TECHNICAL GUIDE

EN

MODULYS XS

2.5 to 20 kVA

ULTIMATE

Fault tolerant power
without compromise

RoHS COMPLIANT

1 000 000 HOURS MTBF

kW = kVA

PF 1 @ VFI-S-111

Socomec Resource Center
To download, brochures, catalogues
and technical manuals

socomec
Innovative Power Solutions

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 distribution panel which can isolate the network upstream of the UPS must be installed. This electrical distribution panel must be equipped with a protection device (or two, if there is a separate bypass line) of an appropriate rating for the power drawn at full load.

For detailed information, see the installation and operating manual.

3. ARCHITECTURE

3.1. Range

MODULYS XS is a full range of high performing UPS system designed to:

- ensure 24/7/365 availability and business continuity for mission critical applications
- avoid data losses and downtime of company operations,
- reduce the electrical infrastructure's total cost of ownership,
- adopt a sustainable development approach.

MODULYS XS								
Module power	2.5 (kVA/kW)				5.0 (kVA/kW)			
Phase in / phase out	1/1				1/1 and 3/1			
Number of power modules	1	2	3	4	1	2	3	4
System Rated power (kVA/kW)	2.5	5	7.5	10	5	10	15	20
MC6	•	•	•	•	•	•	•	•
MC9	•	•	•	•	•	•	•	•
RM3	•	•	•		•	•	•	
RM4	•	•	•	•	•	•	•	•
TC3	•	•	•		•	•	•	

Matrix table for model and kVA power rating

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

4. FLEXIBILITY

4.1. Power ratings from 2.5 to 20 kVA/kW

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 detailed design also provides easy access for maintenance and installation.

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

MODULYS XS MC					
	Dimensions	Width [mm]	Depth [mm]	Height [mm]	weight (kg)
MC6		550	635	1060	90
MC9		550	635	1460	120
MODULYS XS RM					
RM3		449 (19")	570	575	44
RM4		449 (19")	570	708	50
MODULYS XS TC3					
TC3		600	600	1400	140

Additional module

MODULYS XS POWER MODULE					
	Dimensions	Width [mm]	Depth [mm]	Height [mm]	weight (kg)
2.5 kW Power Module		446	475	131	14
5 kW Module		446	475	131	18
MODULYS XS BATTERY MODULE					
Battery Module		446	475	131	10
Battery Pack long life		100	330	115	9
Battery Pack normal life		100	330	115	9
Battery for TC3 100 Ah		Mounted inside the TC3 cabinet			145

4.2. Flexible back-up time

Different extended back-up times are possible by using battery modules with a enhanced battery charger.
Selection of the back-up time is flexible thanks to the wide range of battery packs.

4.2.1. MODULYS XS (MC systems)

Back up time in minutes @ typical load

System power (kVA/kW)		2.5	5	7.5	10		5	10	15	20
Module Rated power		2.5 (kVA/kW)					5 (kVA/kW)			
Battery pack number	2	8	Consult us			MC-6/MC-9	Consult us			
	3	14								
	4	21	8				8			
	5	27	11				12			
	6	35	14	8			14			
	7	42	17	10			17			
	8	49	21	12	8		21	8		
	9	57	24	14	10		24	10		
	10	65	27	16	11		28	12		
	11	73	31	18	13		31	13		
	12	81	35	21	14		35	14	8	
	13	90	38	23	16		38	16	9	
	14	98	42	25	17		42	17	10	
	15	105	46	27	19		46	19	12	
	16	114	49	30	21		49	21	12	8
	17	123	52	32	23	MC-9	53	23	13	9
	18	132	57	35	24		57	24	14	10
	19	140	61	37	25		61	26	16	11
	20	148	65	39	27		66	28	17	12
	21	157	69	42	29		69	29	17	
	22	167	73	44	31		73	31	19	
	23	176	76	47	33		77	33	20	
	24	185	81	49	35		81	35	21	
	25	194	86	51	36		86	36		
	26	202	90	54	38		90	38		
	27	209	94	57	40		94	40		
	28	220	98	60	42		98	42		
	29	229	101	63			102	Consult us		
	30	238	105	65			105			
	31	248	109				109			
	32	256	114				114			
	33	264	Consult us							
	34	272								

