

DELPHYS XL

from 1 to 4 MW and 1.2 to 4.8 MW
High Power UPS



SUPERIOR

Unrivalled power
performance



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1. OBJECTIVES

The aim of these specifications is to provide 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

Connections to the mains power supply and to the load(s) must be implemented using cables of suitable size, in accordance with current standards. If there is no electrical control station present that can isolate the network upstream of the UPS, one must be installed. This electrical control station must be equipped with a protective device (or two, if there is a separate bypass line) with an appropriate rating for the power draw at full load.

For detailed information, see the installation and operating manual.

3. ARCHITECTURE

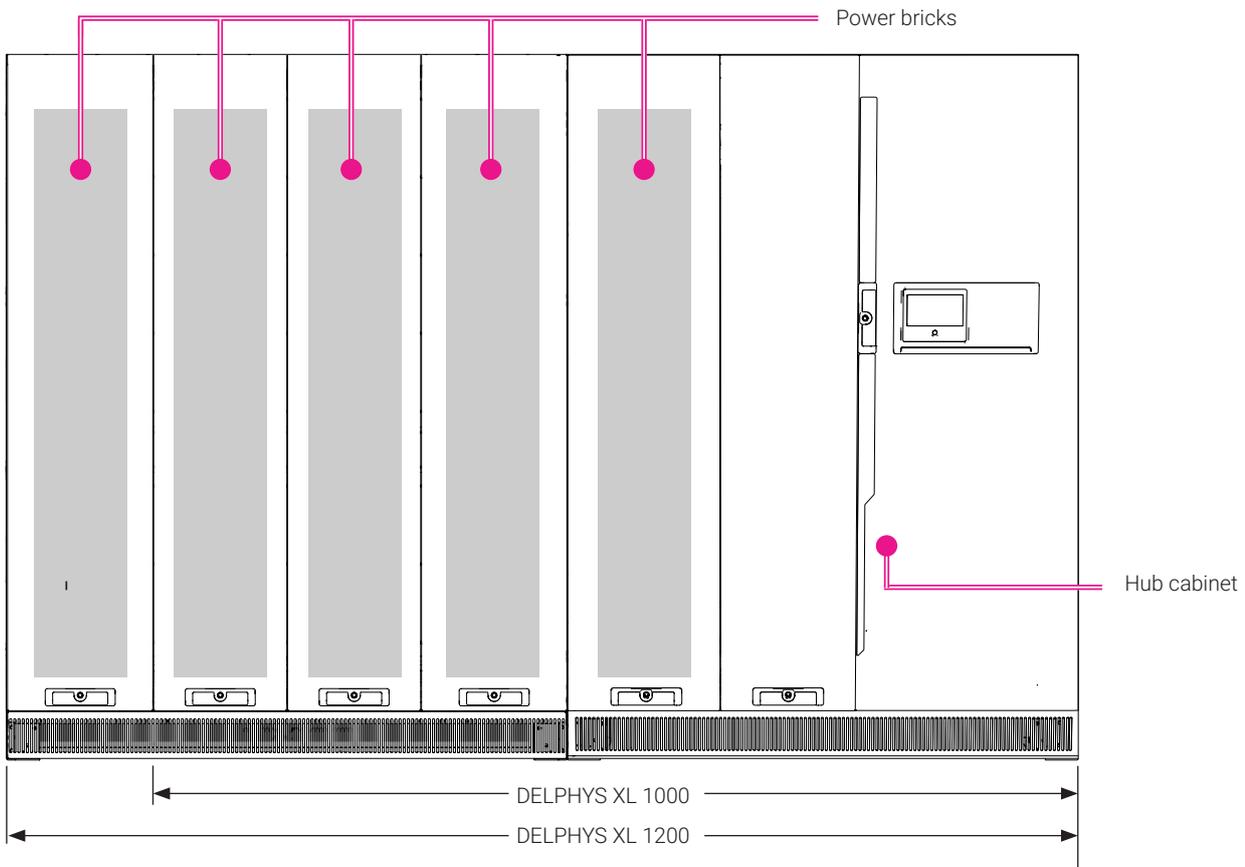
3.1. Range

Delphys XL is a high performance UPS designed to secure highly critical applications and therefore to ensure business continuity by means of a fully resilient architecture.

The DELPHYS XL can deliver many more benefits than standard monolithic systems, packing 1000/1200 kW into an overall space-saving design, which can be integrated into your environment simply and flexibly.

- Fault tolerant architecture,
- Easy and safe maintenance,
- TCO optimization (best in class efficiency levels),
- Optimized footprint,
- Fast deployment time / Flexible installation.

