

TECHNICAL DATASHEET

UPS PowerValue 11RT G2

1-3 kVA B UL



Working mode

on-line double conversion

Module power rating

1-3 kVA

Output power factor

Up to 1.0

Efficiency double conversion

up to 90%

Efficiency in ECO MODE

up to 96%

Maximum weight

27.5 kg

Input current distortion THDi

≤5%

Input power factor (PF)

≥ 0.99

Communication cards

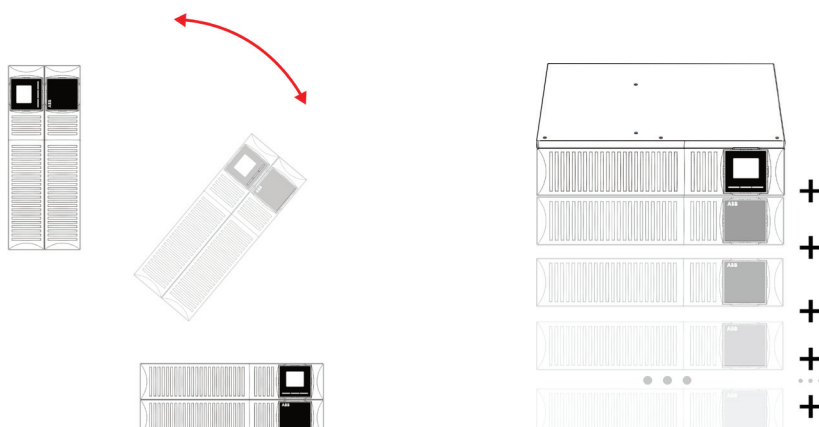
SNMP / ModBus / AS400

Mechanical configuration

Rack-Tower with electronically rotatable display by 90°



- Up to 6 battery modules per UPS can be added
- Rotatable display (90°)



About this manual

Document information

File name	:	4NWD005570_ABB_TDS_PVA11_1-3kVA-RT_G2_UL_EN_REV-E
UPS model	:	PowerValue 11 RT G2 1-3 kVA UL
Date of issue	:	30.09.2020
Issued by	:	Product Marketing
Checked by	:	R&D
Article number	:	N/A
Document number	:	4NWD005570
Revision	:	E

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UPS features



Frequency conversion

Operating as a frequency converter, the PowerValue 11 RT G2 not only converts the power supply frequency (50 Hz to/ from 60Hz) but it also protects the load from power disturbances and guarantees additional battery power in case of mains failure.

The operation and installation is simple and implies correctly wiring the UPS and selecting the frequency conversion mode in the LCD display.

- Input frequency range: 40-70Hz
- Output frequency: 50 or 60 Hz
- Output de-rating:
 - 1-3kVA: 70%

Cold start

The PowerValue 11 RT G2 can be started without being connected to the mains power supply (start up from the batteries).

This feature is especially useful in the following situations:

- To start up and operate the unit, even throughout a power outage.
- To help identify, during an unsuccessful system startup, if the malfunction is on the power supply, e.g. if the UPS starts-up on the battery and does not transfer to the online or the bypass mode, it is most probable that there is a mains failure.

Automatic load start-up

After a power outage, the UPS transfers to the battery. If the batteries are completely discharged and the system shuts down, with the automatic load start-up feature, the UPS will restart automatically once the mains power is recovered.

Emergency power off (EPO)

When activating the emergency UPS power off control, the AC and the DC sources to the load are entirely disconnected.

Operation: To recover the UPS's normal status, the EPO connector has to be set back to its original configuration (Normally closed through a jumper in the UPS rear panel). Following this, the EPO status has to be cleared through the LCD menu and the UPS will recover its operation in the bypass mode. To transfer the UPS to the inverter mode, the selection has to be made through the LCD display.

Fan speed control

The speed of the PowerValue 11 RT G2 fans vary with the load level and with the ambient temperature to minimize the power consumption while keeping the UPS at a safe working temperature.

