PRIME

Trustworthy power

MASTERYS BC+

From 60 to 160 kVA

RoHS COMPLIANT

3 LEVEL TECHNOLOGY

95% EFFICIENCY

Safety tested
Production monitored
TÜV SÜD
tuv-sud.com/ps-cert

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 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.

1. ARCHITECTURE

1.1 RANGE

MASTERYS BC+ 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.

Masterys BC+					
Rated power (kVA)	60	80	100	120	160
MASTERYS BC+ 3/3	•	•	•	•	•
Matrix table for model and kVA power rating					

MASTERYS BC+ 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.

2. FLEXIBILITY

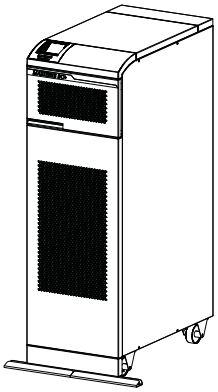
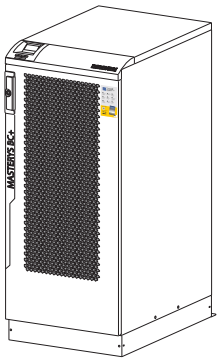
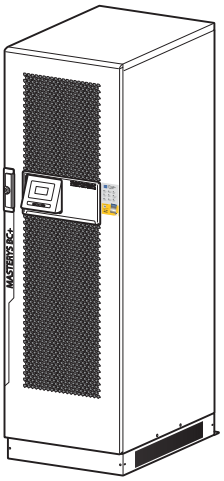
2.1 POWER RATINGS FROM 60 TO 160 KVA

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 detailed design also provides easy access for maintenance and installation.

All of the control mechanisms are located on the front at the bottom and communication interfaces are on the inside of the door.

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.

Dimensions			
Masterys BC+	Width [mm]	Depth [mm]	Height [mm]
MASTERYS BC+ 60 to 80 kVA 	444	800	1400
MASTERYS BC+ 100 to 160 kVA 	600	855	1400
MASTERYS BC4 160 kVA 	600	855	1930

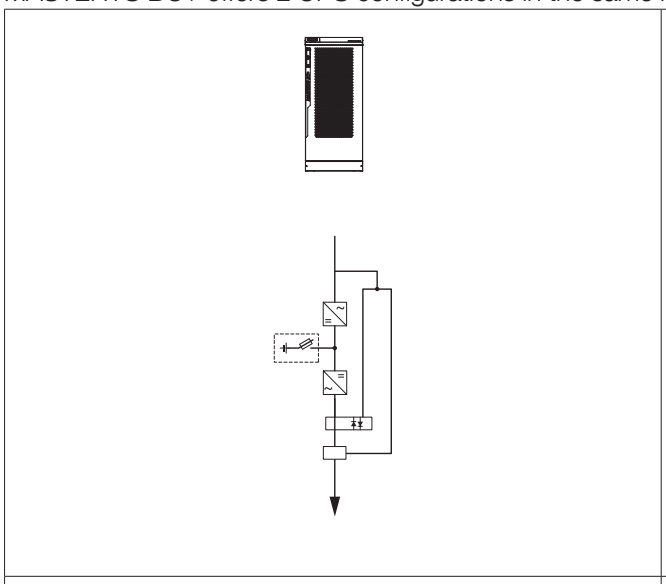
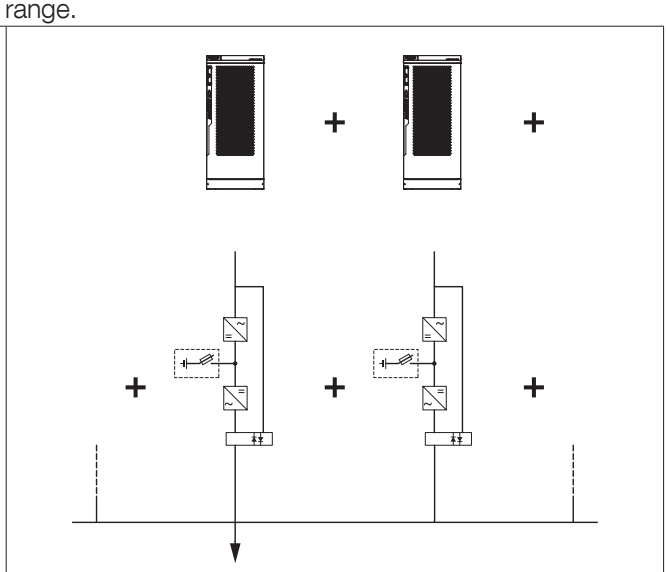
2.2 FLEXIBLE BACK-UP TIME

Different extended back-up times are possible by using external battery cabinets, optionally with a enhanced battery charger

Selection of the back-up time is flexible thanks to the wide range of battery string voltages.

