

TECHNICAL DATASHEET

UPS PowerValue RT G2

5-10 kVA UL



Working mode

on-line double conversion

Module power rating

5-10 kVA

Output power factor

Up to 1.0

Efficiency double conversion

up to 91%

Efficiency in ECO-MODE

up to 97%

Maximum weight

22.5kg/50lbs

Input current distortion THDi

≤4%

Input power factor (PF)

≥ 0.99

Communication cards

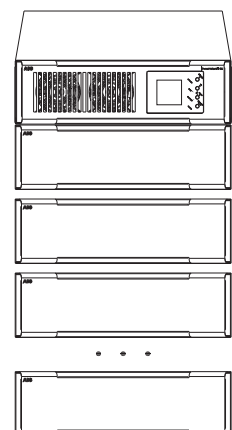
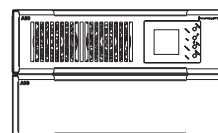
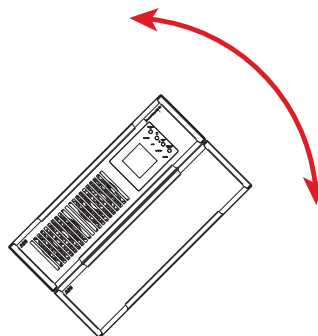
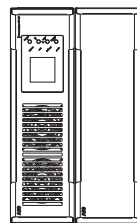
SNMP / Modbus / AS400

Mechanical configuration

Rack-Tower with electronically rotatable display by 90°



- Up to 4 battery modules per UPS can be added
- Rotatable display (90°)



About this manual

Document information

| | | |
|------------------------|---|---|
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UPS features



Frequency conversion

Operating as a frequency converter, the PowerValue 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: 56-64Hz
- Output frequency: 50 or 60 Hz
- Output de-rating : 60%

Cold start

The PowerValue 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 start-up, if the malfunction is on the power supply, or the UPS starts-up on the battery and does not transfer to 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 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 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 RT G2, the power of the generator should be dimensioned 1.3 times the UPS rated power.

Design flexibility

The PowerValue 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 Max 8A battery charger is available if the battery modules are connected.




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)



EXTERNAL BATTERY TYPE MODULE

| | Power | Dimensions (DxHxW) | Weight | Battery |
|---|----------|------------------------------------|-------------|--------------|
|  | 5-10 kVA | 633x131x438mm /25x5.25x17.3inch | 72kg/159lbs | 2 x10 x 10Ah |
| | | | | |
| | | | | |

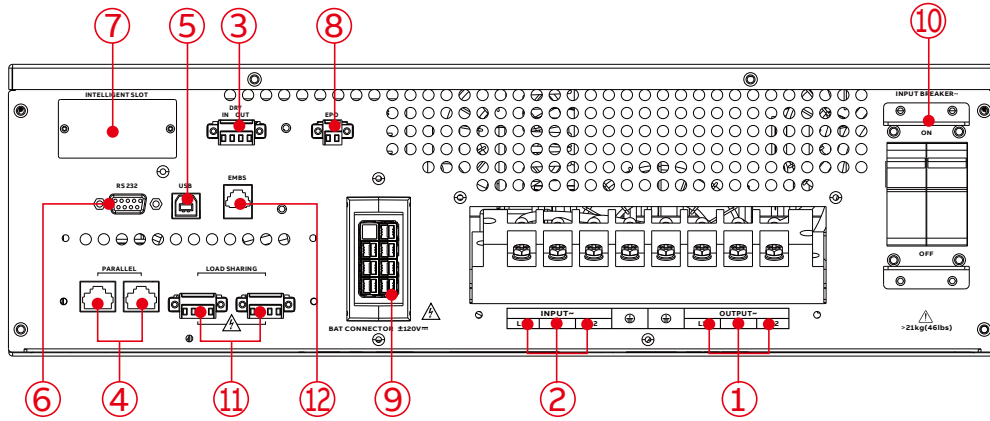
BATTERY AUTONOMY

| Power (kVA) | UPS + 1 batt module | UPS + 2 batt module | UPS + 3 batt module | UPS + 4 batt module |
|-------------|---------------------|---------------------|---------------------|---------------------|
| 5kVA | 14/20/35/78 | 35/51/78/169 | 56/78/132/277 | 78/114/169/404 |
| 6kVA | 11/16/27/61 | 27/42/61/147 | 48/61/103/221 | 61/86/147/311 |
| 8kVA | 7/11/19/48 | 19/27/48/103 | 31/48/73/161 | 48/61/103/221 |
| 10kVA | 6/9/16/42 | 16/24/42/86 | 27/42/61/147 | 42/56/86/180 |