Wide input voltage and frequency range

With higher input tolerances, the UPS works longer on a bypass or normal mode. This helps to reduce the consumption of the batteries when there are small variations in the power supply.

Generator compatibility

Generator power is often routed through the UPS to supply power to the load during long power outages.

The UPS acts as a power link that keeps critical systems operational until the generator synchronizes with the UPS and picks up the load. With the PowerValue 11 RT G2, the power of the generator should be dimensioned 1.3 times the UPS rated power.

Design flexibility

The PowerValue 11 RT G2 is extremely compact and is designed to be positioned in a tower format or rack mounted. The display is electronically rotatable and therefore easily adjustable to your configuration needs.

Increasing the runtime

Battery modules are available to increase the system runtime.

The cables for connecting the battery modules to the UPS are integrated into the units and these can be easily plugged together to increase the system's runtime. To connect several battery modules to a UPS, the battery modules should firstly be connected. Only after this procedure is done, should the battery modules be connected to the UPS. A Max 6A battery charger is available if the battery modules are connected.

Programmable output sockets

There are two kinds of outputs: programmable outlets and general outlets. Please connect non-critical devices to the programmable outlets and critical devices to the general outlets. During power failure, you may extend the backup time to critical devices by setting a shorter backup time for non-critical devices.

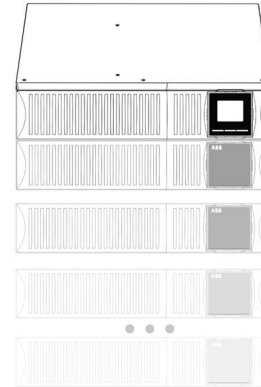


Batteries

The PowerValue can be configured with matching battery modules to satisfy extended runtime demands. Easily replaceable batteries increase availability and reduce Mean Time to Repair (MTTR).



+



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Up to 6

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+

UPS BATTERY TYPE



Power	Internal batteries	Charging current
1 kVA	1 x3 x 9Ah	1/2(Default)/4/6A
1.5 kVA	1 x4 x 9Ah	1/2(Default)/4/6A
2 kVA	1 x6 x 9Ah	1/2(Default)/4/6A
3 kVA	1 x6 x 9Ah	1/2(Default)/4/6A

EXTERNAL BATTERY TYPE MODULE



Power	Dimensions (WxHxD)	Weight	Battery
1 kVA	17.2"x 3.4"x 16.1"(438x88x410mm)	47.4lbs (21.5kg)	2 x3 x 9Ah
1.5 kVA	17.2"x 3.4"x 20"(438x88x510mm)	63.9lbs (29kg)	2 x4 x 9Ah
2 kVA	17.2"x 3.4"x 24.8"(438x88x630mm)	90.8lbs (41.2kg)	2 x6 x 9Ah
3 kVA	17.2"x 3.4"x 24.8"(438x88x630mm)	90.8lbs (41.2kg)	2 x6 x 9Ah

BATTERY AUTONOMY

POWER	UPS internal batteries	UPS +1 batt module	UPS + 2 batt module	UPS + 3 batt module	UPS + 4 batt module
1 kVA	6/10/18/43	31/45/76/164	61/87/140/288	92/129/205/413	124/172/270/539
1.5 kVA	5/8/15/37	26/40/66/143	51/76/122/254	79/114/179/365	106/153/237/476
2 kVA	6/10/18/46	31/46/77/171	61/88/142/301	93/131/207/431	125/174/273/561
3 kVA	3/5/10/27	17/27/47/108	36/53/89/194	55/81/133/281	76/109/177/368