Typical load = 70% Pn

socomec Innovative Power Solutions

4.2.2. MODULYS XS (RM systems)

Back up time in minutes @ typical load

System power (kVA/kW)		2.5	5	7.5	10		5	10	15	20
Module Rated power		2.5 (kVA/kW)					5 (kVA/kW)			
Battery pack number	2	8	Consult us			RM-3/RM-4		Consult us		
	3	14								
	4	21	8				8			
	5	27	11				12			
	6	35	14	8			14			
	7	42	17	10			17			
	8	49	21	12	8		21	8		
	9	57	24	14	Consult us	RM-4	24	Consult us		
	10	65	27	16			28			
	11	73	31	Consult us			31			
	12	81	35				35			
	13	90	Consult us				Consult us			
	14	98								

Typical load = 70% Pn

4.2.3. MODULYS XS (TC System)

Back up time in minutes @ typical load

System power (kVA/kW)		2.5	5	7.5		5	10	15
Module Rated power		2.5 (kVA/kW)				5 (kVA/kW)		
Battery Capacity	100 Ah	118	50	28		50	19	10
	200 Ah	271	118	72		118	50	28

Typical load = 70% Pn

5. STANDARD FEATURES AND OPTIONS

AVAILABILITY	
O	Available as option (installation on site)
STD	Standard feature

	MC	RM	TC	Notes
Communication Option				
ADC+SL card (Advanced Dry Contact + Serial Link)	O	O	O	
External temperature sensor	O	O	O	⚠ ❗ ADC+SL card
Remote touchscreen display	O	O	O	⚠ ❗ ADC+SL card
Modbus TCP interface card	O	O	O	
Net Vision card (professional WEB/SNMP interface for UPS monitoring)	O	O	O	
EMD (Environmental Monitoring Device: temperature, humidity, 2 dry contacts)	O	O	O	⚠ ❗ Net Vision card
Electrical Option				
Dual Input	STD	STD	STD	
Tropicalization	STD	STD	STD	
External maintenance bypass	O	O	O	

❗ Required option

6. SPECIFICATIONS MC6 / MC9

6.1. Installation parameters

INSTALLATION PARAMENTERS										
System Rated power (kVA/kW)			2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)			2.5				5			
Number of Modules			1	2	3	4	1	2	3	4
Phase in/out			1/1				1/1 or 3/1			
Active power		kW	2.5	5	7.5	10	5	10	15	20
Rated/maximum rectifier input current (EN 62040-3)		A	12/15	24/30	36/44	47/59	24/30	47/59	71/87	95/118
Rated bypass input current (1)		A	11	22	33	44	22	44	65	87
Inverter output current @ 230 V Pn		A	11	22	33	44	22	44	65	87
Recommended air flow capacity		m^3/h	160	320	480	640	240	480	720	960
Acoustic noise @ 70% Pn		dBA	43	46	49	52	45	48	51	54
Power dissipation in nominal conditions (2)		W	220	440	660	880	420	840	1260	1680
		kcal/h	189	378	567	757	361	722	1083	1445
		BTU/h	751	1501	2252	3003	1433	2866	4299	5732
Power dissipation (max) in the worst conditions (3)		W	250	500	750	1000	480	960	1440	1920
		kcal/h	215	430	645	860	413	825	1238	1651
		BTU/h	853	1706	2559	3412	1638	3276	4913	6551
Dimensions MC6/MC9	Width	mm	550							
	Depth	mm	635							
	Height	mm	1060 / 1460							
Single unit Clearances	Operational	mm	Rear 300 lateral 0							
	Maintenance	mm	Front 1000 top 800							
Weight MC6/MC9		kg	90 / 120							

(1) Considering nominal bypass current calculated @ 230 V, considering a continuos overload of 110%.
(2) Considering nominal input current (230 V, battery charged) and rated output active power.
(3) Considering maximum input current (low input voltage, battery charged) and rated output active power.

