

DELPHYS MX Elite+

160 to 600 kVA



SUPERIOR

Unrivalled power
performance



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1. OBJECTIVES

The aim of these specifications is to provide:

- the information required to choose the right uninterruptible power supply for a specific application.
- the information required to prepare the system and installation site.

The specifications are intended for:

- installation engineers.
- design engineers.
- engineering consultants.

2. INSTALLATION REQUIREMENTS AND PROTECTION

Connection to the mains power supply and to the load(s) must be made using cables of suitable size, in accordance with current standards. If not already present, an electrical control station which can isolate the network upstream of the UPS must be installed. This electrical control station must be equipped with a circuit breaker (or two, if there is a separate bypass line) of an appropriate rating for the power draw at full load.

If an external manual bypass is required, only the model supplied by the manufacturer must be installed.

We recommend fitting two meters of unanchored flexible cable between the UPS output terminals and the cable anchor (wall or cabinet). This makes it possible to move and service the UPS.

For detailed information, see the installation and operating manual.

3. ARCHITECTURE

3.1. Range

DELPHYS MX Elite+ is a high performing transformer based UPS designed to secure power supply to critical industrial applications.

The isolation transformer installed on the inverter output ensures complete galvanic isolation between DC circuit and load output.

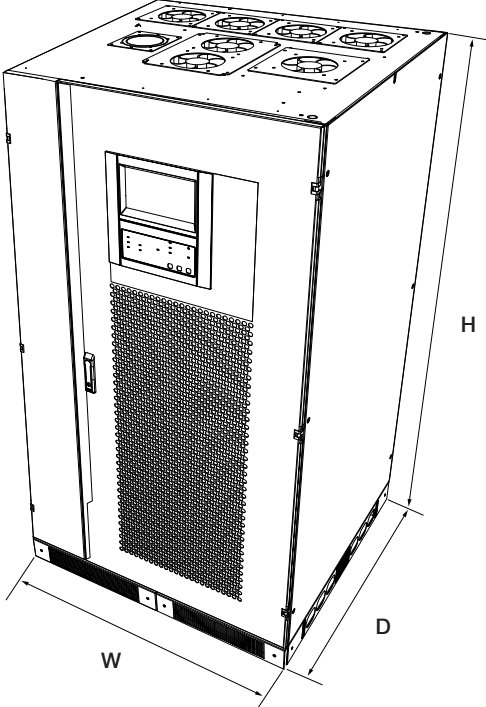
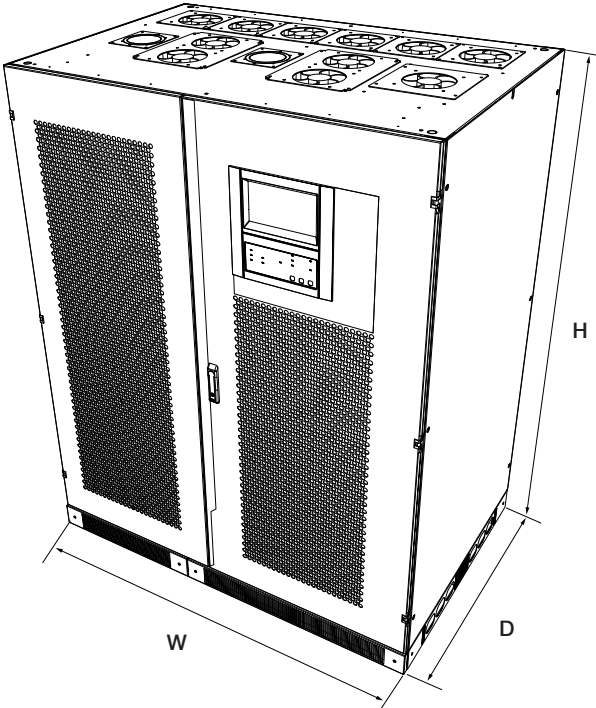
MODELS						
Rated power (kVA)	160	200	250	300	400	600
DELPHYS MX Elite+ 3/3	•	•	•	•	•	•