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

5KVA/6KVA



8KVA/10KVA

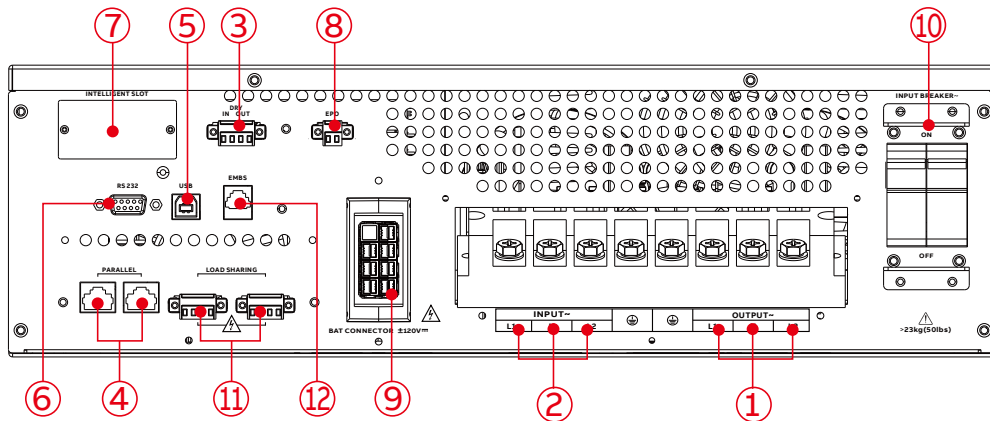


Table 1: UPS rear panel connectors and ports 1

| | |
|----|-----------------------------|
| 1 | AC Output terminal |
| 2 | AC Input terminal |
| 3 | Dry contact terminal |
| 4 | Parallel port |
| 5 | USB communication port |
| 6 | RS-232 communication port |
| 7 | SNMP intelligent slot |
| 8 | EPO connector |
| 9 | External battery connection |
| 10 | Input circuit breaker |
| 11 | Current sharing port |
| 12 | EMBS communication port |

Options

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



EXTERNAL MAINTENANCE BYPASS SWITCH

Used as an external maintenance bypass switch to provide continuous power without shutting down the connected loads during UPS scheduled maintenance or battery replacement.



ISOLATED TRANSFORMER

Provide different output voltage configuration for different requirement.



SENSORS

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

RELAY INTERFACE CARD

Provides contact closures for remote monitoring of alarm conditions of PowerValue 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.

Technical specifications

GENERAL DATA

| | 5 kVA | 6 kVA | 8 kVA | 10 kVA |
|---|---|---|---|---|
| Apparent power | 5 kVA | 6 kVA | 8 kVA | 10 kVA |
| Active power | 5 kW | 6 kW | 8 kW | 9 kW |
| UPS type | On-line, transformer-free | On-line, transformer-free | On-line, transformer-free | On-line, transformer-free |
| Battery | Not included | Not included | Not included | Not included |
| MECHANICAL | | | | |
| Dimensions (depth×height×width) | 635 x 131 x 438 mm /25x5.25x17.3inch | 635 x 131 x 438 mm /25x5.25x17.3inch | 635 x 131 x 438 mm /25x5.25x17.3inch | 635 x 131 x 438 mm /25x5.25x17.3inch |
| Weight (w/o batteries) | 21kg/47lbs | 21kg/47lbs | 22.5kg/50lbs | 22.5kg/50lbs |
| ACOUSTIC NOISE (acc. To IEC 62040-3) | | | | |
| In normal mode (at ≤25°C) | <58 dBA | <58 dBA | <58 dBA | <58 dBA |
| In battery mode (at ≤25°C) | <58 dBA | <58 dBA | <58 dBA | <58 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 | Class A | Class A | Class A | Class A |
| Category Emission / Immunity | Yes | Yes | Yes | Yes |
| ENVIRONMENTAL | | | | |
| Storage temperature range | -15°C – +60°C/5°F-140°F | | | |
| Operative temperature range | 0°C – +40°C/32°F-104°F | | | |
| Storage (models with batteries) | 0°C – +35°C/32°F-104°F | | | |
| Relative humidity | ≤ 95% (non-condensing) | | | |
| Max. altitude without de-rating | 1000m without de-rating, up to 4000m, 1% de-rating every 100m | | | |
| ADDITIONAL AND USUAL INFORMATION | | | | |
| Input connection | 4 wires, 2 phase + N + PE | | | |
| Output connection | 4 wires, 2 phase + N + PE or 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 | Front, Rear | Front, Rear | Front, Rear | Front, Rear |
| OPTIONS | | | | |
| Environmental monitoring probe | | | | |
| External battery modules (EBM) | | | | |
| External maintenance bypass switch (EMBS) | | | | |
| External isolating transformer | | | | |
| Network interface cards/box | | | | |
| Relay card with potential-free contacts (customer outputs) | | | | |
| ModBus card | | | | |
| INCLUDED (DEFAULT) | | | | |
| Parallel Kit (parallel board pre-installed, parallel cable provided with each unit) | Included | Included | Included | Included |
| Sea freight packaging (carton box) | Included | Included | Included | Included |
| Back-feed protection | External | External | External | External |