6.2. Electrical characteristics

ELECTRICAL CHARACTERISTICS - RECTIFIER INPUT										
System Rated power (kVA/kW)			2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)			2.5				5			
Number of Modules			1	2	3	4	1	2	3	4
Rated mains supply voltage		V	230 1ph + N				230 1ph + N 400 3ph + N			
Voltage tolerance		V	184 to 276 (±20%)				184 to 276 (±20%) 320 to 480 (±20%)			
Voltage tolerance at derated load		V	up to 150 @ 70% of nominal load				up to 150 1ph + N up to 260 3ph + N @ 70% of nominal load			
Rated frequency		Hz	50/60							
Frequency tolerance			±10%							
Current Total harmonic distortion (THDi)			≤ 6%				≤ 5.4%			
Power factor (at full load and rated voltage)			≥ 0.98							
Max inrush current at start-up			<In							

ELECTRICAL CHARACTERISTICS - BYPASS									
System Rated power (kVA/kW)		2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)		2.5				5			
Number of Modules		1	2	3	4	1	2	3	4
Bypass frequency variation speed	Hz/s	1 Hz/s							
Bypass rated voltage		Nominal output voltage ±15%							
Bypass rated frequency	Hz	50/60 Hz (selectable)							
Bypass frequency tolerance		±2% (±8% with genset)							
Bypass current overload (A)	5 min	13	25	38	51	25	51	77	100
	1 min	15	30	44	59	30	59	88	117
	20 sec	19	39	59	79	39	79	117	156

ELECTRICAL CHARACTERISTICS -INVERTER									
System Rated power (kVA/kW)		2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)		2.5				5			
Number of Modules		1	2	3	4	1	2	3	4
Rated output voltage	V	208[1]/220/230/240 (selectable)							
Output voltage tolerance		Static: ±3% VFI-SS (EN 62040-3 compliant)							
Rated output frequency	Hz	50/60 Hz (selectable)							
Output frequency tolerance		±0.1% on mains power failure							
Load crest factor		≥ 2.3							
Voltage total harmonic distortion THDV		< 3.5% with linear load							
Inverter overload (kW) in normal mode	5 min	2.75	5.5	8.25	11	5.5	11	16.5	22
	10 sec	3.25	6.5	9.75	13	6.5	13	19.5	26
Short-circuit inverter current (A) (when AUX MAINS is not present)	0 to 60 ms	25	50	75	100	50	100	150	200

ELECTRICAL CHARACTERISTICS - EFFICIENCY		
Double conversion efficiency		up to 92.8%
EcoMode efficiency		99%

ELECTRICAL CHARACTERISTICS - ENVIRONMENT		
Storage temperatures	°C	-5 to +50 (15 to 25 for better battery life)
Working temperature	°C	0 to +40 (15 to 25 for better battery life)
Maximum relative humidity (non-condensing)		95%
Maximum altitude without derating	m (ft)	1000 (3300)
Degree of protection		IP20
Colour		RAL 7016

ELECTRICAL CHARACTERISTICS - BATTERY		
Standard max. recharge current	A	2.4 per Battery Module

(1) Up to 90% Pn

6.3. Recommended protections

RECOMMENDED PROTECTION DEVICES - RECTIFIER (1)									
System Rated power (kVA/kW)		2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)		2.5				5			
Number of Modules		1	2	3	4	1	2	3	4
C curve circuit breaker (1ph/3ph)	A	16	32	50	63	32/13	63/26	100/32	125/50
gG fuse (1ph/3ph)	A	16	32	50	63	32/12	63/25	100/32	125/50

RECOMMENDED PROTECTION DEVICES - GENERAL BYPASS (2)									
System Rated power (kVA/kW)		2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)		2.5				5			
Number of Modules		1	2	3	4	1	2	3	4
Conditional short circuit current rating (Icc)	kA	10				10			
C curve circuit breaker	A	16	32	40	63	32	63	100	125
gG fuse	A	16	32	40	63	32	63	100	125

RECOMMENDED PROTECTION DEVICES - INPUT RESIDUAL CURRENT CIRCUIT (RCD) BREAKER (3)		
Input residual current circuit breaker	A	0.1 A Selective type B

RECOMMENDED PROTECTION DEVICES - OUTPUT (4)									
C curve circuit breaker (3)	A	2	4	6	8	4	8	13	16
B curve circuit breaker (3)	A	4	8	12	16	8	16	25	32