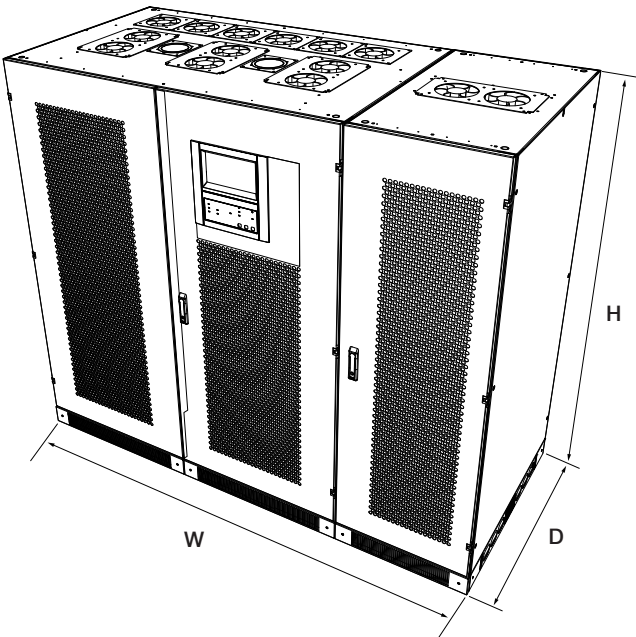
Matrix table for model and kVA power rating

DELPHYS MX Elite+ has been specifically designed to meet the demands of loads in specific application contexts, in order to optimise the features of the product and to facilitate its integration within the system.

4. FLEXIBILITY

4.1. Power ratings from 160 to 600 kVA

DIMENSIONS			
Range	Width (W) [mm]	Depth (D) [mm]	Height (H) [mm]
	1000	850	1900
DELPHYS MX Elite+ 160 to 250 kVA			
	1500	1000	1900
DELPHYS MX Elite+ 300 and 400 kVA			

	2200	1000	1900
DELPHYS MX Elite+ 500 and 600 kVA			

The equipment has been designed with a minimum direct and indirect footprint (the actual space occupied by the unit and the space required around it for maintenance, ventilation and access to the operating mechanisms and communication devices).

The careful design also provides easy access for maintenance and installation:

- all of the control mechanisms and communication interfaces are located and can be accessed in the front part,
- the air inlet is on the front, with outflow from the upper side; this means other equipment or external battery enclosures can be placed alongside the UPS unit.

4.2. Flexible backup time

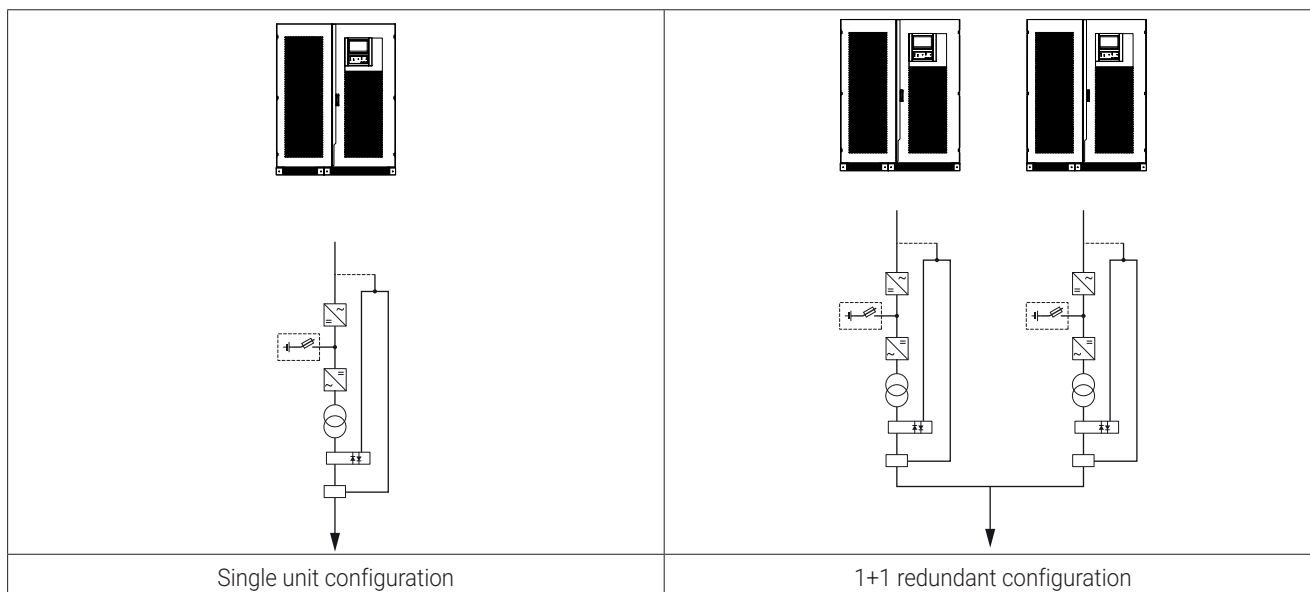
Selection of the back-up time is flexible thanks to the wide range of DC bus voltages. The batteries are organised internally into racks based on their relative sizes, so as to ensure a compact unit while still guaranteeing substantial backup times.