Delphys XL can sustain these values thanks to its unique architecture and design:



Hub cabinet for the UPS Unit:

- All input(s) – outputs and battery connections to the UPS units,
- 1 MW or 1.2 MW centralized static switch on bypass line,
- Local users interface (HMI),
- Remote communications interfaces.

Power bricks rated for 1000 or 1200 kW/kVA continuous operation:

- Single and full rated Rectifier, Inverter and Battery charger per power brick,
- Highly efficient & reliable power bricks,
- Selective disconnection to allow electrical isolation of brick when required.

The development and production sites are certified according to ISO 14001 (Environmental management system) and ISO 9001 (Quality management system).

3.2. RATED POWER

RATED POWER PER UPS UNIT		
UPS power rating	1000 kVA	1200 kVA
Power (kW)	1000 kW (30°C)	1200 kW (35°C)
Parallel units	up to 4 units in parallel	

3.3. System architecture

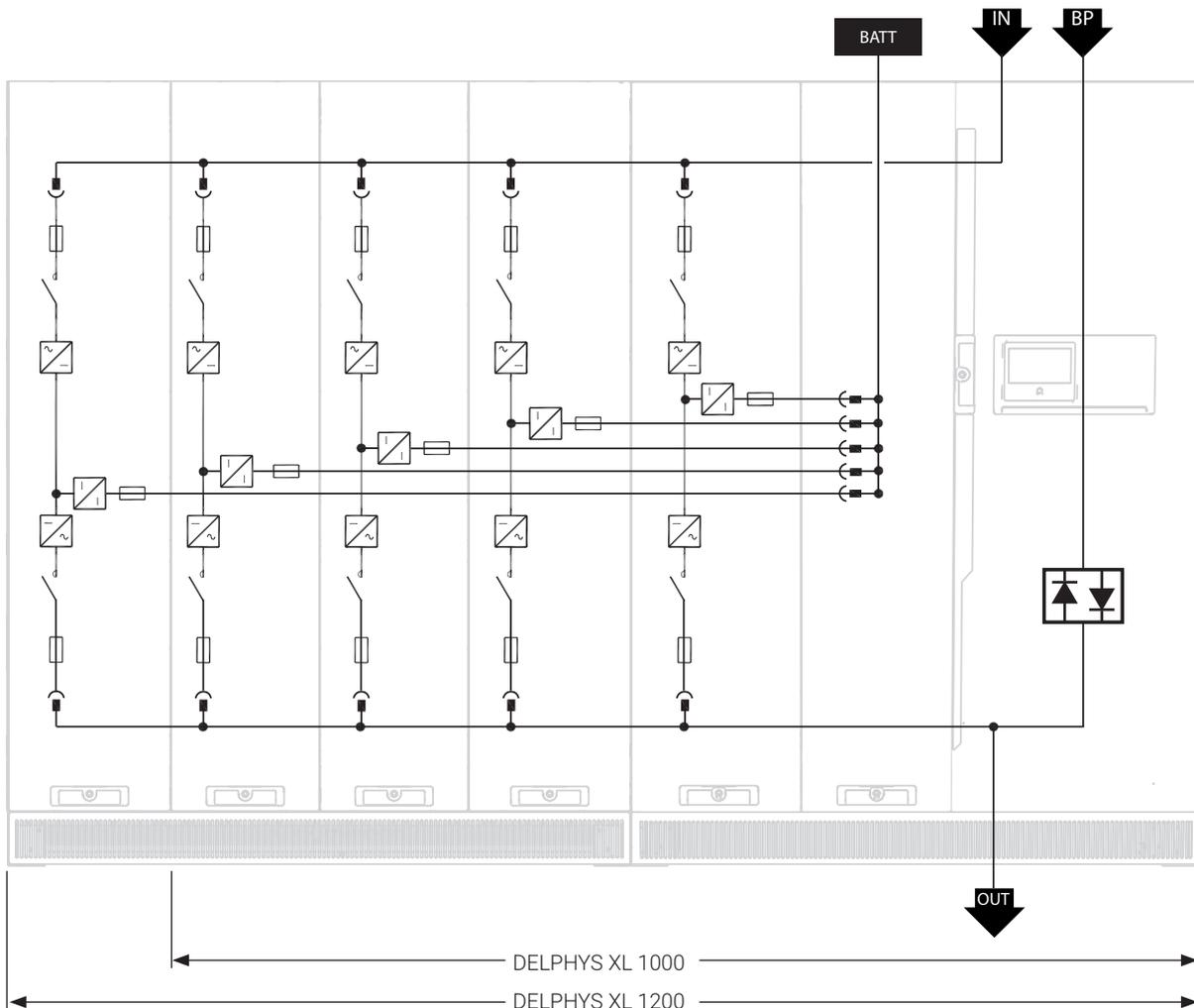
DELPHYS XL is a highly reliable UPS solution based on our field-proven high power XL platform, integrated into a fully redundant architecture that guaranties service continuity for the most critical applications.