CABLES - MAXIMUM CABLE SECTION (5)		
Rectifier terminals	mm	50
Bypass terminals	mm	50
Battery terminals (5)	mm	2x 95
Output terminals	mm	50

(1) Rectifier protection should only be considered in the event of separate inputs. Recommended values to avoid unwanted tripping with UPS at full power. 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) Recommended values to avoid unwanted tripping with UPS at full power. 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).
(3) RCD is not necessary when the UPS is installed in a TN-S system. RCD is not permitted on TN-C systems. If an RCD is required a B-type should be used. Must be coordinate with residual current circuit breakers downstream of the UPS connected to the UPS output.
(4) Protection tripping downstream of the UPS with inverter short circuit current (Worst case = AUX MAINS not present). In the Normal case, with AUX MAINS present, fault clearing is determined by the Mains short-circuit capability.
(5) Use cable with tin-plated eyelets for the connection

7. SPECIFICATIONS RM3 / RM4

7.1. Installation parameters

INSTALLATION PARAMENTERS										
RM3 System Rated power (kVA/kW)			2.5	5	7.5		5	10	15	
RM4 System Rated power (kVA/kW)			2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)			2.5				5			
Number of Modules			1	2	3	4	1	2	3	4
Phase in/out			1/1				1/1 or 3/1			
Active power		kW	2.5	5	7.5	10	5	10	15	20
Rated/maximum rectifier input current (EN 62040-3)		A	12/15	24/30	36/44	47/59	24/30	47/59	71/87	95/118
Rated bypass input current (1)		A	11	22	33	44	22	44	65	87
Inverter output current @ 230 V Pn		A	11	22	33	44	22	44	65	87
Recommended air flow capacity		m^3/h	160	320	480	640	240	480	720	960
Acoustic noise @ 70% Pn		dBA	43	46	49	52	45	48	51	54
Power dissipation in nominal conditions (2)		W	220	440	660	880	420	840	1260	1680
		kcal/h	189	378	567	757	361	722	1083	1445
		BTU/h	751	1501	2252	3003	1433	2866	4299	5732
Power dissipation (max) in the worst conditions (3)		W	250	500	750	1000	480	960	1440	1920
		kcal/h	215	430	645	860	413	825	1238	1651
		BTU/h	853	1706	2559	3412	1638	3276	4913	6551
Dimensions RM3/RM4	Width	mm	449							
	Depth	mm	570							
	Height	mm	575 / 708							
Weight		kg	44 / 50							

(1) Considering nominal bypass current calculated @ 230 V, considering a continuos overload of 110%.
(2) Considering nominal input current (230 V, battery charged) and rated output active power.
(3) Considering maximum input current (low input voltage, battery charged) and rated output active power.

7.2. Electrical characteristics

ELECTRICAL CHARACTERISTICS - RECTIFIER INPUT									
RM3 System Rated power (kVA/kW)		2.5	5	7.5		5	10	15	
RM4 System Rated power (kVA/kW)		2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)		2.5				5			
Number of Modules		1	2	3	4	1	2	3	4
Rated mains supply voltage	V	230 1ph + N				230 1ph + N 400 3ph + N			
Voltage tolerance	V	184 to 276 (±20%)				184 to 276 (±20%) 320 to 480 (±20%)			
Voltage tolerance at derated load	V	up to 150 @ 70% of nominal load				up to 150 1ph + N up to 260 3ph + N @ 70% of nominal load			
Rated frequency	Hz	50/60							
Frequency tolerance		±10%							
Current Total harmonic distortion (THDi)		≤ 6%				≤ 5.4%			
Power factor (at full load and rated voltage)		≥ 0.98							
Max inrush current at start-up		<In							

socomec
Innovative Power Solutions

ELECTRICAL CHARACTERISTICS - BYPASS									
RM3 System Rated power (kVA/kW)		2.5	5	7.5		5	10	15	
RM4 System Rated power (kVA/kW)		2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)		2.5				5			
Number of Modules		1	2	3	4	1	2	3	4
Bypass frequency variation speed	Hz/s	1 Hz/s							
Bypass rated voltage		Nominal output voltage ±15%							
Bypass rated frequency	Hz	50/60 Hz (selectable)							
Bypass frequency tolerance		±2% (±8% with genset)							
Bypass current overload (A)	5 min	13	25	38	51	25	51	77	100
	1 min	15	30	44	59	30	59	88	117
	20 sec	19	39	59	79	39	79	117	156