To guarantee maximum back-up time availability and battery life, the DELPHYS MX Elite+ includes smart battery charging management.

4.3. Parallel

DELPHYS MX Elite+ UPS units (rectifier, battery, inverter and bypass) can be connected in parallel (up to 6 units) with distributed bypass. This solution, which is ideally suited for 1+1 redundancy, offers flexible power upgrading and enables stand-alone UPS units to be expanded. Each single UPS unit has a built-in maintenance bypass (single unit or distributed bypass).

It is possible to add an external maintenance bypass, common to all of the UPS units, for maintenance access.



5. STANDARD AND OPTIONS

5.1. Standard electrical features.

- Backfeed protection: detection circuit.
- Standard interface:
 - 8 NO/NC contact outputs.
 - Abnormal Rectifier, Battery Running, The Bypass operation, Abnormal input, Overload alarm, Abnormal cells, Abnormal Inverter, Integrated alarm.

5.2. Mechanical options.

- Reinforced IP protection degree.
- Extended top entry outlet solution.

5.3. Standard communication features.

- 10 inches touch screen display.
- RS485/Modbus RTU, RS232.
- Dry contact with 8 nos NO/NC contacts.

5.4. Communication options.

- NET VISION: professional WEB/SNMP Ethernet interface for secure UPS monitoring and remote automatic shutdown.
- Modbus TCP.
- 8 nos Dry contact with extended function.

5.5. Remote monitoring service.

- SoLink: Socomec 27/4 Remote Monitoring Service connecting your installation to the nearest Socomec Service Centre.
- SoLive: Mobile app taking the surveillance of all your UPS systems into your smartphone.

6. SPECIFICATIONS

6.1. Installation parameters

INSTALLATION PARAMETERS								
Rated power (kVA)		160	200	250	300	400	500	600
Phase in/out		3/3						
Active power (kW)		144	180	225	270	360	450	540
Rated/maximum rectifier input current (A)		261	327	408	490	653	816	979
Rated bypass input current (A)		243	303	379	455	607	758	910
Inverter output current @230V (A) P/N		243	303	379	455	607	758	910
Maximum air flow (m³/h)		3960			7260		9240	
Sound level (dBA)		≤ 68			≤ 75			
Dissipation at rated load (minimum mains power present and batteries charged)	kW	11.2	14	17.5	21	28	35	42
	kcal/h	9630	12040	15050	18060	24080	30100	36120
	BTU/h	38214	47777	59722	71666	95555	119444	143333
Dimensions	W (mm)	1000	1000	1000	1500	1500	2200	2200
	D (mm)	850	850	850	1000	1000	1000	1000
	H (mm)	1900	1900	1900	1900	1900	1900	1900
Weight	kg	1150	1250	1350	1800	2000	2800	3000

6.2. Electrical characteristics

ELECTRICAL CHARACTERISTICS - INPUT							
Rated power (kVA)	160	200	250	300	400	500	600
Phase in/out	3/3						
Rated mains supply voltage	380/400/415 V (adjustable)						
Voltage tolerance (ensuring battery recharge)	304 ~ 460 VAC (+/-20% @ 380 V) 400 V (-10% ~ 15%) @full load PF0.9 400 V (-20% ~ 15%) @80% load PF0.9						
Rated frequency	50/60 Hz						
Frequency tolerance	± 10%						
Power factor (input at full load and rated voltage)	0.99						
Total harmonic distortion (THDi)	< 3%						
Max inrush current at start-up	<I _n (no overcurrent)						
Soft start	-						

ELECTRICAL CHARACTERISTICS - BYPASS							
Rated power (kVA)	160	200	250	300	400	500	600
Bypass frequency variation speed	-						
Bypass rated voltage	Rated output voltage ±10%						
Bypass rated frequency	50/60 Hz selectable						
Bypass frequency tolerance	±5 Hz (1% to 10% settable)						

ELECTRICAL CHARACTERISTICS - INVERTER								
Rated power (kVA)		160	200	250	300	400	500	600
Rated output voltage (selectable)		380/400/415 V						
Output voltage tolerance		Static: < 1% Dynamic: (0-100% Pn) ±2%						
Rated output frequency		50/60 Hz (selectable)						
Output frequency tolerance		± 0.02% internal frequency						
Load crest factor		3:1						
Voltage harmonic distortion (ThdU)	on linear load	< 1%						
	on non-linear load	< 5%		< 2.5%				
Overload tolerated by the inverter (with mains power present)		110 % 1 hour, 125 % 10 minutes 150 % 1 minute (all with battery)						