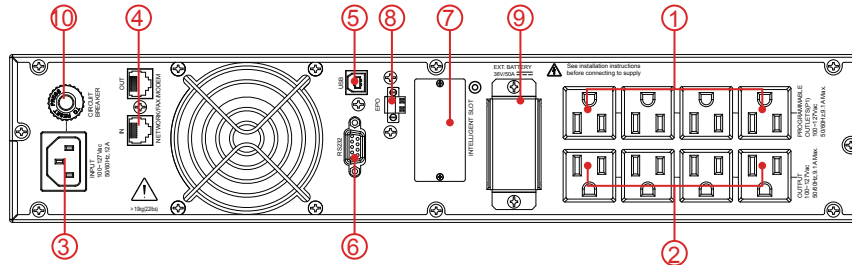
POWER	UPS + 5 batt module	UPS + 6 batt module
1 kVA	147/209/345/758	175/251/417/936
1.5 kVA	129/182/299/643	160/224/377/839
2 kVA	147/209/350/784	175/251/421/958
3 kVA	92/133/217/462	113/164/262/551

Battery autonomy in minutes at 100 / 75 / 50 / 25% load

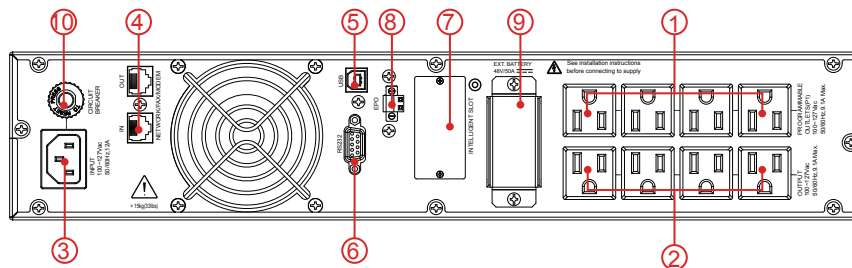
Given runtimes are estimates and valid at 20 degrees Celsius. Actual runtime of the system will depend, among many variables, on the age of the batteries and environmental conditions

Rear view

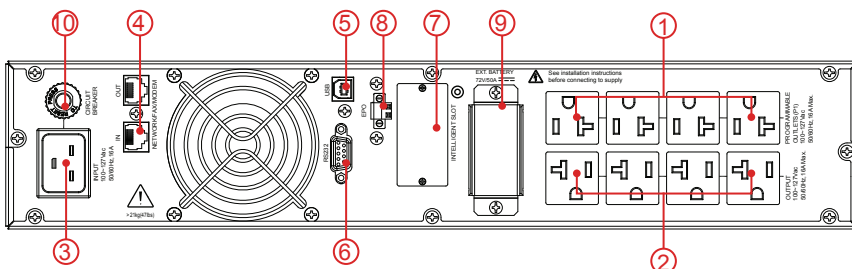
1 kVA



1.5 kVA



2 kVA



3 kVA

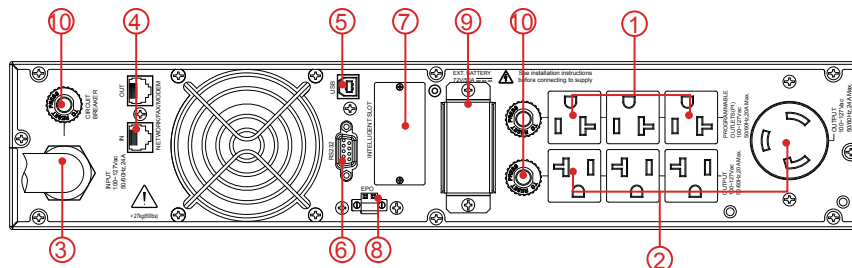











Table 1: UPS rear panel connectors and ports

1	Programmable outlets: connect to non-critical loads
2	Output receptacles: connect to mission-critical loads
3	AC input
4	Network/Fax/Modem surge protection
5	USB communication port
6	RS-232 communication port
7	SNMP intelligent slot
8	Emergency power off function connector (EPO)
9	External battery connection
10	Circuit breaker

CONNECTORS / SOCKETS

Product name	Output socket				Input socket			
	Qty	Type	Current	Drawing	Qty	Type	Current	Drawing
1 kVA	8	NEMA 5-15R	12A		1	IEC C14	12A	
1.5 kVA	8	NEMA 5-15R	12A		1	IEC C14	12A	
2 kVA	8	NEMA 5-20R	16A		1	IEC C20	16A	
3 kVA	1	NEMA L5-30R	24A		1	NEMA L5-30P	24A	
	6	NEMA 5-20R	16A					

Options

For 1-3 kVA, an external enclosure is necessary to connect via RS232 to the UPS.