ELECTRICAL CHARACTERISTICS -INVERTER									
RM3 System Rated power (kVA/kW)		2.5	5	7.5		5	10	15	
RM4 System Rated power (kVA/kW)		2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)		2.5				5			
Number of Modules		1	2	3	4	1	2	3	4
Rated output voltage	V	208(1)/220/230/240 (selectable)							
Output voltage tolerance		Static: ±3% VFI-SS (EN 62040-3 compliant)							
Rated output frequency	Hz	50/60 Hz (selectable)							
Output frequency tolerance		±0.1% on mains power failure							
Load crest factor		≥ 2.3							
Voltage total harmonic distortion THDV		< 3.5% with linear load							
Inverter overload (kW)	5 min	2.75	5.5	8.25	11	5.5	11	16.5	22
	10 sec	3.25	6.5	9.75	13	6.5	13	19.5	26
Short-circuit inverter current (A) (when AUX MAINS is not present)	0 to 60 ms	25	50	75	100	50	100	150	200

ELECTRICAL CHARACTERISTICS - EFFICIENCY	
Double conversion efficiency	up to 92.8%
EcoMode efficiency	99%

ELECTRICAL CHARACTERISTICS - ENVIRONMENT		
Storage temperatures	°C	-5 to +50 (15 to 25 for better battery life)
Working temperature	°C	0 to +40 (15 to 25 for better battery life)
Maximum relative humidity (non-condensing)		95%
Maximum altitude without derating	m (ft)	1000 (3300)
Degree of protection		IP20
Colour		RAL 7016

ELECTRICAL CHARACTERISTICS - BATTERY		
Standard max. recharge current	A	2.4 per Battery Module

(1) Up to 90% Pn

7.3. Recommended protections

RECOMMENDED PROTECTION DEVICES - RECTIFIER (1)									
RM3 System Rated power (kVA/kW)		2.5	5	7.5		5	10	15	
RM4 System Rated power (kVA/kW)		2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)		2.5				5			
Number of Modules		1	2	3	4	1	2	3	4
C curve circuit breaker (1ph/3ph)	A	16	32	50	63	32/13	63/26	100/32	125/50
gG fuse (1ph/3ph)	A	16	32	50	63	32/12	63/25	100/32	125/50

RECOMMENDED PROTECTION DEVICES - GENERAL BYPASS (2)									
RM3 System Rated power (kVA/kW)		2.5	5	7.5		5	10	15	
RM4 System Rated power (kVA/kW)		2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)		2.5				5			
Number of Modules		1	2	3	4	1	2	3	4
Conditional short circuit current rating (Icc)	kA	10				10			
C curve circuit breaker	A	16	32	40	63	32	63	100	125
gG fuse	A	16	32	40	63	32	63	100	125

RECOMMENDED PROTECTION DEVICES - INPUT RESIDUAL CURRENT CIRCUIT (RCD) BREAKER (3)		
Input residual current circuit breaker	A	0.1 A Selective type B

RECOMMENDED PROTECTION DEVICES - OUTPUT (4)									
RM3 System Rated power (kVA/kW)		2.5	5	7.5		5	10	15	
RM4 System Rated power (kVA/kW)		2.5	5	7.5	10	5	10	15	20
Module Rated power (kVA/kW)		2.5				5			
Number of Modules		1	2	3	4	1	2	3	4
C curve circuit breaker (3)	A	2	4	6	8	4	8	13	16
B curve circuit breaker (3)	A	4	8	12	16	8	16	25	32

CABLES - MAXIMUM CABLE SECTION (5)		
Rectifier terminals	mm	50
Bypass terminals	mm	50
Battery terminals (5)	mm	2x 95
Output terminals	mm	50

