdc source	
	X1 / 10	GND	GND		(max. 200 mA load)

Phoenix Spring Terminals (X1...X2) Connection

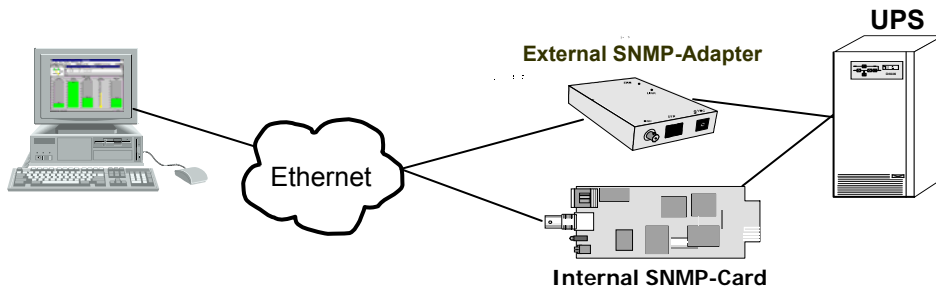
10.9 OPTIONS

- SNMP card and WaveMon Management Software , Modbus Protocol
- External Battery Cabinets
- In/Output Transformatore for special voltages on request
- Temp. sensor for battery temp. control

10.9.1 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, 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.



10.10 BATTERY AUTONOMIES

10.10.1 Examples of Internal Battery Autonomy of DPA UPScale RI 11, RI 12, RI 22 , RI 24

Module Type		UPScale M 10		UPScale M 20 <small>Module need at least 48 blocks for full power or minimum 40 blocks for 16kW</small>		
Internal Separate Battery configuration		Battery Autonomy in (min.) per Module				
Frame Type	Separate Battery / Module	8kW	10kW	12kW	16kW	20kW
UPScale RI 11 <small>max. 40 blocks 1 modules ONLY</small>	(1x40)x7Ah / Module	8	6	5		
UPScale RI 22 <small>max. 80 blocks 1 modules ONLY</small>	(1x50)x7Ah / Module	11	8	7	4	
UPScale RI 22 <small>max. 80 blocks up to 2 modules</small>	(1x40)x7Ah / Module	8	6	5		

Internal Common Battery configuration		Battery Autonomy in (min.) for Tot. System Power				
With 1 Module	Module Type	1 x UPScale M 10		1 x UPScale M 20		
	Total System Power	8kW	10kW	12kW	16kW	20kW
UPScale RI 22	1x (2x40)x7Ah	21	15	12	8	5
With 2 Modules	Module Type	2 x UPScale M 10		2 x UPScale M 20		
	Total System Power	16kW	20kW	24kW	32kW	40kW
UPScale RI 22	1x (2x40)x7Ah	8	6	5		
UPScale RI 24	2x (2x40)x7Ah	21	16	13	9	5

10.11 INSTALLATION PLANNING

Clearances	X	Y
Minimum	900mm	900 mm

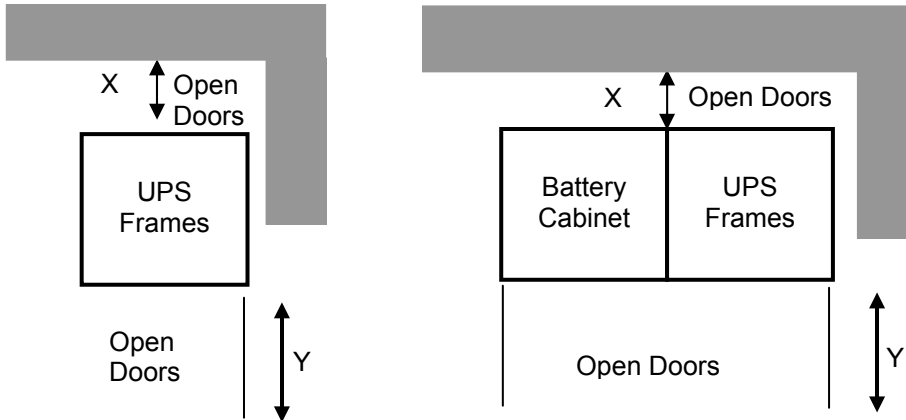


Figure 1: UPS space recommendation Figure 2 : : UPS + Battery space recommendation

