

UPS SYSTEMS

Addendum to User Manual CPSS PowerScale 10-50 kVA Technical Specifications



Tables of contents

11	Syst	em description	. 5
	11.1	CPSS PowerScale system description	5
	11.2	Technical Characteristics	6
		11.2.1 Mechanical characteristics CPSS 10-20 kVA Cabinet A	6
		11.2.2 Mechanical characteristics CPSS 10-25 kVA Cabinet B	6
		11.2.3 Mechanical characteristics CPSS 25-50 kVA Cabinet B	6
	11.3	Input Characteristics	7
		11.3.1 Input PF versus % load	7
		11.3.2 Input distortion THDi versus % load	7
	11.4	Battery Characteristics	8
	11.5	Output Characteristics	9
		11.5.1 AC – AC EFFICIENCY with Linear load up to cosφ 1	10
	11.6	Environmental Characteristics	.11
	11.7	Standards	12
	11.8	Communication	12
		11.8.1 Power Management Display (PMD	13
		11.8.2 Mimic diagram	13
		11.8.3 Display	13
		11.8.4 Customer interfaces: Terminals X1 Standard	14
		11.8.5 Customer output dry port: Terminal block X10	14
		11.8.6 Customer inputs dry ports: Terminal block X1	14
		11.8.7 Customer output dry ports: Terminal blocks X1 (relay slot card)	14

Options	15
11.9.1 SNMP card / WaveMon Management Software	15
Batteries types and recharge time	16
11.10.1 Batteries types and recharge time	16
Installation planning	17
11.11.1 Heat dissipation per UPS range with non-linear load	18
Block diagrams	18
11.12.1 Wiring and block diagrams	18
11.12.2 Recommended cable sections & fuse ratings	18
11.12.3 Cabinet C (25-30 kVA) terminal connections overview	•••••
11.12.4 Cabinet C (40-50 kVA) terminal connections overview	•••••
11.12.5 Connection diagram PowerScale	20
Settings for operating mode	21
act us	22
	 Options 11.9.1 SNMP card / WaveMon Management Software Batteries types and recharge time 11.10.1 Batteries types and recharge time Installation planning 11.11.1 Heat dissipation per UPS range with non-linear load Block diagrams 11.12.1 Wiring and block diagrams 11.12.2 Recommended cable sections & fuse ratings 11.12.3 Cabinet C (25-30 kVA) terminal connections overview 11.12.4 Cabinet C (40-50 kVA) terminal connections overview 11.12.5 Connection diagram PowerScale Settings for operating mode

11 System description

11.1 CPSS PowerScale system description

POWERSCALE CPSS was designed in accordance with Standard EN50171 to comply with all necessary requirements for installation in buildings subject to fire safety standards, including lighting, fire alarm systems, facility smoke alarms, video surveillance systems, pagers, and all other critical infrastructures in which power protection is necessary in critical conditions.

POWERSCALE is an advanced double conversion CPSS derived from a UPS which has satisfied the most stringent safety, EMC, and other important standards relevant to this product.

The battery charger, including the safety protections, was designed in accordance with Standard EN50171 and offers high flexibility by dimensioning an accurate battery configuration without compromising the proper functionality in all described conditions mentioned in this Technical Specification. The battery charger is able to manage lead acid as well as Ni/Cd batteries. Since the CPSS is able to be used with external batteries for long autonomy requirements, the distribution is equipped with battery terminals. performance, parallel capability and connectivity's interaction. When operating in parallel configuration, each POWERSCALE CPSS can take the leadership role, avoiding single points of failure in the parallel chain and ensuring the highest level of power is available.

POWERSCALE is a stand-alone CPSS which can be paralleled for power protection increase and/or for redundancy purposes. It offers seven different power ranges: 10-15-20-25-30-40-50 kVA in three different cabinet sizes. Even if the POWERSCALE CPSS is able to handle up to 120% load without time limits, up to 20 UPS can be paralleled together and provide any redundant power capacity with common or separate battery configuration. If required, POWERSCALE CPSS allows for system upgrades to meet the highest level of availability, interruption-free and without a temporary transfer the load to row mains (by-pass).

This Technical Specification provides detailed technical information on the mechanical, electrical, and environmental performance of the POWERSCALE CPSS that can support to give answers to tenders and end-user requirements.