The system is composed of several autonomous Power Bricks with advanced selective disconnection and a robust static bypass; Complete mechanical and electrical segregation between the power converters avoids any default propagation inside the system to give the best possible availability.

All the Power conversion bricks and the static switch operate intelligently on a peer-to-peer basis providing a resilient solution with no single point of failure.

Any potential fault is isolated inside the affected sub-assemblies, keeping the critical load protected in double conversion mode by means of the remaining power converters.

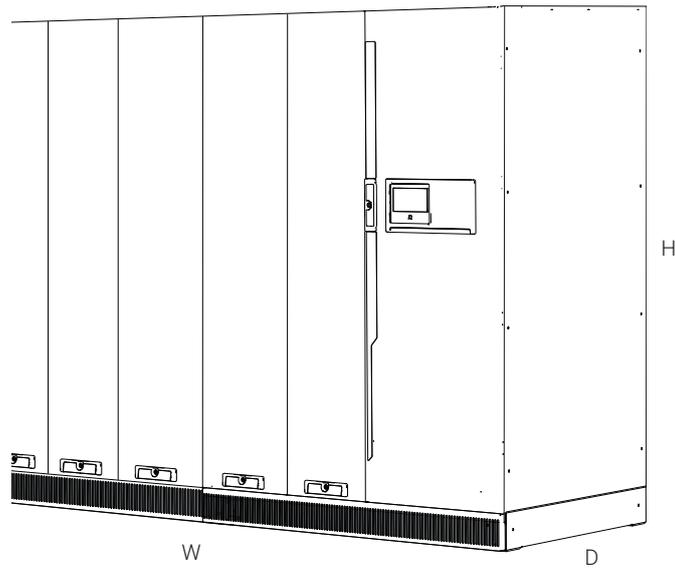
Therefore, DELPHYS XL is a fault tolerant UPS system assuming a complete redundancy up to 75% (Delphys XL 1000) and 80% (Delphys XL 1200) of load rate. This intrinsic redundancy reinforces inherent reliability and eliminates all single points of failure associated with traditional UPS to maximize the Mean Time Between Critical Failure.



The above schematic shows an example of Delphys XL with separated inputs (Rectifier / Bypass).

3.4. Footprint

Delivering far greater benefits than standard monolithic systems, DELPHYS XL packs 1000/1200 kW into an overall space-saving design which can be integrated into your existing architecture simply and flexibly.



DIMENSIONS (INSTALLATION)

			Unit	Hub cabinet	Bricks cabinet	Brick
Width [W]	Delphys XL 1000	(mm)	2625	1405	1220	378
	Delphys XL 1200		3003	1405	1605	
Depth [D] ⁽¹⁾	Delphys XL 1000	(mm)	1000	1000	1000	949
	Delphys XL 1200		1000	1000	1000	
Height [H]	Delphys XL 1000	(mm)	2005	2005	2005	1731
	Delphys XL 1200		2005	2005	2005	
Weight	Delphys XL 1000	(kg)	2600	767 + 1 x 363	366 + 3 x 363	363
	Delphys XL 1200		3200	937 + 1 x 363	448 + 4 x 363	
Single unit clearances			No rear or lateral clearance, Top = 400 mm			
Access for maintenance and operation			Front only (≥ 1200 mm free space for brick extraction)			
Installation			Back to back installation / Against a wall			

(1) Depth not including door handles (+30 mm).

4. STANDARD AND OPTIONAL EQUIPMENT

4.1. FLEXIBLE UPS UNIT ARCHITECTURE

- Common or Separated rectifier and bypass mains
- Top and Bottom cable entry or Bus bar flanges
- Up to 10 strings DC connection capability without extra coupling cabinet
- Compatible with different energy storage technologies (e.g. VLRA, Li-Ion, Ni-Cd...)

4.2. Standard features

- Intrinsic redundancy with selective fault disconnection
- Redundant cooling
- Full system heat run tests
- External breakers position management
- Energy Saver mode
- Backfeed protection: detection circuit
- Battery temperature sensor
- Rails for power brick extraction
- Trolley for power brick cold swap

4.3. Electrical options

- Input, output and maintenance bypass switches
- PEN kit for TN-C grounding system
- Reinforced battery charger
- battery protection tripping kit
- Smart conversion Mode
- BCR (Battery Capacity Re-injection)
- ACS synchronization system
- Cold start
- Maintenance Station with spare Power conversion brick
- Advanced GenSet management

4.4. Standard communication features

- User-friendly 7' touch-screen with multilingual color graphic display (Hub cabinet).
- 4 Com-Slots for communication options.
- USB port to download UPS report and log file.
- Ethernet port for service purpose.