Accessibility	Totally front accessibility for service and maintenance Rear access is needed for cable connections
Input and Output Power Cabling	From the rear

10.11.1 HEAT DISSIPATION PER MODULE WITH NON-LINEAR LOAD

Module Range		UPScale M 10or M 20	
Module Type		UPScale M 10	UPScale M 20
Heat Dissipation with 100% Non-linear Load per Module (EN 62040-1-1:2003)	W	550	1100
Heat Dissipation with 100% Non-linear Load per Module (EN 62040-1-1:2003)	BTU/h	1887	3754
Airflow (25° - 30°C) with Non-linear Load per Module (EN 62040-1-1:2003)	m ³ /h	150	150
Dissipation at no load	W	120	150

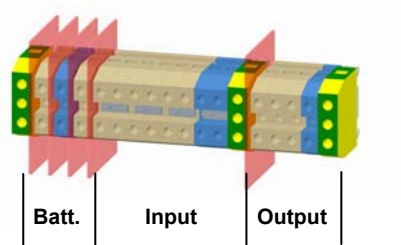
10.12 WIRING AND BLOCK DIAGRAMS FOR ALL FRAMES AND MODULES

The customer has to supply the wiring to connect the UPS to the local power source. The installation inspection and initial start up of the UPS and extra battery cabinet must be carried out by a qualified service personnel such as a licensed service engineer from the manufacturer or from an agent authorized by the manufacturer. More details and procedure are mentioned in the user manual.

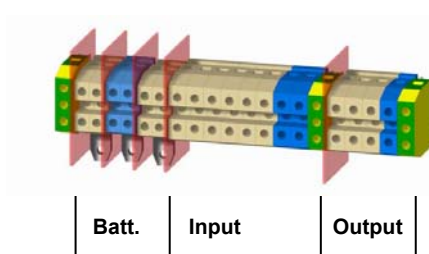
10.12.1 TERMINAL CONNECTIONS OVERVIEW

FRAME TYPE Terminals (T) Connection Bar (B)	Battery Earth PE	Separate. Battery (+ / N / -)	Common Battery (+ / N / -)	Input Bypass 3+N	Input Rectifier 3+N+PE	Output load 3+N+PE
UPScale RI10/11/12	16/25mm ² (T)	3 x 10/16mm ² (T)	-	4 x 10/16 mm ² (T)	5 x 10/16 mm ² (T)	5 x 10/16 mm ² (T)
UPScale RI20/22/24	16/25mm ² (T)	2x (3 x 10/16mm ²) (T)	3 x M5 (B)	4 x 16/25 mm ² (T)	5 x 16/25 mm ² (T)	5 x 16/25 mm ² (T)
UPScale RI40	50 mm ² (T)	4x (3 x 10/16mm ²) (T)	3 x M6 (B)	3 x 50 mm ² (T) + N 70/95 mm ² (T)	3 x 50 mm ² (T) + N 70/95 mm ² (T) +PE 50 mm ² (T)	3 x 50 mm ² (T) + N 70/95 mm ² (T) +PE 50 mm ² (T)

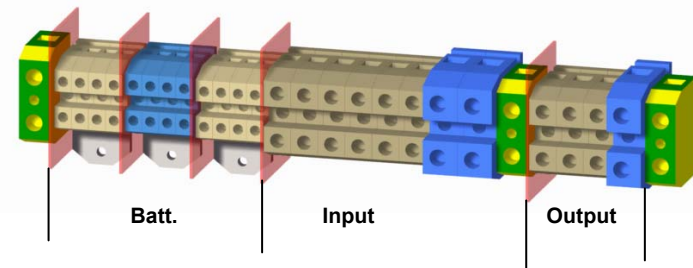
**UPScale RI 10, RI 11, RI 12
(on rear site)**