The POWERSCALE CPSS features innovations that deliver the industry's best key values, such as: enhanced power

According to Standard EN50171 following the operating principles:

11.2 Technical Characteristics

11.2.1 Mechanical characteristics CPSS 10-20 kVA Cabinet A

PowerScale Cabinet A	Model		CPSS 10 kVA	CPSS 15 kVA	CPSS 20 kVA
	Dimensions (WxHxD)	mm		345x720x710	
	Weight	kg		48	
	with standard packaging	kg		+ 4	
	Colour	kg		RAL 9005	

11.2.2 Mechanical characteristics CPSS 10-25 kVA Cabinet B

PowerScale Cabinet B	Model		CPSS 10 kVA	CPSS 15 kVA	CPSS 20 kVA	CPSS 25 kVA		
	Dimensions (WxHxD)	mm	345x1045x710					
	Weight	kg	68					
	with standard packaging	kg	+ 5					
	Colour			Black R#	AL 9005			

Mechanical characteristics CPSS 25-50 kVA Cabinet C 11.2.3

PowerScale Cabinet C	Model		CPSS 10 kVA	CPSS 15 kVA	CPSS 20 kVA	CPSS 25 kVA	
	Dimensions (WxHxD)	mm	440x1400x910				
	Weight	kg		13	3		
	with standard packaging	kg		+	5		
	Colour			Black R/	AL9005		

11.3 Input Characteristics

UPS Model		CPSS 10 kVA	CPSS 15 kVA	CPSS 20 kVA	CPSS 25 kVA	CPSS 30 kVA	CPSS 40 kVA	CPSS 50 kVA
Nominal Input Voltage	V		3x3	80/220V+N, 3	x400V/230V	+N, 3x415/24	l0V+N	
Input Voltage Tolerance (ref to 3x400/230V) for Loads in %:	V		(-10%/+1 (-20%/+1 (-30%/+1	.5%) 3x308/1 15%) 3x280/1 15%) 3x240/1	77 V to 3x460 .61 V to 3x46 .38 V to 3x46	0/264 V for <: 0/264 V for < 0/264 V for <	100 % load 80 % load 60 % load	
Input Frequency	Hz				35 – 70			
Input Power Factor				PF=	0.99 @ 100 %	load		
Inrush Current	А	max. In						
Input Distortion THDi				Sine-wave	THDi < 3 % @) 100% load		
Max. Input Power with rated output power and charged battery (output $\cos \phi = 1$)	kW	8.5	10.6	15.8	21.1	26.5	31.7	42.4
Max. Input Current with rated output power and charged battery (output $\cos \phi = 1$)	А	12.3	15.4	22.9	30.6	37.1	45.9	61.4
Max. Input Power with rated output power and discharged battery (output $\cos \phi = 1$)	kW	10.5	12.7	17.9	23.2	31.6	36.8	47.5
Max. Input Current with rated output power and discharged battery (output cosφ = 1)	А	15.2	18.4	25.9	33.6	45.8	53.3	68.8

11.3.1 Input PF versus % load



Input Power Factor (Leading)

11.3.2 Input distortion THDi versus % load



NOTE: Based on power ratings

11.4 Battery Characteristics

UPS Range Cabinet Type		CPSS CPSS 10 kVA 15 kVA		CPSS 20 kVA		CPSS 25 kVA		CPSS 30 kVA	CPSS 40 kVA	CPSS 50 kVA		
		Α	В	А	В	А	В	В	С	С	С	С
Min/Max number of 12V Battery Blocks per string without de-rating	No.	34-50 48-5		-50	50 48-50		50		50	40-50	48-50	
Min/Max number of 1,2V NiCd-Cells	No.	280-500 360-50		-500	480-500 480-500		500	480-500	320-500	340-500	480-500	
Maximum Battery Charger Current	А	6A 15					5A					
Battery Charging Curve		Ripple free; IU (DIN 41773)										
Temperature compensation ready		Standard (temp. sensor optional)										
Battery Test	Automatic and periodically (adjustable)											
Battery Type	Maintenance free VRLA or NiCd											

The CPSS is not provided with internal batteries.