4.5. Communication options

- Dry-contact interface (configurable voltage-free contacts).
- MODBUS RTU RS485 or TCP
- NET VISION: professional WEB/SNMP Ethernet interface for secure UPS monitoring and remote automatic shutdown.
- NET VISION EMD: Environment Temperature and Humidity sensor with 2 inputs
- Remote View Pro supervision software.
- IoT Gateway for Socomec cloud services and SoLive mobile app.
- Remote touch-screen panel.

4.6. REMOTE MONITORING AND CLOUD SERVICES*

- SoLive: Real-time cloud monitoring app to supervise any Socomec UPS via smartphone
- SoLink: 24/7 cloud remote surveillance service by manufacturer specialists for any Socomec UPS
- Remote operations: on-demand remote connection by Socomec experts to perform diagnosis and troubleshooting directly on UPS

* Please check the service availability in your Country.

5. SPECIFICATIONS

5.1. Installation parameters

SYSTEM INSTALLATION			
	Unit	Rated power (kVA)	
		1000	1200
Active power	(kW)	1000	1200
Rated rectifier input current @ 400V	(A)	1510	1812
Maximum rectifier input current	(A)	1560	1950
Rated bypass input current @ 400V	(A)	1443	1732
Rated output current @ 400 V	(A)	1443	1732
Maximum air flow	(m ³ /h)	8000	10000
Power dissipation in nominal conditions ⁽¹⁾	(kW)	46	55
	(kcal/h) x1000	39.6	47
	BTU/h x1000	157	188
Power dissipation (max) under the worst conditions ⁽²⁾	(kW)	50.5	62.5
	(kcal/h) x1000	43.4	53.7
	BTU/h x1000	172	213

5.2. Electrical characteristics

ELECTRICAL CHARACTERISTICS - RECTIFIER INPUT ⁽³⁾		
Rated mains supply voltage	380/400/415 V 3ph	
Voltage tolerance	200 V to 480 V ⁽⁴⁾	
Rated frequency	50/60 Hz	
Frequency tolerance	45 to 65 Hz	
Power factor	> 0.99 ⁽⁵⁾	
Total harmonic distortion (THDi)	< 2.5% ⁽⁵⁾	
Max inrush current at start-up	< I _n (no overcurrent)	
Genset compatibility	Soft start (Power walk-in)	Configurable from 5A/sec to immediate (no ramp)
	Advanced Genset Management	Smart power sharing between GenSet/battery upon load steps

ELECTRICAL CHARACTERISTICS - BATTERY		1000	1200
Battery Type	VRLA – Lithium Ion - Ni-Cd		
Number of poles	2 wires (+/-)		
Lithium Ion communication with UPS	Basic (dry contact) / Smart (Modbus)		
Number of VRLA battery cells with load PF=1 ⁽⁶⁾	258 to 300	252 to 300	
Number of VRLA battery cells with load PF ≤ 0.9	246 to 300	228 to 300	
Voltage range for LIB batteries	Up to 705V		
Battery AC ripple current	< 3% Nominal Capacity (at C10 discharge)		
Battery AC ripple voltage	< 1% on the battery block		
Maximum recharge current	standard	160 A	200 A
	optional	480 A	600 A

(1) Nominal input current and rated output active power (PF1).

(2) Dissipation that may be generated temporarily, considering: Low input voltage, battery recharge and rated output active power (PF1).

(3) IGBT rectifier.

(4) Conditions apply.

(5) At full load and rated input voltage (THDV < 1%).

(6) Batteries configurations should be selected according to the back up time and the UPS ambient temperature - please consult us for validation

ELECTRICAL CHARACTERISTICS - STATIC BYPASS		1000	1200
Bypass rated voltage		380/400/415 V 3ph	
Bypass voltage tolerance		±15% (adjustable)	
Bypass rated frequency		50/60 Hz (selectable)	
Bypass frequency tolerance		±2% (from ±1% to ±5% (operation with generator unit))	
Bypass frequency variation speed follow up		1 Hz/s adjustable from 1 to 3 Hz/s	
Semiconductors characteristics	I ² t (A ² s)	Up to 5,615,000	Up to 10,400,000
	Is/c (A peak)	Up to 33,500	Up to 45,500
Overload tolerated on the bypass	Permanent	110% of the rated apparent power	
	10 min	125% of the rated apparent power	
	1 min	150% of the rated apparent power	
Short-circuit withstanding (I _{cw})	kA	65 / 100 (optional)	

