PRIME

Trustworthy power

EMergency CPSS

2 to 200 kVA

socomec

Innovative Power Solutions

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.

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 drawn at full load.

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

We recommend fitting two metres 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.

1. ARCHITECTURE

1.1 RANGE

The EMergency CPSS range has been designed to protect the power supply of safety systems.
All our EMergency products are compliant with standard EN 50171:2001.

The EMergency CPSS products are designed to power emergency escape lighting in the event of normal supply failure. Depending on the local legislation, it may be suitable for powering other essential safety equipment, for example:

- electric circuits of automatic fire extinguishing installations;
- paging systems and signalling safety installations;
- smoke extraction equipment;
- carbon monoxide warning systems;
- special safety installations related to specific buildings, e.g. high-risk areas.

CPSS Emergency EM from 2 to 200 kVA

- Designed and manufactured in compliance with standard EN 50171:2001.
- Ensures the power supply to emergency lighting, safety signalling lighting and anti-panic systems.

Models[1][2]													
Rated power (kVA)		2	6	10	15	20	25	30	40	80	120	160	200
EM+	ITYS 1/1	•	•	-	-	-	-	-	-	-	-	-	-
	MASTERYS 3/1	-	-	•	•	-	-	-	-	-	-	-	-
	MASTERYS 3/3	-	-	•	•	•	•	•	•	•	•	-	-
	DELPHYS 3/3	-	-	-	-	-	-	-	-	-	-	•	•

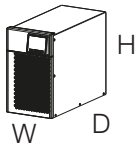
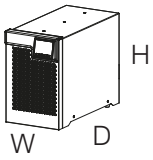
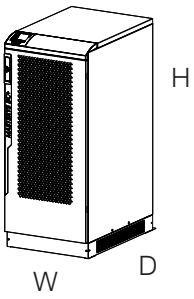
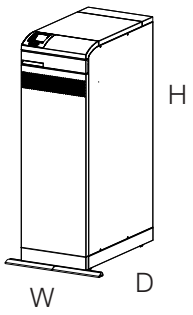
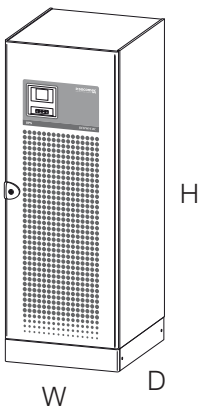
Matrix table for model and kVA power rating.

(1) Check the product availability for your country. (2) Products can be adapted to application and site specifications.

Each range 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.

2. FLEXIBILITY

2.1 POWER RATINGS FROM 2 TO 200 KVA

Dimensions				
Cabinet type		Width (W) [mm]	Depth (D) [mm]	Height (H) [mm]
	ITYS EM+ *2* kVA	192	428	322
	ITYS EM+ *6* kVA	225	416	354
	MASTERYS EM+ *10* to *40* kVA	444	800	1400
	MASTERYS EM+ *80* to *120* kVA	600	855	1400
	DELPHYS EM *160* / *200* kVA	700	800	1930

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 in the upper front section and can be accessed from the metal door.

The air inlet is at the front, with outflow from the top/rear only; this means other equipment or external battery enclosures can be placed alongside the UPS unit.

3. STANDARD AND OPTIONS

3.1 EMERGENCY CPSS EM FROM 2 TO 200 KVA

The wide range is suitable for all standard requirements.
For non-standard requests, our team of experts is available to adapt products to your needs.

Features

- IP20 metal enclosure compliant with EN 60598-1.
- Battery charging: 80% in 12 h.
- Battery protection against damage due to polarity inversion.
- Battery protection against considerable discharge.
- Battery with 10-year life expectancy(1).
- Designed to withstand 120% of the nominal charge during the entire back-up period.
- Specific remote contacts and notifications.

Options

- Connection to downstream IT system.
- Eco mode to reach up to 98% efficiency.
- Other types of battery available.

(1) not for ITYS EM+ 2 kVA (LPS system).