(1) Rectifier protection should only be considered in the event of separate inputs. Recommended values to avoid unwanted tripping with UPS at full power. 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) Recommended values to avoid unwanted tripping with UPS at full power. 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).
(3) RCD is not necessary when the UPS is installed in a TN-S system. RCD is not permitted on TN-C systems. If an RCD is required a B-type should be used. Must be coordinate with residual current circuit breakers downstream of the UPS connected to the UPS output.
(4) Protection tripping downstream of the UPS with inverter short circuit current (Worst case = AUX MAINS not present). In the Normal case, with AUX MAINS present, fault clearing is determined by the Mains short-circuit capability.
(5) Use cable with tin-plated eyelets for the connection

8. SPECIFICATIONS TC3

8.1. Installation parameters

INSTALLATION PARAMENTERS								
System Rated power (kVA/kW)			2.5	5	7.5	5	10	15
Module Rated power (kVA/kW)			2.5			5		
Number of Modules			1	2	3	1	2	3
Phase in/out			1/1			1/1 or 3/1		
Active power		kW	2.5	5	7.5	5	10	15
Rated/maximum rectifier input current (EN 62040-3)		A	12/15	24/30	36/44	24/30	47/59	71/87
Rated bypass input current (1)		A	11	22	33	22	44	65
Inverter output current @ 230 V Pn		A	11	22	33	22	44	65
Recommended air flow capacity		m^3/h	160	320	480	240	480	720
Acoustic noise @ 70% Pn		dBA	43	46	49	45	48	51
Power dissipation in nominal conditions (2)		W	220	440	660	420	840	1260
		kcal/h	189	378	567	361	722	1083
		BTU/h	751	1501	2252	1433	2866	4299
Power dissipation (max) in the worst conditions (3)		W	250	500	750	480	960	1440
		kcal/h	215	430	645	413	825	1238
		BTU/h	853	1706	2559	1638	3276	4913
Dimensions	Width	mm	600					
	Depth	mm	600					
	Height	mm	1400					
Single unit Clearances	Operational	mm	Rear 300 lateral 0					
	Maintenance	mm	Front 1000 top 800					
Weight		kg	140					

(1) Considering nominal bypass current calculated @ 230 V, considering a continuos overload of 110%.
(2) Considering nominal input current (230 V, battery charged) and rated output active power.
(3) Considering maximum input current (low input voltage, battery charged) and rated output active power.

8.2. Electrical characteristics

ELECTRICAL CHARACTERISTICS - RECTIFIER INPUT								
System Rated power (kVA/kW)			2.5	5	7.5	5	10	15
Module Rated power (kVA/kW)			2.5			5		
Number of Modules			1	2	3	1	2	3
Rated mains supply voltage		V	230 V 1ph + N			230 1ph + N 400 3ph + N		
Voltage tolerance		V	184 to 276 (±20%)			184 to 276 (±20%) 320 to 480 (±20%)		
Voltage tolerance at derated load		V	up to 150 V @ 70% of nominal load			up to 150 1ph + N up to 260 3ph + N @ 70% of nominal load		
Rated frequency		Hz	50/60					
Frequency tolerance			±10%					
Current Total harmonic distortion (THDi)			≤ 6%			≤ 5.4%		
Power factor (at full load and rated voltage)			≥ 0.98					
Max inrush current at start-up			<In					

ELECTRICAL CHARACTERISTICS - BYPASS							
System Rated power (kVA/kW)		2.5	5	7.5	5	10	15
Module Rated power (kVA/kW)		2.5			5		
Number of Modules		1	2	3	1	2	3
Bypass frequency variation speed	Hz/s	1					
Bypass rated voltage		Nominal output voltage ±15%					
Bypass rated frequency	Hz	50/60 (selectable)					
Bypass frequency tolerance		±2% (±8% with genset)					
Bypass current overload (A)	5 min	13	25	38	25	51	77
	1 min	15	30	44	30	59	88
	20 sec	19	39	59	39	79	117