2.3 HORIZONTAL PARALLEL

MASTERYS BC+ offers 2 UPS configurations in the same range.

	
Single unit configuration	Parallel UPS

3. STANDARD FEATURES AND OPTIONS

Availability	
●	*Factory-installed option*
○	*Available as option (installation on site)*
STD	*Standard feature*

	60-80 kVA	100120 kVA	160 kVA	Notes
Battery Option				
Additional charger	●○	●○	●○	⚠ ❗ Kif for Rectifier Neutral creation
Communication Option				
ACS card *(Automatic Cross Synchronisation)*	●○	●○	●○	
ADC+SL card *(Advanced Dry Contact + Serial Link)*	○	○	○	
External temperature sensor	○	○	○	⚠ ❗ ADC+SL card
Remote touchscreen display	○	○	○	⚠ ❗ ADC+SL card
BACnet/IP interface card	○	○	○	
Modbus TCP interface card	○	○	○	
Net Vision card *(professional WEB/SNMP interface for UPS monitoring)*	○	○	○	
EMD *(Environmental Monitoring Device: temperature, humidity, 2 dry contacts)*	○	○	○	⚠ ❗ Net Vision card
Electrical Option				
Parallel card	●○	●○	●○	
Kit for Parallel configuration (C7)	-	●○	●○	⚠ ❗ Parallel card
External isolation Transformer	-	○	-	
IMD *(insulation monitoring device)*	-	○	-	⚠ ❗ External isolation Transformer
External maintenance bypass	○	○	-	
Kit for TN-C / Neutral-Ground connection	○	●○	●○	⚠ ⛔ Kit for Rectifier Neutral creation
Internal Backfeed isolation device	●	●	●	
Kit For Common Mains	○	○	○	
Kit for Rectifier Neutral creation	●	●	●	⚠ ⛔ Kit for TN-C / Neutral-Ground connection ⛔ Kit For Common Mains ⛔ Additional charger
Mechanical Option				
Anti vermin protection	STD	●	●	
Kit for IP21	○	○	○	
"T" cabinet	-	-	STD	

❗ *Required option*

⛔ *Incompatible option*

4. SPECIFICATIONS

4.1 INSTALLATION PARAMETERS

Installation paramenters							
Rated power (kVA)			60	80	100	120	160
Phase in/out			3/3				
Active power		kW	54	72	90	108	144
Rated/maximum rectifier input current (EN 62040-3)		A	83/99	111/128	138/165	166/201	222/268
Rated bypass input current (1)		A	96	128	160	191	255
Inverter output current @ 400 V Pn		A	87	115	145	174	232
Recommended air flow capacity		m^3/h	480	600	720	960	1320
Acoustic noise @ 70% Pn		dBA	53				57
Power dissipation in nominal conditions (2)		W	2600	3800	4700	5600	7500
		kcal/h	2408	3267	4041	4815	6449
		BTU/h	9553	12965	16037	19108	25591
Power dissipation (max) in the worst conditions (3)		W	3200	4300	5200	6200	8300
		kcal/h	2752	2150	4471	5331	7137
		BTU/h	10918	14671	17743	21155	28321
Dimensions	Width	mm	444		600		
	Depth	mm	800		855		
	Height	mm	1400		1400		1930
Single unit Clearances	Operational	mm	Rear ≥ 200				
	Maintenance	mm	Front ≥ 1500; Top ≥ 800				
Weight		kg	151	157	220	232	333

1. *Considering nominal bypass current calculated @ 400 V, considering a continuos overload of 110%.*
2. *Considering nominal input current (400 V, battery charged) and rated output active power.*
3. *Considering maximum input current (low input voltage, battery charged) and rated output active power.*

4.2 ELECTRICAL CHARACTERISTICS

Electrical characteristics - Rectifier Input					
Rated power (kVA)	60	80	100	120	160
Rated mains supply voltage	400 V 3ph + N				
Voltage tolerance	340 to 480 V (-15 +20%)				
Voltage tolerance at derated load	up to 240 V @ 70% of nominal active load				
Rated frequency	50/60 Hz				
Frequency tolerance	±10%				
Power factor (at full load and rated voltage)	≥ 0.99				
Total harmonic distortion (THDi)	≤ 2%				
Max inrush current at start-up	<In				
Power walk-in (from battery to normal mode)	4 second (settable parameters)				