ELECTRICAL CHARACTERISTICS - EFFICIENCY								
Rated power (kVA)		160	200	250	300	400	500	600
Double conversion efficiency (normal mode)		Up to 94% at full load						
Efficiency in Eco Mode		99%						

ELECTRICAL CHARACTERISTICS - ENVIRONMENT								
Rated power (kVA)		160	200	250	300	400	500	600
Storage temperatures		-20 to +70 °C (-4 to 158 °F) (15 to 25 °C for better battery life)						
Working temperature		0 to +35 °C (32 to 95 °F)						
Maximum relative humidity (non-condensing)		95%						
Maximum altitude without derating		1000 m (3300 ft)						
Degree of protection		IP20 (up to IP21 optional)						
Colour		Grey TOYO (RAL9006)						

(1) Conditions apply.

6.3. Recommended protection devices

RECOMMENDED PROTECTION DEVICES - RECTIFIER ⁽¹⁾							
Rated power (kVA)	160	200	250	300	400	500	600
D curve circuit breaker (A)	400			630	800	1250	

RECOMMENDED PROTECTION DEVICES - GENERAL BYPASS ⁽¹⁾							
Rated power (kVA)	160	200	250	300	400	500	600
Semiconductors characteristics	I _{2t} (A ² s)	414000			1125000		
	I _{s/c} (A peak)	9100			15000		
D curve circuit breaker (A)	400		500	630	800	1250	

RECOMMENDED PROTECTION DEVICES - INPUT RESIDUAL CURRENT CIRCUIT BREAKER ⁽²⁾							
Rated power (kVA)	160	200	250	300	400	500	600
Input residual current circuit breaker	300 mA						

RECOMMENDED PROTECTION DEVICES - OUTPUT ⁽²⁾							
Rated power (kVA)	160	200	250	300	400	500	600
Short-circuit inverter current (A) - (0 to 100 ms) (when AUX MAINS is not present)	-	-	1720	-	2500	-	4380
C curve circuit breaker ⁽³⁾ (A)	400		500	630	800	1250	
High-speed fuse ⁽³⁾ (A)	-	-	-	-	-	-	-

CABLES - MAXIMUM CABLE SECTION							
Rated power (kVA)	160	200	250	300	400	500	600
Rectifier terminals	1 hole of $\Phi 12$ for screw M10			3 holes of $\Phi 13$ for screw M10		2 holes of $\Phi 11$ for screw M10	
Bypass terminals	1 hole of $\Phi 12$ for screw M10			3 holes of $\Phi 13$ for screw M10		3 holes of $\Phi 14$ for screw M10	
Battery terminals	1 hole of $\Phi 12$ for screw M10			2 holes of $\Phi 14$ for screw M10		2 holes of $\Phi 14$ for screw M10	
Output terminals	1 hole of $\Phi 12$ for screw M10			3 holes of $\Phi 13$ for screw M10		3 holes of $\Phi 14$ for screw M10	

- (1) Rectifier protection should only be considered in the event of separate inputs. The bypass protection is given by recommendation. When the bypass and rectifier inputs are combined (common input), the general input protection rating must be the highest of both (bypass or rectifier).
- (2) Must be selective with residual current circuit breakers downstream of the UPS connected to the UPS output. If the bypass network is separate from the rectifier circuit, or in the event of parallel UPS, use a single residual current circuit breaker upstream of the UPS.
- (3) Selectivity of distribution after the UPS with inverter short-circuit current (short-circuit with AUX MAINS not present). The rating of the protection can be increased by "n" times downstream a parallel UPS system, with "n" equal to the number of parallel modules.

7. REFERENCE STANDARDS AND DIRECTIVES

7.1. Overview

The equipment, installed, used and serviced in accordance with its intended use, its regulations and standards, its manufacturer instructions and rules, is in compliance with the relevant Union harmonisation legislation:

LVD 2014 / 35 / EU

DIRECTIVE 2014/35/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014, on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.

EMC 2014 / 30 / EU

DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014, on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.

RoHS 2011/65/EU

Directive 2011/65 of the European parliament and of the council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

7.2. Standards

7.2.1. Safety

EN 62040-1 Uninterruptible Power System (UPS) - Part 1: General and safety requirements.

IEC 62040-1 Uninterruptible Power System (UPS) - Part 1: Safety requirements.

7.2.2. Electromagnetic compatibility

EN 62040-2 Uninterruptible Power System (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements.

IEC 62040-2 Uninterruptible Power System (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements.

7.3. System and installation guidelines

When carrying out electrical installation, all the above standards must be observed. All national and international standards (e.g IEC60364) applicable to the specific electrical installation including batteries must be observed. For further information refer to 'Technical specifications' chapter in the user manual.