ELECTRICAL CHARACTERISTICS -INVERTER							
System Rated power (kVA/kW)		2.5	5	7.5	5	10	15
Module Rated power (kVA/kW)		2.5			5		
Number of Modules		1	2	3	1	2	3
Rated output voltage	V	208[1]/220/230/240 (selectable)					
Output voltage tolerance		Static: ±3% VFI-SS (EN 62040-3 compliant)					
Rated output frequency	Hz	50/60 (selectable)					
Output frequency tolerance		±0.1% on mains power failure					
Load crest factor		≥ 2.3					
Voltage total harmonic distortion THDV		< 3.5% with linear load					
Inverter overload (kW)	5 min	2.75	5.5	8.25	5.5	11	16.5
	10 sec	3.25	6.5	9.75	6.5	13	19.5
Short-circuit inverter current (A) (when AUX MAINS is not present)	0 to 60 ms	25	50	75	50	100	150

ELECTRICAL CHARACTERISTICS - EFFICIENCY	
Double conversion efficiency	up to 92.8%
EcoMode efficiency	99%

ELECTRICAL CHARACTERISTICS - ENVIRONMENT		
Storage temperatures	°C	-5 to +50 (15 to 25 for better battery life)
Working temperature	°C	0 to +40 (15 to 25 for better battery life)
Maximum relative humidity (non-condensing)		95%
Maximum altitude without derating	m (ft)	1000 (3300)
Degree of protection		IP20
Colour		RAL 7016

ELECTRICAL CHARACTERISTICS - BATTERY		
Standard max. recharge current	A	2.4 per Battery Module

(1) Up to 90% Pn

socomec
Innovative Power Solutions

8.3. Recommended protections

RECOMMENDED PROTECTION DEVICES - RECTIFIER (1)							
System Rated power (kVA/kW)		2.5	5	7.5	5	10	15
Module Rated power (kVA/kW)		2.5			5		
Number of Modules		1	2	3	1	2	3
C curve circuit breaker (1ph/3ph)	A	16	32	50	32/13	63/26	100/32
gG fuse (1ph/3ph)	A	16	32	50	32/12	63/25	100/32

RECOMMENDED PROTECTION DEVICES - GENERAL BYPASS (2)							
System Rated power (kVA/kW)		2.5	5	7.5	5	10	15
Module Rated power (kVA/kW)		2.5			5		
Number of Modules		1	2	3	1	2	3
Conditional short circuit current rating (Icc)	kA	10			10		
C curve circuit breaker	A	16	32	40	32	63	100
gG fuse	A	16	32	40	32	63	100

RECOMMENDED PROTECTION DEVICES - INPUT RESIDUAL CURRENT CIRCUIT (RCD) BREAKER (3)		
Input residual current circuit breaker	A	0.1 A Selective type B

RECOMMENDED PROTECTION DEVICES - OUTPUT (4)							
C curve circuit breaker (3)	A	2	4	6	4	8	13
B curve circuit breaker (3)	A	4	8	12	8	16	25

CABLES - MAXIMUM CABLE SECTION (5)		
Rectifier terminals	mm	50
Bypass terminals	mm	50
Battery terminals (5)	mm	2x 95
Output terminals	mm	50

(1) Rectifier protection should only be considered in the event of separate inputs. Recommended values to avoid unwanted tripping with UPS at full power. 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) Recommended values to avoid unwanted tripping with UPS at full power. 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).
(3) RCD is not necessary when the UPS is installed in a TN-S system. RCD is not permitted on TN-C systems. If an RCD is required a B-type should be used. Must be coordinate with residual current circuit breakers downstream of the UPS connected to the UPS output.
(4) Protection tripping downstream of the UPS with inverter short circuit current (Worst case = AUX MAINS not present). In the Normal case, with AUX MAINS present, fault clearing is determined by the Mains short-circuit capability.
(5) Use cable with tin-plated eyelets for the connection

9. REFERENCE STANDARDS AND DIRECTIVES

9.1. 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

9.2. Standards

9.2.1. Safety

EN 62040-1	Uninterruptible Power System (UPS) - Part 1: General sand safety requirements (certified by TÜV)
IEC 62040-1	Uninterruptible Power System (UPS) - Part 1: Safety requirements (CB scheme by TÜV)

9.2.2. Electromagnetic compatibility

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

9.2.3. TEST and performance

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

9.2.4. ENVIRONMENTAL

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

9.3. 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.

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.