**UPScale RI 20, RI 22, RI 24
(on rear site)**

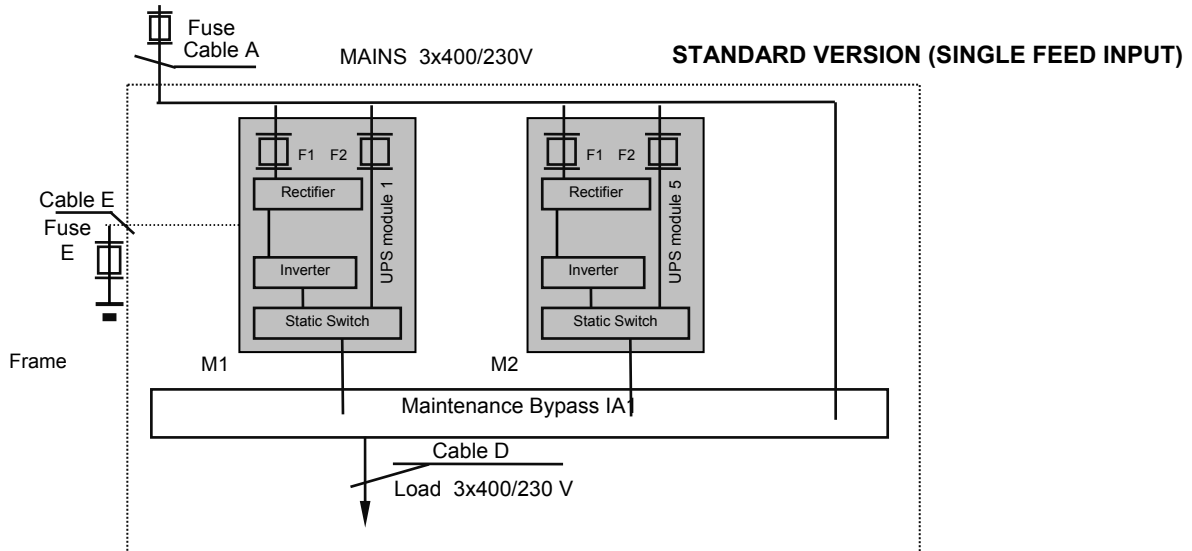


**UPScale RI 40
(on rear site)**



10.12.2 SINGLE FEED INPUT

Cable Sections and Fuse Ratings recommended. Alternatively, local standards to be respected



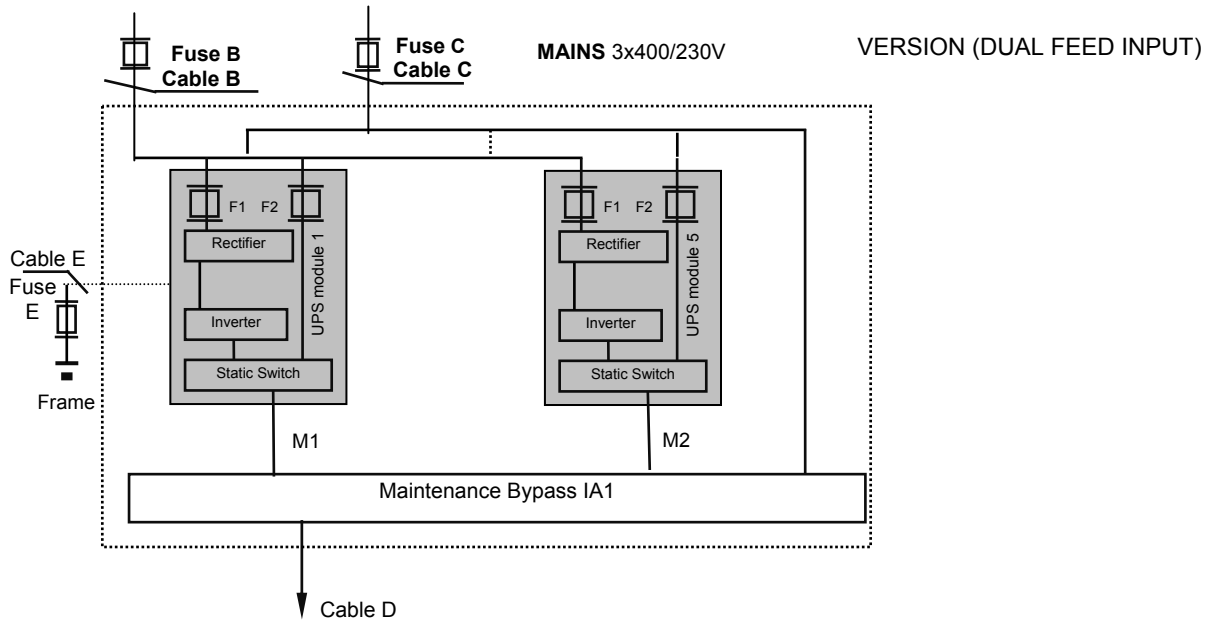
10.12.3 SINGLE FEED INPUT / Cable Sections