4. SPECIFICATIONS

4.1 ITYS EM+

4.1.1 INSTALLATION PARAMETERS

Installation parameters			
Sn - rated power (kVA)		2	6
Pn - active power (kW)		2	6
Pn according to EN 50171:2001 (kW)		1.5	5
Max withstand power according to EN 50171:2001 (kW)		2	6
Phase in/out		1/1	
Rated/maximum rectifier input current (EN 62040-3) (A)		9/16	28/42
Inverter output current @ 230 V (A) P/N		8.7	26
Maximum air flow (m^3/h)		192	230
Sound level (dBA)		< 50	
Dissipation at rated load (minimum mains power present and battery charging)	W	135	326
	kcal/h	116	280
	BTU/h	461	1112
Dimensions (W x D x H) (mm)		192 x 428 x 322	225 x 416 x 354
Maximum weight (kg)		11	13.5

4.1.2 ELECTRICAL CHARACTERISTICS

Installation parameters		
Rated power (kVA)	2	6
Phase in/out	1/1	
Rated mains supply voltage	230 V (1ph+N)	
Voltage tolerance (ensuring battery recharge)	160 V to 300 V	160 V to 276 V
	(up to 110 V with load linear decrease from 100% Pn to 50% Pn)	
Rated frequency	50/60 Hz (selectable)	
Frequency tolerance	±2%	
Power factor (input at full load and rated voltage)	≥ 0.995	
Total harmonic distortion (THDi)	< 5%	< 3%
Max inrush current at start-up	< 8 x In	

Electrical characteristics - Bypass		
Rated power (kVA)	2	6
Bypass frequency variation speed	1 Hz/s - 3 Hz/s	
Bypass rated voltage	187-264 V	
Bypass rated frequency (selectable)	50/60 Hz (selectable)	
Bypass frequency tolerance	±10% (configurable from 1% to 10%)	

Electrical characteristics - Inverter		
Rated power (kVA)	2	6
Rated output voltage (selectable)	220/230/240 V	
Output voltage tolerance	Static: ±1%	
Rated output frequency (selectable)	50/60 Hz (selectable)	
Output frequency tolerance	±0.1% (on mains power failure)	
Load crest factor	< 3:1	
Total voltage distortion	< 1% on linear load	
Overload tolerated by the inverter	110% x 5 min, 130% x 5 sec	

Electrical characteristics - Efficiency		
Rated power (kVA)	2	6
Double conversion efficiency (normal mode - @ full load)	up to 93%	up to 95%
Efficiency in Eco Mode	up to 97%	up to 98%

Electrical characteristics - Environment		
Rated power (kVA)	2	6
Storage temperatures	-5 to +50 °C (23 to 122 °F) (15 to 25 °C for better battery life)	
Working temperature	0 to +40 °C (32 to 104 °F) (15 to 25 °C for better battery life)	
Maximum relative humidity (non-condensing)	95%	
Maximum altitude without derating	1000 m (3300 ft)	
Degree of protection	IP20	
Portability	ISTA 1H P-164000664	
Colour	RAL 7016 textured	

4.1.3 RECOMMENDED PROTECTION

RECOMMENDED PROTECTION - Rectifier		
Rated power (kVA)	2	6
Circuit breaker (A)	20 C curve	63 D curve

RECOMMENDED PROTECTION - Input residual current circuit breaker		
Rated power (kVA)	2	6
Input residual current circuit breaker	0.03 A Selective Type A	

RECOMMENDED PROTECTION - Output		
Rated power (kVA)	2	6
B curve circuit breaker (A)	4	6

CABLES - Maximum cable section		
Rated power (kVA)	2	6
Rectifier terminals	IEC 320-C20	16 mm^2
Bypass terminals	-	
Battery terminals	Connector	
Output terminals	8x IEC 320-C13	