RACK MOUNTING KITS

Rack rails, screws and metallic plates for easy installation of the UPS and EBM's to a standard 19' rack.

NETWORK INTERFACE CARD

Enables real-time monitoring of your UPS system via a standard web browser or by using the included monitoring software.

ABB's monitoring devices provide real-time visibility of the condition of your power equipment and help in solving problems before they become critical.

SUPPORTED MODELS

- WebPro SNMP
- WebPro ModBus
- Environmental Monitoring Probe

Third party adapters can be installed as well¹:

- CS141 slot / box Basic
- CS141 slot / box Advanced
- CS141 slot / box ModBus

RELAY INTERFACE CARD

Provides contact closures for remote monitoring of alarm conditions of PowerValue 11 RT G2 systems.

The card is user-installable, hot-swappable and enables advanced communication between the UPS and the computer

Models

- AS400

MONITORING SOFTWARE


It is an advanced UPS management software suite to allow remote control and monitoring of UPS equipped with network interface cards in a LAN or Internet environment. It can manage a single or multiple UPSs and prevent data loss from power outage by programming a safe system shutdown. The software is included with the SNMP adapter.



SENSORS

Temperature sensors, humidity sensors and alarm buzzers support monitoring the environmental condition and enables an efficient identification of the alarms.

Technical specifications

GENERAL DATA	1 kVA	1.5 kVA	2 kVA	3 kVA
Product picture				
Apparent power	1 kVA	1.5 kVA	2 kVA	3 kVA
Active power	1 kW	1.45 kW	1.93 kW	2.88 kW
UPS type	On-line, transformer-free	On-line, transformer-free	On-line, transformer-free	On-line, transformer-free
Battery	Included	Included	Included	Included
MECHANICAL				
Dimensions (width×height×depth)	17.2"x 3.4"x16.1" (438x88x410mm)	17.2"x3.4"x20" (438x88x510mm)	17.2"x3.4"x24.8" (438x88x630mm)	17.2"x3.4"x24.8" (438x88x630mm)
Weight (with batteries)	31.7lbs (14.4kg)	43lbs (19.5kg)	49.6lbs (22.5kg)	60.6lbs (27.5kg)
ACOUSTIC NOISE (acc. To IEC 62040-3)				
In normal mode (at <=25°C) at 100 / 50 % Load	<50 dBA	<50 dBA	<55 dBA	<55 dBA
In battery mode (at <=25°C) at 100 / 50 % Load	<50 dBA	<50 dBA	<55 dBA	<55 dBA
SAFETY				
Access	Operator	Operator	Operator	Operator
Degree of protection against hazards and water ingress	IP 20	IP 20	IP 20	IP 20
ELECTROMAGNETIC COMPATIBILITY				
Compliant to FCC part 15	Yes	Yes	Yes	Yes
Category Emission / Immunity	Class A	Class A	Class A	Class A
ENVIRONMENTAL				
Storage temperature range	-4°F - +122°F (-20°C - +50°C)	-4°F - +122°F (-20°C - +50°C)	-4°F - +122°F (-20°C - +50°C)	-4°F - +122°F (-20°C - +50°C)
Operative temperature range	32°F - +104°F (0°C - +40°C)	32°F - +104°F (0°C - +40°C)	32°F - +104°F (0°C - +40°C)	32°F - +104°F (0°C - +40°C)
Storage (models with batteries)	32°F - +95°F (0°C - +35°C)	32°F - +95°F (0°C - +35°C)	32°F - +95°F (0°C - +35°C)	32°F - +95°F (0°C - +35°C)
Relative humidity	≤ 95% (non-condensing)			
Max. altitude without de-rating	39370" ~ 1000m (above 39370" ~ 1000m, 1% de-rating every 3937" ~ 100m according to IEC/EN 62040-3)			
ADDITIONAL AND USUAL INFORMATION				
Input connection	3 wires, 1 phase + N + PE			
Output connection	3 wires, 1 phase + N + PE			
Cable entry	Rear	Rear	Rear	Rear
Battery cable entry	Rear	Rear	Rear	Rear
Accessibility	Front only	Front only	Front only	Front only
Air outlet	Rear	Rear	Rear	Rear
OPTIONS				
Environmental monitoring probe				
External battery modules (EBM)				
Network interface cards/box				
Relay card with potential-free contacts (customer outputs)				
Rack mounting kits for UPS and EBM				
ModBus card				
INCLUDED (DEFAULT)				
Sea freight packaging (carton box)	Included	Included	Included	Included
Back-feed protection	Internal	Internal	Internal	Internal