External battery cabinets shall be considered to achieve the typical runtime requested by the security systems applications in which the CPSS is deployed

Please contact your local ABB to know the battery configuration for derating allowing 120% load respect the maximum power

11.5 Output Characteristics

UPS Model	CPSS 10 kVA	CPSS 15 kVA	CPSS 20 kVA	CPSS 25 kVA	CPSS 30 kVA	CPSS 40 kVA	CPSS 50 kVA		
Nominal output power	kVA	10	15	20	25	30	40	50	
Nominal output power	kW	9	13,5	18	22,5	27	36	45	
Nominal output power according EN50171	kW	8	10	15	20	25	30	40	
Output rated current (In) @ rated power in kW and @ 400VAC	А	11.6	14.4	21.7	28.9	36.1	43.3	57.7	
Output Rated Voltage	V			3x380/220V c	r 3x400/230V (or 3x415/240V			
Output Voltage Stability	%	Static: Dynamic (Ste	o load 0%-100%	% or 100%-0%)				< +/- 1% < +/- 4%	
Output Voltage Distortion	%	With Linear Lo With Non-line	ad ar Load (accord	ling to IEC/EN 6	52040-3)			< 2% < 4%	
Output Frequency	Hz	50 Hz or 60 Hz							
Output Frequency Tolerance	%	Synchronized (selectable for Free running	Synchronized with mains< +/- 2(selectable for bypass operation)or < +/- 4						
Bypass operation		At Nominal In or 196 V to 26	out voltage of 3 4 V ph-N	8x400 V				+/- 15 %	
Permissible Unbalanced Load (All 3 phases regulated independently)	%				100%				
Phase Angle Tolerance (With 100 % Unbal-anced load)	Deg.				+/- 0 deg.				
Overload Capability on Inverter	s	120% Load \rightarrow continuously120% Load \rightarrow continuously150% Load \rightarrow 100 seconds150% Load \rightarrow 100 seconds						uously conds	
Output short capability current (RMS) on inverter for 40 ms	А	3.4 x ln 2.8 x ln 2.6 x ln 2.8 x ln 2.3 x ln 2.8 x ln 2.9 x l					2.9 x In		
Output short capability current (RMS) on static-bypass for 10 ms	А	approx. 10 x output rated current (In) (RMS)							
Crest – Factor (Load supported)		3:1							



11.5.1 AC – AC EFFICIENCY with Linear load up to $\cos \varphi 1$

NOTE: Based on power ratings

11.6 Environmental Characteristics

UPS range		CPSS 10 kVA	CPSS 15 kVA	CPSS 20 kVA	CPSS 25 kVA	CPSS 30 kVA	CPSS 40 kVA	CPSS 50 kVA			
Audible Noise with 100% / 50% Load	dBA	60/53	60/53	58/50	58/50	58/50	58/50	65/51			
Operation temperature	°C				0-40						
Ambient Temperature for Batteries (recom-mended)	°C		20 – 25								
Storage Temperature	°C				-25 - +70						
Battery Storage Time at Ambient Temperature					Max. 6 months						
Max. altitude (above sea level)	m			1000m (3	300ft) without	de-rating					
		Me	ter above sea le	evel (m / ft)		De-Rating	Factor for Pow	/er			
			1500 / 48	50	0.95						
De-rating factor for use at altitudes 1000m sea level according(IEC 620	s above 40-3)		2000 / 66	00		0.91					
	,		2500 / 82	50		0.86					
			3000 / 99	00	0.82						
Relative Air-humidity		Max. 95% (non-condensing)									
Accessibility			Rear acce	SS	Front access						
Positioning			Min. 20 cm r	ired for fan)							
Input and Output Power Cabling		Rear side bottom					side bottom				
Efficiency AC-AC (at cosφ1.0) (depending on power rating)	%	Load: 100 % 75 % 50 % 25 % 95.5 % 95.5 % 95 % 94.5 %									
Eco-Mode efficiency at 100% load	%	98 %									

11.7 Standards

Safety (Referred to PowerScale UPS)		IEC/EN 62040-1, IEC/EN 60950-1				
Electromagnetic Compatibility (Referred to PowerScale UPS)	IEC/EN 62040-2, IEC/EN61000-3-2, IEC/EN61000-6-2					
EMC Classification for (Re-ferred to PowerScale UPS)	8kW (10kVA UPS)	10-40kW (15-50 kVA UPS)				
Emission Class	C2	C3				
Immunity Class	C3					
Performance (Referred to Pow-erScale UPS)		IEC/EN62040-3				
CPSS		EN50171				
Product certification		CE				
Degree of protection		IP 20				