4.2 MASTERYS EM+

4.2.1 INSTALLATION PARAMETERS

Installation parameters											
Sn - rated power (kVA)		10	15	10	15	20	25	30	40	80	120
Pn - active power (kW)		10	15	10	15	20	25	27	36	72	108
Pn according to EN50171:2001 (kW)		10	15	10	15	20	25	27	36	72	108
Max withstand power (kW) according to EN 50171:2001		12	18	12	18	24	30	32.4	43.2	86.4	129.6
Phase in/out		3/1		3/3							
Rated/maximum rectifier input current (EN 62040-3) (A)		15/28	23/37	15/28	23/37	31/45	39/55	42/55	56/73	111/146	166/219
Rated bypass input current (A)		48	72	16	24	32	40	48	64	128	191
Inverter output current @ 230 V (A) P/N		43	65	14	22	29	37	43	58	115	174
Maximum air flow	m^3/h	240							360	720	1080
Sound level @70% Pn	dBA	≤ 43							≤ 49	≤ 53	≤ 55
Power dissipation in nominal conditions	W	440	665	440	665	905	1135	1270	1776	3550	5325
	kcal/h	378	572	378	572	778	976	1092	1526	3052	4579
	BTU/h	1501	2269	1501	2269	3088	3875	4335	6060	12120	18180
Power dissipation (max) in the worst conditions	W	490	750	490	750	1050	1315	1420	1930	3860	5790
	kcal/h	421	645	421	645	903	1130	1221	1660	3319	4979
	BTU/h	1672	2559	1672	2559	3582	4490	4848	6950	13179	19768
Dimensions (W x D x H)	mm	444 x 800 x 1400								600 x 855 x 1400	
Single unit clearances Opertional	mm	Rear ≥ 200									
Single unit clearances Maintenance	mm	Front ≥1500 top ≥ 800									
Weight (without battery)	kg	89							95	186	240
Weight with internal battery (2/3/4/5 shelf)	kg	333 / 430 / 527 / 624					-				

4.2.2 ELECTRICAL CHARACTERISTICS

Electrical characteristics - Input										
Rated power (kVA)	10	15	10	15	20	25	30	40	80	120
Phase in/out	3/1		3/3							
Rated mains supply voltage	400 V (3ph + N)									
Voltage tolerance (ensuring battery recharge)	-15% +20% (output load at power factor 1) -20%+20% (output load at power factor 0.9) (up to -40% @70% of nominal active load (linear decrease)									
Rated frequency	50/60 Hz (selectable)									
Frequency tolerance	45 ÷ 66 Hz									
Power factor (input at full load and rated voltage)	≥ 0.99									
Total harmonic distortion (THDi)	< 3%	< 2.5%	< 3%	< 2.5%		< 2%				
Max inrush current at start-up	< In (no overcurrent)									
Power walk-in (from battery to normal mode	4 seconds (settable parameters)									

Electrical characteristics - Bypass											
Rated power (kVA)		10	15	10	15	20	25	30	40	80	120
Phase in/out		3/1		3/3							
Bypass frequency variation speed		1 Hz/s - 3 Hz/s									
Bypass rated voltage		Nominal output voltage ±15%									
Bypass rated frequency (selectable)		50/60 Hz (selectable)									
Bypass frequency tolerance		±2% (from ±1% to ±8% (operation with generator unit))									

Electrical characteristics - Inverter											
Rated power (kVA)		10	15	10	15	20	25	30	40	80	120
Phase in/out		3/1		3/3							
Rated output voltage (selectable)		220/230/240 V									
Output voltage tolerance		Static: ±1% Dynamic: VFI-SS-111 (EN62040-3) compliant									
Rated output frequency (selectable)		50/60 Hz (selectable)									
Output frequency tolerance		±0.01% (on mains power failure)									
Load crest factor		≥ 2.7									
Voltage harmonic distortion		< 1% on linear load									
Overload tolerated by the inverter kW	10 min	12.5	18.7	12.5	18.7	25	31.2	33.7	45	90	135
	1 min	15	22.5	15	22.5	30	37.5	40.5	54	108	162

Electrical characteristics - Efficiency										
Rated power (kVA)	10	15	10	15	20	25	30	40	80	120
Phase in/out	3/1		3/3							
Double conversion efficiency @ full load (normal mode)	up to 96.2 %									
Efficiency in Eco Mode	≤ 99.4%									

Electrical characteristics - Environment										
Rated power (kVA)	10	15	10	15	20	25	30	40	80	120
Phase in/out	3/1		3/3							
Storage temperatures	-5 to +50 °C (23 to 113 °F) (15 to 25 °C for better battery life)									
Working temperature	0 to +40 °C(1) (32 to 104 °F) (15 to 25 °C for better battery life) Max +50°C (122°F) @ 70% Sn						0 to +35 °C(1) (32 to 95 °F) (15 to 25 °C for better battery life) Max +45°C (113°F) @ 70% Sn			
Maximum relative humidity (non-condensing)	95%									
Maximum altitude without derating	1000 m (3300 ft)									
Degree of protection	IP20 (IP21 optional)									
Colour	RAL 7016									

Electrical characteristics - Battery										
Rated power (kVA)	10	15	10	15	20	25	30	40	80	120
Phase in/out	3/1		3/3							
Maximum recharge current/with optional extra charger (A)	5/10					10			20	32

(1) Conditions apply.