ELECTRICAL CHARACTERISTICS - INVERTER		1000	1200
Rated output voltage (selectable)		380/400/415 V 3ph	
Output voltage tolerance		static load <1%, dynamic load VFI-SS-111 compliant	
Rated output frequency		50/60 Hz (selectable)	
Autonomous frequency tolerance		±0.01 Hz on mains power failure	
Harmonic voltage distortion		ThdU ≤ 1 % with rated linear load	
Overload tolerated by the inverter ⁽¹⁾	1 h	1100 kW	1320 kW
	10 min	1250 kW	1500 kW
	1 min	1440 kW	1800 kW

ENVIRONMENT CHARACTERISTICS	
UPS Storage conditions	-20 to +70 °C under ≤70% condensation free RH
UPS Start-up and working conditions	0 to +50 °C under ≤95% condensation free RH
Air inlet	Front
Air outlet	Top
Efficiency in double conversion (VFI)	up to 97%
Efficiency in Smart conversion mode	up to 99%
Acoustic noise	< 83 dBA
Maximum altitude without derating	1000 m (3,300 ft)
Degree of protection	IP 20 (IP30 top grids)
Color	RAL 7016

(1) The tolerated output overload corresponds to the inverter capability under defined conditions. The output overload performance is incremented by the static bypass capability (when available).

5.3. Recommended protection devices

5.3.1. Inputs protections for single unit configuration

RECOMMENDED PROTECTION DEVICES	1000	1200
Unit Rated power (kVA)	1000	1200
Rectifier input ⁽⁸⁾ (A)	1600	2000
Bypass input main ⁽⁸⁾ (A)	1600	2000

5.3.2. Output protections

RECOMMENDED PROTECTION DEVICES – OUTPUT ⁽⁹⁾		1000	1200
Unit Rated power (kVA)		1000	1200
Inverter short-circuit current ⁽¹⁰⁾ (A) (when AUX MAINS is not present)	0 to 20 ms	3230	4100
	20 to 100 ms	2390	3250
Output protection rating (A)		≤ 160	≤ 250

5.3.3. Connecting cables

CABLES CONNECTION – HUB CABINET ⁽¹¹⁾			
	Maximum number of cables according to size (Others on demand)		
Rectifier terminals 3PH ⁽¹²⁾	6 x 240 mm ² per pole	5 x 300 mm ² per pole	4 x 400 mm ² per pole
Bypass terminals 3PH+N ⁽¹³⁾	6 x 240 mm ² per pole	5 x 300 mm ² per pole	4 x 400 mm ² per pole
Output terminals 3PH+N ⁽¹³⁾	6 x 240 mm ² per pole	5 x 300 mm ² per pole	4 x 400 mm ² per pole
Battery terminals	up to 10 x 240mm ² per pole (+/-)		

(1) Applicable by respecting the installation rules regarding cable lengths. The bypass protection is given as a recommendation (trip curves setting and distribution sizing shall be defined according to the rated load current and the UPS overload capability).

(2) Selectivity of distribution after the UPS with inverter short-circuit current (short-circuit with AUX MAINS not present). This must be selective with residual current circuit breakers connected downstream of the UPS.

(3) Average Peak Current.

(4) Based on 90° H07 RNF or R2V cable type; for other please consult us.

(5) Neutral is not required at the rectifier input. If distributed, however, consult us to ensure it is allowed by installation standards.

(6) On demand, the Unit can supply a 3 wires distribution (without input and output neutral).

6. REFERENCE STANDARDS AND DIRECTIVES

6.1. Overview

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

LVD 2014 / 35 / EU

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

EMC 2014 / 30 / EU

DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014, on the harmonization 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

6.2. Standards

6.2.1. 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

6.2.2. 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

6.2.3. Test and performance

EN 62040-3 Uninterruptible Power System (UPS) - Part 3: Method of specifying the performance and test requirements

6.2.4. Environmental

IEC 62040-4 Uninterruptible Power System (UPS) - Part 4: Environmental aspects - Requirements and reporting

6.3. 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.



ELITE UPS: a mark of efficiency

Socomec, as CEMEP UPS manufacturer member, has signed a Code of Conduct put forward by the Joint Research Centre of the European Commission (JRC), to ensure the protection of critical applications and processes ensuring 24/7 continuous high quality supply. The JRC commits to mitigating energy losses and gas emissions caused by UPS equipment, therefore maximising UPS efficiency.