Enclosure type	Load in KW	Input 3x400V/230V			Output 3x400V/230V @ cosphi 1.0		Battery		
		Fuse A (Agl/CB)	Cable A (mm ²) (IEC 60950-1:2001)	Max. Input Current with battery charging (A)	Cable D (mm ²) (IEC 60950-1:2001)	I _{nom} (A)	Fuse E + / N / - (Agl/CB)	Cable E (mm ²) Only for external Batteries + / N / -	
								Com. Battery	Sep. Battery
Upscale RI 10	20	3x40A	5x6	27	5x6	29 A	3x63A	3x10	
Upscale RI 11	20	3x40A	5x6	27	5x6	29 A	3x63A	3x10	
Upscale RI 12	20	3x40A	5x6	27	5x6	29 A	3x63A	3x10	
Upscale RI 20	40	3x80A	5x16	68	5x16	58 A	3x100A *1	3x25 *1	2x(3x10)
Upscale RI 22	40	3x80A	5x16	68	5x16	58 A	3x100A *1	3x25 *1	2x(3x10)
Upscale RI 24	40	3x80A	5x16	68	5x16	58 A	3x100A *1	3x25 *1	2x(3x10)
Upscale RI 40	80	3x160A	5x50	136 A	5x50	116 A	3x224A*1	3x95 *1	4x (3x10)

*1 only valid for common battery use

10.12.4 DUAL FEED INPUT

Cable Sections and Fuse Ratings recommended. Alternatively, local standards to be respected



10.12.5 Dual FEED INPUT / Cable Sections

Enclosure type	Load in KW	Input 3x400V/230V			Bypass 3x400V/230V		Output 3x400V/230V @ cosphi 1.0		Battery		
		Fuse B (Agl/CB)	Cable B (mm ²) (IEC 60950-1:2001)	Max. Input Current with battery charging (A)	Fuse C (Agl/CB)	Cable C (mm ²) (IEC 60950-1:2001)	Cable D (mm ²) (IEC 60950-1:2001)	I nom	Fuse E +/N/- (Agl/CB)	Cable E (mm ²) Only for external Batteries + / N / -	
										Com. Battery	Sep. Battery
Upscale RI 10	20	3x40A	5x6	27	3x40A	4x6	5x6	29 A	3x63A	3x10	
Upscale RI 11	20	3x40A	5x6	27	3x40A	4x6	5x6	29 A	3x63A	3x10	
Upscale RI 12	20	3x40A	5x6	27	3x40A	4x6	5x6	29 A	3x63A	3x10	
Upscale RI 20	40	3x80A	5x16	68	3x80A	4x16	5x16	58 A	3x100A *1	3x25 *1	2x(3x10)
Upscale RI 22	40	3x80A	5x16	68	3x80A	4x16	5x16	58 A	3x100A *1	3x25 *1	2x(3x10)
Upscale RI 24	40	3x80A	5x16	68	3x80A	4x16	5x16	58 A	3x100A *1	3x25 *1	2x(3x10)
Upscale RI 40	80	3x160A	5x50	136 A	3x160A	4x50	5x50	116 A	3x224A*1	3x95 *1	4x (3x10)

*1 only valid for common battery use