11.8 Communication

STANDARD ITEMS

RS232 on Sub-D9 port	For monitoring and integration in network management
Customer Interfaces :	1 Remote Shut down [EMERGENCY OFF (Normally closed)]
Inputs	1 GEN-ON (Normally open)
	1 Programmable Customer's Inputs (Normally open)
	1 Temp. Sensor for Battery Control
	1 12 Vdc source (max. 250 mA)
RJ45 port	For multidrop purpose
Power Management Display (PMD)	LCD display
Relay card + USB Including:	
Customer Interfaces:	• Common alarm
5 output DRY PORTS	Load on bypass
	• Battery low
	Load on inverter
	Mains failure
RS232 on USB port	For remote signalling and automatic computer shutdown

ADDITIONAL ITEMS

SNMP Card (slot already included)	SNMP card
	For monitoring and integration in network management

Figure 11.8.3-1: Power Management Display (PMD) of POWERSCALE

11.8.1 Power Management Display (PMD)

The user-friendly PMD consists of three parts the MIMIC DIAGRAM, CONTROL KEYS and LCD that provides the necessary monitoring information about the UPS.

11.8.2 Mimic diagram

The mimic diagram serves to give the general status of the UPS. The LED-indicators show the power flow status and in the event of mains failure or load transfer from inverter to bypass and vice-versa the corresponding LED- indicators will change colour from green (normal) to red (warning). The LED's LINE 1 (rectifier) and LINE 2 (bypass) indicate the availability of the mains power supply. The LED's INVERTER and BYPASS if green indicate which of the two are supplying power to the critical load. The LED-indicator BATTERY is normally lit green, and when it supplies the load is blinking. The LED-indicator ALARM is a visual indication of any internal or external alarm condition. At the same time the audible alarm will be activated.

11.8.3 Display

The 2 x 20 character LCD simplifies the communication with the UPS. The menu driven LCD enables the access to the EVENT REGISTER, or to monitor the input and output U, I, f, P, Autonomy Time and other Measurement's, to perform commands like start-up and shutdown of UPS or load transfer from Inverter to BYPASS and vice-versa and finally it serves for the DIAGNOSIS (SERVICE MODE) for adjustments and testing.

The display will show several measures (menu "Measurements") including the specific ones requested by the standard EN50171:

- Battery voltage
- Battery charge current
- Battery discharge current
- · Load current for each phase

By selecting the "Event log", the display is able to show several alarms, including date and time, which allows to know exactly the detail of the event.

In case of a battery charger malfunction the display will inform about the specific failure. A warning that the battery will be near to the discharge level will be displayed 10 minutes before the switching off of the CPSS. As soon the battery discharge will appear the full system will turn off except the power supply which keep the bypass SCR on. If the mains will restore the CPSS will automatically snap to the selected operating mode. If the network will be still absent, the protection procedure to avoid a deep battery discharge will start. At the end of this control, the power supply will turn off and the battery will not anymore be discharged. Also in this condition the system will restart automatically by mains restore.

Furthermore the LED of the mimic diagram will indicate the mode of operation set on the CPSS and eventually possible malfunctions (see Chapter 11.13).

- System operating or operating mode
- CPSS supplied trough batteries
- Indication of battery circuit interrupted (including alarm)

The standard CPSS is equipped with additional dry port card which allows to display remotely following information:

- System in operation
- Supply from the battery
- Common alarm (as soon a malfunction is detected this alarm will appear)



Figure 10.8.6-1: Phoenix Spring Terminals (X1) Connection

11.8.4 Customer interfaces: Terminals X1 Standard

11.8.5 Customer output dry port: Terminal block X10

This terminal allows to connect the command for an external contactor which function allows to control an external Switching Device for partial switching of the load

11.8.6 Customer inputs dry ports: Terminal block X1

Connection of Remote Shut down facilities, Generator Operation, Customers specials (see UM Section 9 / OPTIONS)

11.8.7 Customer output dry ports: Terminal blocks X1 (relay slot card)

Provision of signals for the automatic and orderly shutdown of servers, AS400 or Automation building systems All voltage free contacts are rated 60 VAC max. and 500 mA max.: All the interfaces are connected to Phoenix Spring terminals with wires : 0.5 mm²