INPUT CHARACTERISTICS	1 kVA	1.5 kVA	2 kVA	3 kVA
Acceptance voltage (steady-state, r.m.s)	55-150VAC (de-rating to 60% @60V)			
Nominal voltage	100 VAC / 110 VAC / 115 VAC / 120 VAC / 125 VAC			
Tolerance, referred to 120V	-33% / +25% at <100% load, -41% / +25% at <80% load, -50% / +25% at <70% load, -54% / +25% at <60% load			
Frequency, rated	50 Hz / 60 Hz (selectable)			
Frequency tolerance	45 Hz – 55 Hz (50 Hz system) / 54 Hz – 66 Hz (60 Hz system)			
Current (r.m.s), rated (with battery charged and input 120V, Limited by Input power cord rating)	9.3A	13.2 A	17.6 A	26.4 A
Current (r.m.s), maximum (with charging batt. and input 120V, Limited by Input power cord rating)	9.3A	13.2 A	17.6 A	26.4 A
Total harmonic distortion (THDi)	< 5 % @ 100% R Load	< 5 % @ 100% R Load	< 5 % @ 100% R Load	< 5 % @ 100% R Load
Power factor	≥ 0.99 @ 100% load	≥ 0.99 @ 100% load	≥ 0.99 @ 100% load	≥ 0.99 @ 100% load
Rated short-time withstand current (I_{cw})	3 kA for 1.5 cycles	3 kA for 1.5 cycles	3 kA for 1.5 cycles	3 kA for 1.5 cycles
AC power distribution system	TN-C,TN-C-S,TN-S,TT			
Phases required	1	1	1	1
Neutral required	Yes	Yes	Yes	Yes
Connection	3 wires, 1 phase + N + PE			
Cable entry	Rear	Rear	Rear	Rear
Walk In/Soft Start	Yes (Power supply needed only for first start-up)			