Electrical characteristics - Bypass							
Rated power (kVA)		60	80	100	120	160
Bypass frequency variation speed		1 Hz/s (settable up to 3 Hz/s)				
Bypass rated voltage		Nominal output voltage ±15% (selectable ±5-±20%)				
Bypass rated frequency		50/60 Hz (selectable)				
Bypass frequency tolerance		±2% (configurable from ±1% to ±10%)				
Bypass current overload (A)	10 min	109	145	181	218	290
	1 min	130	174	217	261	348

Electrical characteristics -Inverter						
Rated power (kVA)	60	80	100	120	160
Rated output voltage	360/380/400/415 V (selectable)				
Output voltage tolerance	Static: ±1% Dynamic: VFI-SS-111 (EN 62040-3 compliant)				
Rated output frequency	50/60 Hz (selectable)				
Output frequency tolerance	±0.01% on mains power failure				
Load crest factor	≥ 2.7				
Voltage total harmonic distortion THDV	< 1% with linear load				
Inverter overload (kW)	10 min	67.5	90	112.5	135	180
	5 min	71.3	95.4	118.8	142.6	190
	1 min	81	108	135	162	216
Short-circuit inverter current (A) (when AUX MAINS is not present)	0 to 40 ms	212	273	351	429	574
	40 to 100 ms	176	228	294	358	478

Electrical characteristics - Efficiency					
Rated power (kVA)	60	80	100	120	160
Double conversion efficiency	up to 95%				
EcoMode efficiency	99.4%				

Electrical characteristics - Environment					
Rated power (kVA)	60	80	100	120	160
Storage temperatures	-5 to +50 °C (15 to 25 °C for better battery life)				
Working temperature	0 to +40 °C (1) (15 to 25 °C for better battery life) Max +45°C @ 70% Sn for a limited time				
Maximum relative humidity (non-condensing)	95%				
Maximum altitude without derating	1000 m (3300 ft)				
Degree of protection	IP20 (IP21 as option)				
Colour	RAL 7016 (door metallized grey E150HVF)				

Electrical characteristics - Battery						
Rated power (kVA)		60	80	100	120	160
Standard max. recharge current	A	10		16		32
Battery connection in parallel configuration	UPS work with distributed battery				

(1) Condition apply.

4.3 RECOMMENDED PROTECTIONS

RECOMMENDED PROTECTION DEVICES - Rectifier (1)						
Rated power (kVA)		60	80	100	120	160
C curve circuit breake	A	125	160	250	250	315
gG fuse	A	125	160	250	250	315

RECOMMENDED PROTECTION DEVICES - General bypass (2)						
Rated power (kVA)		60	80	100	120	160
Maximum I^2t supported by the bypass	A^2s	120000				400000
Max Ipk supported by the Bypass	A	5000				9000
Conditional short circuit current rating (Icc)	kA	10				
C curve circuit breaker	A	125	160	250	250	400
gG fuse	A	125	160	250	250	400

RECOMMENDED PROTECTION DEVICES - Input residual current circuit (RCD) breaker (3)						
Rated power (kVA)		60	80	100	120	160
Input residual current circuit breaker	A	0.5 A Selective type B				

RECOMMENDED PROTECTION DEVICES - Output (4)						
Rated power (kVA)		60	80	100	120	160
C curve circuit breaker (3)	A	≤ 20	≤ 25	≤ 32	≤ 40	≤ 50
B curve circuit breaker (3)	A	≤ 40	≤ 50	≤ 63	≤ 80	≤ 100

CABLES - Maximum cable section (5)					
Rated power (kVA)	60	80	100	120	160
Rectifier terminals (4x)	50 mm^2		bus bar with holes ø 10 mm 2x120 mm^2 (flexible cable and rigid cable)		bus bar with holes ø 10 mm 2x150 mm^2 (flexible cable and rigid cable)
Bypass terminals (4x)					
Output terminals (4x)					
Battery terminals (3x)	95 mm^2				

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. A current limiting device has to be used in case of maximum I^2t and Ipk of the SCR by-pass is exceeded. 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. If the bypass network is separate from the rectifier circuit, or in the event of parallel UPSs, use a single residual current circuit breaker upstream of the UPS.*
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. The rating of the protection can be increased "n" times downstream of a parallel UPS system, with "n" equal to the number of parallel UPS units.*
5. *Use cable with tin-plated eyelets for the connection*

5. REFERENCE STANDARDS AND DIRECTIVES

5.1 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

5.2 STANDARDS

5.2.1 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 (CB scheme by TÜV)

5.2.2 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)

5.2.3 TEST AND PERFORMANCE

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

5.2.4 ENVIRONMENTAL

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

5.3 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.