	Block	Terminal	Contact	Signal	On Display	Function
	X1	X1/10	GND	GND		12 Vdc source
		X1/9	IN	+12Vdc		(Max 200mA load)
		X1/8	GND	GND		Remote Shutdown
_		V1 /7	IN	+12Vdc		(Do not remove the factory mounted bridge until
ARD		X1 / 7				an external remote shut down is connected)
Ŋ		X1/6	GND	GND		Temperature Battery
STA		V1 / F	IN	+3.3Vdc		(If connected, the battery charger current is
0,		X1/5				batt. temperature dependent)
		X1/4	GND	GND		Customer IN 1
		X1/3	IN	+12Vdc		(Function on request, to be defined)
		X1/2	GND	GND		GEN_OPERATION
		X1/1	IN	+12Vdc		(NC = Generator ON)
	Block	Torminal	Contact	Signal	On Dicplay	Eurotion
		V1 / 15	Contact	Signal		Common
	XI	×1 / 13	NC			NO Alarm Condition
		V1 / 12	NO	ALARM		Common Alarm (System)
		V1 / 12	<u> </u>		LOAD ON MAINS	Common
ot)			NC	Mossago	LOAD_ON_MAINS	(Load on Inverter)
S			NO	Message		Load on hypass (Mains)
JSB		X1/10	<u>с</u>		BATT LOW	Common
n br		 	NC		BATT_LOW	Battery OK
da		X1/0	NO			Battery I ow
car		X1/6	C		LOAD ON INV	Common
lay		X1/5	NC	Message		(Load on Mains bypass)
Re		X1/4	NO	message		Load on Inverter
		X1/3	С		MAINS OK	Common
		X1 / 2	NC	ALARM		Mains Failure
		X1 /1	NO			Mains Present
		+ USB				
					1	

10.8.6-1

External SD (Switch Device) controller (X10) located near the distribution terminals

Block	Terminal	Contact	Signal	On Display	Function	
X10	X10/1	С				
				SD CONTROL	External SD control	(Contacts rate 250V 6A)
	X10/2	NO				

Figure 11.9.1-1: SNMP Adapter

11.9 Options

- SNMP card and WaveMon Management Software , Modbus Protocol, USB
- Temperature sensor for battery temperature control

11.9.1 SNMP card / WaveMon Management Software The Simple Network Management Protocol (SNMP) is a worldwide-standardized communication-protocol. It is used to monitor any device in the network via simple control language. The UPS-Management Software WaveMon also provides its data in this SNMP format with its internal software agent. The operating system you are using must support the SNMP protocol. We offer our WaveMon software with SNMP functionality for Novell, OS/2, all Windows running on INTEL and ALPHA, DEC VMS, Apple.

Two types of SNMP interfaces with identical functionality are available: an external SNMP-Adapter (Box) and an internal SNMP-Card. Both can manage a parallel system (N modules) and return either global values - which are consistent for the whole parallel system - or specific values from the single modules.



Internal SNMP-Card

11.10 Batteries types and recharge time

11.10.1 Batteries types and recharge time

The standard EN50171 requires to use high performance batteries with a guaranteed life of 10 years. The CPSS is able to recharge the batteries at the 80% of the capacity in 12 hours depending to the autonomy requested. Therefore, the battery capacity has to be selected by each battery configuration and load power considering the recommended recharge time.



Figure 10.11-1: Positioning



PowerScale	e Cabinets	Cab. A	Cab. B	Cab. C
A	Back clearances for ventilation (forced air outlet) / access for wiring in case the unit cannot be pulled forward	200 / 500 mm	200 / 500 mm	200 mm / front wiring
В	Front clearances for pulling the unit forward (to get rear access for wiring or side access for battery. replacement)	800 mm	800 mm	1000 mm
с	Maximum door opening angle (there is no door)	-	-	-
D	Top Clearance, not needed	0 mm	0 mm	0 mm
	Side clearances R for vent. (natural air-exchange) / access for battery replacement in case the unit cannot be pulled forward	50 / 800 mm	50 / 800 mm	0 / 800 mm
	Side cl. L for ventilation (natural air-exchange)	50 mm	50 mm	0 mm