OUTPUT CHARACTERISTICS	1 kVA	1.5 kVA	2 kVA	3 kVA
Rated power	1000 W	1450W	1930 W	2880 W
AC power distribution system	TN-C,TN-C-S,TN-S,TT			
Available phases	1	1	1	1
Neutral available	Yes	Yes	Yes	Yes
Rated voltage (steady state, r.m.s.)	100 VAC(Derating 80%) / 110 VAC / 115 VAC / 120 VAC / 125 VAC	100 VAC(Derating 80%) / 110 VAC / 115 VAC / 120 VAC / 125 VAC	100 VAC(Derating 80%) / 110 VAC / 115 VAC / 120 VAC / 125 VAC	100 VAC(Derating 80%) / 110 VAC / 115 VAC / 120 VAC / 125 VAC
Variation in normal mode / battery mode	± 1%	± 1%	± 1%	± 1%
Total Harmonic Distortion (THDu), 100% Load, Normal Mode				
- Linear	< 2%	< 2%	< 2%	< 2%
- Non-linear (acc. to IEC 62040-3)	< 4%	< 4%	< 4%	< 4%
Total Harmonic Distortion (THDu), 100% Load, Battery Mode				
- Linear	< 2%	< 2%	< 2%	< 2%
- Non-linear (acc. to IEC 62040-3)	< 4%	< 4%	< 4%	< 4%
Voltage Transient And Recovery Time, 100% Step Load				
- Linear	60 ms	60 ms	60 ms	60 ms
- Non-linear (acc. to IEC 62040-3)	100 ms	100 ms	100 ms	100 ms
Transfer time normal mode --> battery mode	0 ms	0 ms	0 ms	0 ms
Frequency (steady-state), rated	Synchronized with the input mains: 47-53 Hz for 50 Hz systems 57-63 Hz for 60 Hz systems			
Variation in free-running	± 0.1 Hz	± 0.1 Hz	± 0.1 Hz	± 0.1 Hz
Max synch phase error (referred to a 360° cycle)	≤3°	≤3°	≤3°	≤3°
Max slew-rate	1 Hz/s	1 Hz/s	1 Hz/s	1 Hz/s
Nominal current (In), r.m.s. rated	8.3 A	12.5 A	16.6 A	25 A
Overload on inverter	1.5s @140% load; 30s @130% load; 300s @110% load (Line Mode) 1.5s @140% load; 10s @130% load; 120s @110% load (Battery Mode)			
Fault clearing capability normal mode and battery mode (100ms)	2.0 x In	2.0 x In	2.0 x In	2.0 x In
Crest factor (Load supported)	3 : 1	3 : 1	3 : 1	3 : 1
Load power factor, rated	1.0	1.0	1.0	1.0
Displacement (permissible lead-lag range)	0.7 lead – 0.7 lag	0.7 lead – 0.7 lag	0.7 lead – 0.7 lag	0.7 lead – 0.7 lag

DOUBLE CONVERSION EFFICIENCY IN NORMAL MODE, LINEAR LOAD:

100% load	88%	89%	90%	90%
75% load	88%	89%	89%	90%
50% load	88%	90%	89%	91%
25% load	85%	88%	87%	88%
Eco-mode efficiency, linear load	≥95%	≥95%	≥95%	≥96%

BYPASS—AUTOMATIC: STATIC SWITCH

Transfer time: inverter to bypass / bypass to inverter / inverter to eco mode / eco mode à inv.	<10 ms / <10 ms / <10 ms / <10ms	<10 ms / <10 ms / <10 ms / <10ms	<10 ms / <10 ms / <10 ms / <10ms	<10 ms / <10 ms / <10 ms / <10ms
Fault clearing capability (bypass mode) for 20 ms	7.7 x In ¹⁾ (100A)	6.2 x In ¹⁾ (100A)	5 x In ¹⁾ (100A)	6.7 x In ¹⁾ (200A)
Overload on bypass mode	30 minute @ 110<120% load 10 minute @ 120-130% load 1 minute @ >130% load			
Bypass - maintenance	Optional, external	Optional, external	Optional, external	Optional, external
Bypass protection fuse or circuit breaker rating	13A/16A/20A/30A			

¹ With recommended fuses, see section Cables and Fuses

BATTERY CHARACTERISTICS	1 kVA	1.5 kVA	2 kVA	3 kVA
Technology	VRLA, vented lead-acid	VRLA, vented lead-acid	VRLA, vented lead-acid	VRLA, vented lead-acid
Number of 12 V blocks (fixed)	3	4	6	6
Battery charger max. current capability	6A	6A	6A	6A
Battery charger max. power charger capability	246 W	328 W	493 W	493 W
Floating voltage (VRLA)	2.28 VDC/cell	2.28 VDC/cell	2.28 VDC/cell	2.28 VDC/cell
End of discharge voltage (VRLA)	Load dependent, 1.67 VDC/cell@100% Load			
Temperature compensation	Yes	Yes	Yes	Yes
Battery test	Automatic and periodic battery test (selectable)	Automatic and periodic battery test (selectable)	Automatic and periodic battery test (selectable)	Automatic and periodic battery test (selectable)