4.2.3 RECOMMENDED PROTECTION

RECOMMENDED PROTECTION DEVICES - Rectifier[1]										
Rated power (kVA)	10	15	10	15	20	25	30	40	80	120
Phase in/out	3/1		3/3							
C curve circuit breaker (A)	32	40	32	40	63	63	63	80	160	250
gG fuse (A)	32	40	32	40	63	63	63	80	160	250

RECOMMENDED PROTECTION DEVICES - General bypass[1]										
Rated power (kVA)	10	15	10	15	20	25	30	40	80	120
Phase in/out	3/1		3/3							
Maximum I^2t supported by the bypass (kA^2s)	16		8			15			120	400
Max Ipk supported by the bypass (kA)	2.4		1.2			1.7			5	9
C curve circuit breaker (A)	63	100	25	32	40	63	63	80	200	250
gG fuse (A)	63	100	25	32	40	63	63	80	200	250

RECOMMENDED PROTECTION DEVICES - Input residual current circuit breaker[2]										
Rated power (kVA)	10	15	10	15	20	25	30	40	80	120
Phase in/out	3/1		3/3							
Input residual current circuit breaker	> 0.5 A Selective type B									

RECOMMENDED PROTECTION DEVICES - Output[3]											
Rated power (kVA)		10	15	10	15	20	25	30	40	80	120
Phase in/out		3/1		3/3							
Short-circuit inverter current (A) (when AUX MAINS is not present)	0 to 40 ms	120	177	40	59	79	98	106	141	282	423
	40 to 100 ms	99	147	33	49	66	82	88	117	236	351
C curve circuit breaker[3] (A)		8	13	3	4	6	6	8	10	20	32
B curve circuit breaker[3] (A)		16	25	6	8	10	13	16	20	40	63

CABLES - Maximum cable section										
Rated power (kVA)	10	15	10	15	20	25	30	40	80	120
Phase in/out	3/1		3/3							
Rectifier terminals	25					50			70	2x120
Bypass terminals	50					50			70	2x120
Battery terminals	25					50			70	2x120
Output terminals	50		25			50			70	2x120

(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 the two (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 arrangements, 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 of a parallel UPS system, with "n" equal to the number of parallel modules.

4.3 DELPHYS EM

4.3.1 INSTALLATION PARAMETERS

Installation parameters				
Rated power (kVA)			160	200
Phase in/out			3/3	
Active power (kW)			144	180
Pn according to EN 50171			120	150
Rated/maximum rectifier input current (A)			220/290	278/340
Rated bypass input current (A)			232	290
Inverter output current @ 400 V (A) P/N			232	290
Maximum air flow (m^3/h)			2250	
Sound level (dBA)			< 68	
Power dissipation in nominal conditions[1]		W	9200	11500
		kcal/h	7911	9888
		BTU/h	31391	39239
Power dissipation (max) in the worst conditions[2]		W	10600	13300
		kcal/h	9114	11436
		BTU/h	36168	45380
Dimensions	Width	mm	700	
	Depth	mm	800	
	Height	mm	1930	
Weight		kg	480	500

(1) Considering nominal input current (400 V, battery charged) and rated output active power (PF 0.9).

(2) Considering maximum input current (low input voltage, battery recharge) and rated output active power (PF 0.9).

4.3.2 ELECTRICAL CHARACTERISTICS

Electrical characteristics - Rectifier[1] Input		
Rated power (kVA)	160	200
Rated mains supply voltage	400 V 3ph	
Voltage tolerance	240 to 480 V[2]	
Rated frequency	50/60 Hz (selectable)	
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	<In (no overcurrent)	

(1) IGBT rectifier. (2) Conditions apply.