11.11.1 Heat dissipation per UPS range with non-linear load

UPS Range		CPSS 10 kVA	CPSS 15 kVA	CPSS 20 kVA	CPSS 25 kVA	CPSS 30 kVA	CPSS 40 kVA	CPSS 50 kVA
Heat Dissipation with 100% Non-linear Load per range (EN 62040-3)	W	600	900	1100	1400	1700	2300	2900
Heat Dissipation with 100% Non-linear Load per range (EN 62040-3)	BTU/h	2048	3072	3754	4778	5802	7850	9898
Airflow (25° - 30°C) with 100% Non-linear Load per range (EN 62040-3)	m³/h	150	150	150	150	570	570	570
Heat Dissipation without load	W	120	150	150	170	250	300	350

11.12 Block diagrams

11.12.1 Wiring and block diagrams

The customer has to supply the wiring to connect the UPS to the local power source. The installation inspection and initial start up of the UPS and extra battery cabinet must be carried out by a qualified service personnel such as a licensed service engineer from the manufacturer or from an agent certified by the manufacturer

11.12.2 Recommended cable sections & fuse ratings

Cabinet A (10-20 kVA) & Cabinet B (10-25 kVA) terminal connections overview

Battery (+ / N / -) + PE [quantity x mm ²]	Input Rectifier 1L1, 1L2, 1L3 + N + PE [quantity x mm ²]	Input Bypass 2L1, 2L2, 2L3 + N + PE [quantity x mm²]	Output load 3L1, 3L2, 3L3 + N + PE [quantity x mm²]	Tightening Torque [Nm]
4 x 16	5 x 16	5 x 16	5 x 16	1.5



11.12.3 Cabinet C (25-30 kVA) terminal connections overview

Battery (+ / N / -) + PE [quantity x mm ²]	Input Rectifier 1L1, 1L2, 1L3 + N + PE [quantity x mm²]	Input Bypass 2L1, 2L2, 2L3 + N + PE [quantity x mm ²]	Output load 3L1, 3L2, 3L3 + N + PE [quantity x mm ²]	Tightening Torque [Nm]
(+ / N / -): 3 x 35 PE: 1 x 16	5 x 16	5 x 16	5 x 16	35 mm ² : 3.5 16 mm ² : 1.5



11.12.4 Cabinet C (40-50 kVA) terminal connections overview

Battery (+ / N / -) + PE [quantity x mm ²]	Input Rectifier 1L1, 1L2, 1L3 + N + PE [quantity x mm ²]	Input Bypass 2L1, 2L2, 2L3 + N + PE [quantity x mm²]	Output load 3L1, 3L2, 3L3 + N + PE [quantity x mm²]	Tightening Torque [Nm]
(+ / N / -):	1L1, 1L2, 1L3 + N:	2L1, 2L2, 2L3 + N:	3L1, 3L2, 3L3 + N:	35 mm2:
3 x 35	4 x 35	4 x 35	4 x 35	3.5
PE:	PE:	PE:	PE:	16 mm2:
1 x 16	1 x 16	1 x 16	1 x 16	1.5



Figure 11.12.3-1: Block Diagram POWERASCALE CPSS from 10-50 kVA

11.12.5 Connection diagram PowerScale

Cable Sections and Fuse Ratings recommended. Alternatively, local standards to be respected.

DUAL INPUT FEED SINGLE INPUT FEED MAINS (3x380V/220V, MAINS (3x380V/220V, Fuse A 3x400/230V,3x415/240V) Fuse B Fuse C 3x400/230V,3x415/240V) Cable A Cable B Cable C -FA1 FA2 FA2 1 F1/FA3 Cable E Cable E F1/FA Rectifier Rectifier I Fuse E IA1 Fuse E IA1 Inverter Inverter Static Switch Static Switch IA2 IA2 I Frame Mainten. Bypass Mainten. Bypass Frame L Cable D Cable D Load 10.12.3-1 Load