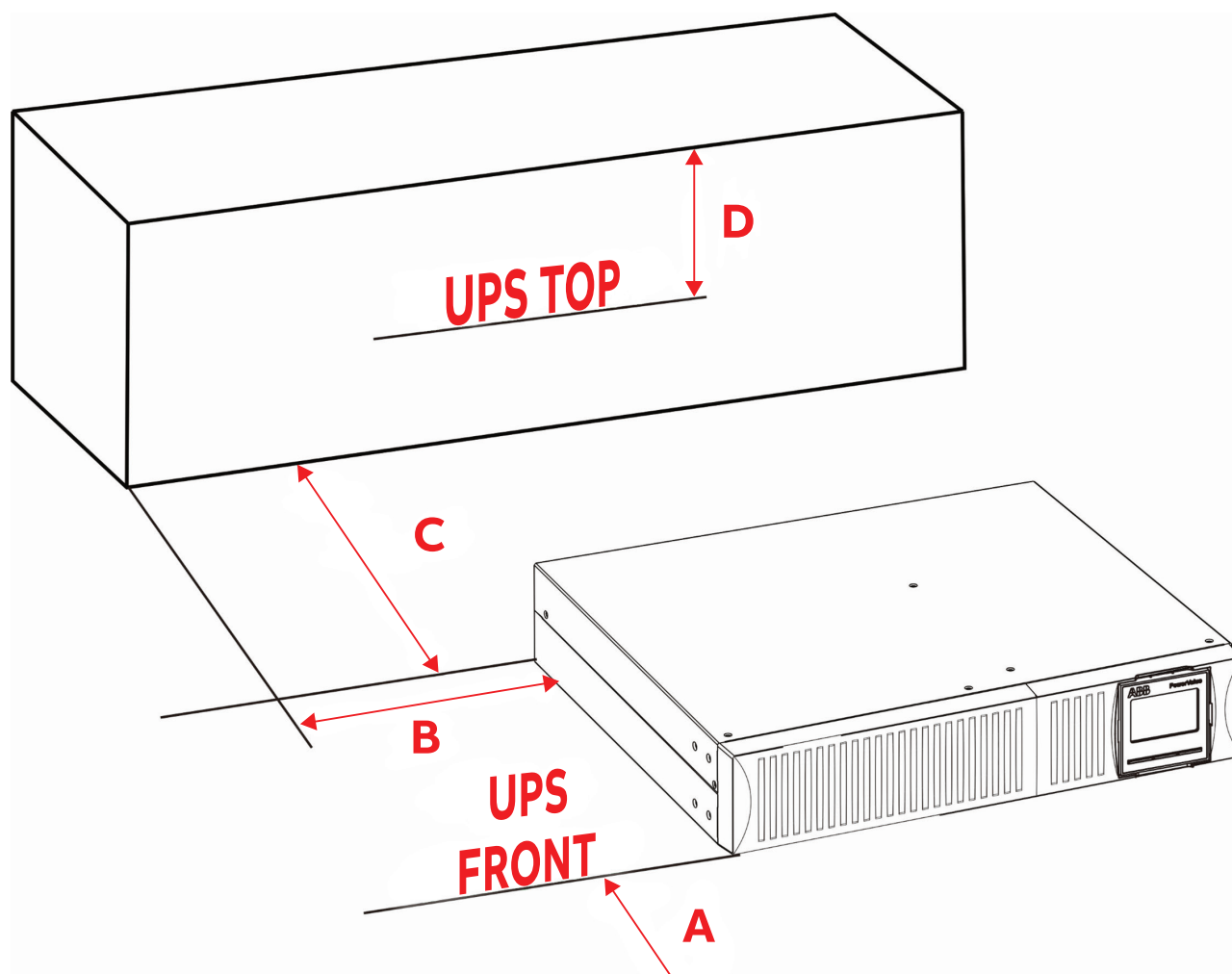
¹⁾ With recommended fuses, see section Cables and Fuses