Electrical characteristics - Bypass		
Rated power (kVA)	160	200
Bypass frequency variation speed	1.5 Hz/s (settable up to 3 Hz/s)	
Bypass rated voltage	Nominal output voltage ±15%	
Bypass rated frequency	50/60 Hz (selectable)	
Bypass frequency tolerance	from ±1% to ±8% (operation with generator unit)	

Electrical characteristics - Inverter			
Rated power (kVA)		160	200
Rated output voltage (selectable)		380/400/415 V	
Output voltage tolerance		Static: ±1% Dynamic: VFI-SS-111 compliant	
Rated output frequency (selectable)		50/60 Hz (selectable)	
Output frequency tolerance		±0.01% on mains power failure	
Load crest factor		3:1	
Voltage harmonic distortion		< 1.5% with linear load	
Overload tolerated by the inverter - 25 °C	1 min	225 kW	270 kW
	10 min	180 kW	225 kW

Electrical characteristics - Efficiency		
Rated power (kVA)	160	200
Double conversion efficiency (normal mode) - full load	up to 94%	

Electrical characteristics - Environment		
Rated power (kVA)	160	200
Storage temperatures	-5 to +45 °C (23 to 113 °F) (15 to 25 °C for better battery life)	
Working temperature	0 to +40(1) °C (32 to 104 °F) (15 to 25 °C for better battery life)	
Maximum relative humidity (non-condensing)	95%	
Maximum altitude without derating	1000 m (3300 ft)	
Degree of protection	IP20	
Colour	RAL 7012, silver grey frontal door	

(1) Conditions apply.

4.3.3 RECOMMENDED PROTECTION

RECOMMENDED PROTECTION DEVICES - Rectifier[1]		
Rated power (kVA)	160	200
D curve circuit breaker (A)	315	400
gG fuse (A)	315	400

RECOMMENDED PROTECTION DEVICES - General bypass[1]			
Rated power (kVA)		160	200
Semiconductor characteristics	I^2t (A^2s)	320000	
	Is/c (A peak)	8000	
D curve circuit breaker (A)		400	
gG fuse (A)		400	

RECOMMENDED PROTECTION DEVICES - Input residual current circuit breaker[2]		
Rated power (kVA)	160	200
Input residual current circuit breaker	3 A	

RECOMMENDED PROTECTION DEVICES - Output[3]		
Rated power (kVA)	160	200
Short-circuit inverter current (A) - (0 to 100 ms) (when AUX MAINS is not present)	720 A	
C curve circuit breaker[3] (A)	≤ 63 A	
B curve circuit breaker[3] (A)	≤ 125 A	
High-speed fuse[3] (A)	≤ 160 A	

CABLE CONNECTION - Maximum capability per pole		
Rated power (kVA)	160	200
Rectifier terminals	2 x 150 mm^2	
Bypass terminals	2 x 150 mm^2	
Battery terminals	2 x 240 mm^2	
Output terminals	2 x 150 mm^2	

(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 the two (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 arrangements, 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 of a parallel UPS system, with "n" equal to the number of parallel modules.

5. REFERENCE STANDARDS AND DIRECTIVES

5.1 OVERVIEW

The construction of the equipment and choice of materials and components comply with all laws, decrees, directives and standards currently in force.

In particular, the equipment is fully compliant with all European Directives concerning CE marking.

LVD 2014/35/EU

Directive of the European Parliament and council of 26 February 2014 on the harmonisation of the laws of Member States on making electrical equipment designed for use within certain voltage limits available on the market.

EMC 2014/30/EU

Directive of the European Parliament and council of 26 February 2014 on the harmonisation of the laws of Member States on electromagnetic compatibility.

RoHS 2011/65/EU

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

5.2 STANDARDS

5.2.1 CPSS

EN 50171:2001 General requirements for central power supply systems for an independent energy supply to essential safety equipment

5.2.2 SAFETY

EN 62040-1 Uninterruptible Power System (UPS) - Part 1: General and safety requirements (certified by TÜV SÜD)

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

5.2.3 ELECTROMAGNETIC COMPATIBILITY

EN 62040-2 Uninterruptible Power System (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements (C3 category) (tested and verified by third party)

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

EN 60529 Degrees of protection provided by enclosures

5.3 SYSTEM AND INSTALLATION GUIDELINES

When carrying out electrical installation, all of 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 the 'Technical specifications' chapter in the user manual.

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.