SINGLE INPUT FEED – Cable sections and fuse ratings recommended according to IEC 60950-1							
Power	UPS	Fuse A	Cable A	Cable D	Fuse E	Cable E	
[kVA]	Cabinet	1L1, 1L2, 1L3 [quantity x A]	1L1, 1L2, 1L3, N, PE [quantity x mm²]	3L1, 3L2, 3L3, N, PE [quantity x mm ²]	+, N, -, PE [quantity x A]	+, N, -, PE [quantity x mm²]	
10	А, В	3 x 20	5 x 2.5	5 x 2.5	2 4 22	4 × 4	
15	А, В	3 x 32	5 x 4	5 x 4	5 X 52	4 X 4	
20	А, В	2 × 40	E v C	Г и C	2 5 0	4 x 10	
25	В, С	5 X 40	5 X 0	5 X 0	5 X 50		
30	С	3 x 63	5 x 10	5 x 10	3 x 80	4 x 16	
40			(1L1, 1L2, 1L3, N):	(3L1, 3L2, 3L3, N):		(+, N, -): 3 x 25	
50	С	3 x 80	4 x 25, (PE): 1 x 16	4 x 25, (PE): 1 x 16	3 x 100	(PE): 1 x 16	

DUAL INPUT FE	DUAL INPUT FEED – Cable sections and fuse ratings recommended according to IEC 60950-1							
Power [kVA]	UPS Cabinet	Fuse B 1L1, 1L2, 1L3 [quantity x A]	Cable B 1L1, 1L2, 1L3, N, PE [quantity x mm ²]	Fuse C 2L1, 2L2, 2L3 [quantity x A]	Cable C 2L1, 2L2, 2L3, N, PE [quantity x mm ²]	Cable D 3L1, 3L2, 3L3, N, PE [quantity x mm ²]	Fuse E +, N, -, PE [quantity x A]	Cable E +, N, -, PE [quantity x mm ²]
10	А, В	3 x 20	5 x 2.5	3 x 20	5 x 2.5	5 x 2.5	2 2 2 2 2 2	4 x 4
15	А, В	3 x 32	5 x 4	3 x 32	5 x 4	5 x 4	5 X 52	
20	А, В	2 ~ 40	E v C	3 x 40	E v C	Г и C	3 x 50	4 ~ 10
25	В, С	- 3 x 40	5 X 0		5 X 0	5 X 0		4 x 10
30	С	3 x 63	5 x 10	3 x 63	4 x 10	5 x 10	3 x 80	4 x 16
40 50	с	3 x 80	(1L1, 1L2, 1L3, N): 4 x 25, (PE): 1 x 16	3 x 80	(2L1, 2L2, 2L3, N): 4 x 25, (PE): 1 x 16	(3L1, 3L2, 3L3, N): 4 x 25, (PE): 1 x 16	3 x 100	(+, N, -): 3 x 25 (PE): 1 x 16

11.13 Settings for operating mode

As soon the CPSS is powered and switched on according to the Powerscale UM, the customer has the possibility to choose the operating mode as following:

Mode without interruption	The CPSS is on inverter mode and no SD (Option) is connected
Changeover mode	The CPSS has to run in inverter mode (no SD is connected). On "COMMAND" menu, the function "LOAD TO BYPASS" has to be select with the "Arrow" and confirmed with "Enter" (see picture of PMD on page 11). Bypass LED will be green and Inverter LED become yellow (Yellow, Red and Green ON). In this condition the load is supplied by mains trough bypass and as soon a mains failure occurs the load will be transferred on inverter. Inverter LED will become green. As soon the grid will be again available, the load will be transferred back to bypass
Changeover mode with central switching of the load	In normal operation the load connected to the CPSS is not supplied. Bypass and Inverter LEDs become yellow (Yellow , Red and Green ON). In this condition the load will be powered after a mains failure.
Without interruption or changeover mode with additional control switching device (optional SD) for partial switching of the load	 For this operation mode, a Switch Device (optional SD) that allows the following operations, has to be added: On "Mode without interruption" a partial load will be supplied from the inverter without no interruption in case of mains failure. Another part of the load, which was not powered, will be supplied only during mains failure. The settings and display indications are the same as "Mode without interruption". For SD no settings has to be carried out. On "Changeover mode", in conjunction with optional SD, a partial load will be supplied from mains through bypass and in case of a power failure the load will be transferred on inverter. The load not powered will be fed only during mains failure. Similar as before, behavior, settings and display indications are similar as the "Changeover mode" and no settings for SD has to be done.

All switch and transfer timings are in accordance with the standard EN 50171 (< 0.5sec).



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