USER INTERFACE – COMMUNICATION

STANDARD ITEMS

RS232 on Sub-D9 port	For service and for CS141 box
Connectivity slot	For integration of optional connectivity and relay card
Display	LCD display
EPO	Emergency Power Off
Dry IN/OUT contacts	NO
USB (monitoring software, HID)	Yes

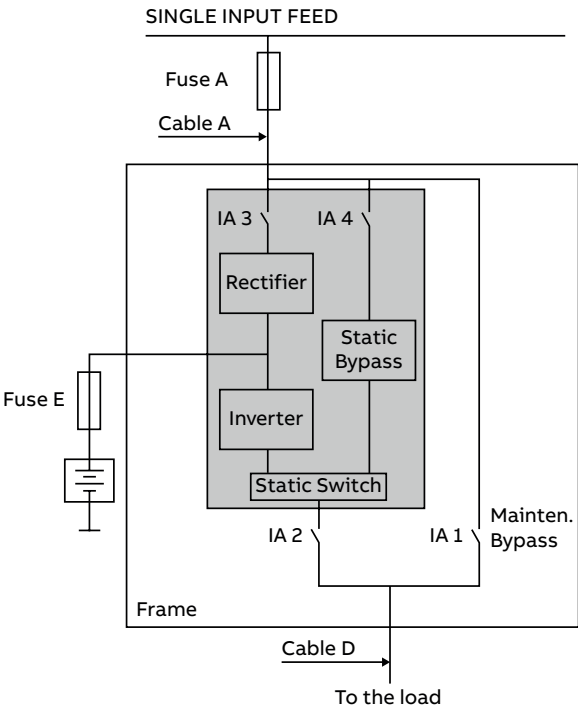
CLEARANCES	1 kVA /1.5kVA	2 kVA	3 kVA
MINIMUM CLEARANCES FOR SINGLE UPS			
A	9.8" (25cm)	9.8" (25cm)	9.8" (25cm)
B	0" (0cm)	0" (0cm)	0" (0cm)
C	9.8" (25cm)	9.8" (25cm)	9.8" (25cm)
D	0" (0cm)	0" (0cm)	0" (0cm)
MINIMUM CLEARANCES FOR UPS PLUS OTHER CABINETS IN ROW			
A	9.8" (25cm)	9.8" (25cm)	9.8" (25cm)
B	0" (0cm)	0" (0cm)	0" (0cm)
C	9.8" (25cm)	9.8" (25cm)	9.8" (25cm)
D	0" (0cm)	0" (0cm)	0" (0cm)



HEAT DISSIPATION	1 kVA	1.5kVA	2 kVA	3 kVA
Air-flow	From front to back	From front to back	From front to back	From front to back
Heat dissipation with 100% linear load	120W	165W	200W	300W
Heat dissipation with 100% non-lin. load (acc. to 62040-3)	120W	165W	200W	300W
Air-flow (25° - 30°) with 100% non-linear load	17.5 m³/h	23.3 m³/h	35.0 m³/h	35.0 m³/h
Heat Dissipation without load	36W	43W	43W	55W

CABLE & FUSE

Cable sections and fuse ratings recommended according to (IEC 60950-1)



RATINGS	1 kVA	1.5 kVA	2 kVA	3 kVA
SINGLE INPUT FEED				
Input fuse A-Type: gL or CB	1 x 15A	1 x 15A	1 x 20A	1 x 30A
Input cable A	3 x AWG16	3 x AWG14	3 x AWG12	3 x AWG10
Output cable D	3 x AWG16	3 x AWG14	3 x AWG12	3 x AWG10
Battery fuse E-Type: gR or CB	2 x 60A	2 x 60A	2 x 60A	2 x 60A

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