INPUT CHARACTERISTICS

| | 5 kVA | 6 kVA | 8 kVA | 10 kVA |
|---|--|--|--|--|
| Acceptance voltage (steady-state, r.m.s) | 88-155VAC (L-N)/ 152-269VAC (L-L) | 88-155VAC (L-N)/ 152-269VAC (L-L) | 88-155VAC (L-N)/ 152-269VAC (L-L) | 88-155VAC (L-N)/ 152-269VAC (L-L) |
| Nominal voltage | 120/208, 120/240, 100/200, 110/220, 115/230, 127/220 VAC | 120/208, 120/240, 100/200, 110/220, 115/230, 127/220 VAC | 120/208, 120/240, 100/200, 110/220, 115/230, 127/220 VAC | 120/208, 120/240, 100/200, 110/220, 115/230, 127/220 VAC |
| Tolerance, referred to 120/208VAC | -20% / +25% | -20% / +25% | -20% / +25% | -20% / +25% |
| Frequency, rated | 50 Hz / 60 Hz (selectable) | 50 Hz / 60 Hz (selectable) | 50 Hz / 60 Hz (selectable) | 50 Hz / 60 Hz (selectable) |
| Frequency tolerance | 46 Hz – 54 Hz (50 Hz system) / 56 Hz – 64 Hz (60 Hz system) | 46 Hz – 54 Hz (50 Hz system) / 56 Hz – 64 Hz (60 Hz system) | 46 Hz – 54 Hz (50 Hz system) / 56 Hz – 64 Hz (60 Hz system) | 46 Hz – 54 Hz (50 Hz system) / 56 Hz – 64 Hz (60 Hz system) |
| Input phase (L1 to L2) | 120°±10%, 180°±10%, 240°±10% | | | |
| Current (r.m.s), rated (with battery charged and input 120/208V) | 20.8 | 25 | 33.3 | 41.7 |
| Current (r.m.s), maximum (with charging batt. and input 120/208V) | 21.8A | 26A | 34.3A | 42.7A |
| Total harmonic distortion (THDi) | < 4 % @ 100% R Load | < 4 % @ 100% R Load | < 4 % @ 100% R Load | < 4 % @ 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}) | 6kA for 1.5 cycles | 6 kA for 1.5 cycles | 6 kA for 1.5 cycles | 6 kA for 1.5 cycles |
| AC power distribution system | TN-S, TT | | | |
| Phases required | 2 | 2 | 2 | 2 |
| Neutral required | Yes | Yes | Yes | Yes |
| ADDITIONAL AND USUAL INFORMATION | | | | |
| Connection | 4 wires, 2 phase + N + PE | | | |
| Cable entry | Rear | Rear | Rear | Rear |
| Walk In/Soft Start | Yes (Power supply needed only for first start-up) | | | |

OUTPUT CHARACTERISTICS

| | 5 kVA | 6 kVA | 8 kVA | 10 kVA |
|--|---|------------------------------|------------------------------|------------------------------|
| Rated power | 5000 W | 6000W | 8000 W | 9000 W |
| AC power distribution system | TN-S, TT | | | |
| Available phases | 2 | 2 | 2 | 2 |
| Neutral required | Yes | Yes | Yes | Yes |
| Rated voltage (steady state, r.m.s.) | 100/200(derating 90%), 120/208(default), 120/240, 110/220, 115/230, 127/220 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 | 100 ms | 100 ms | 100 ms | 100 ms |
| Non-linear (acc. to IEC 62040-3) | 100 ms | 100 ms | 100 ms | 100 ms |
| Transfer normal mode --> battery mode | 0 ms | 0 ms | 0 ms | 0 ms |
| Frequency (steady-state), rated | Synchronized with the input mains: 46-54 Hz for 50 Hz systems 56-64 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 | 23 A | 28 A | 37 A | 42 A |
| Overload on inverter | 200ms: > 150% load; 10s: 130-150% load; 5min: 110-130% load; 30min: 100-110% load (Line Mode) 200ms: > 150% load; 10s: 130-150% load; 30s: 110-130% load; 3min: 100-110% load (Battery Mode) | | | |
| Fault clearing capability normal mode and battery mode (100ms) *default | 1.5 x In | 1.5 x In | 1.5 x In | 1.5 x In |
| Crest factor (Load supported) | 3 : 1 | 3 : 1 | 3 : 1 | 3 : 1 |
| Load power factor, rated | 1.0 | 1.0 | 1.0 | 0.9 |
| Displacement (permissible lead-lag range) | 0.5 lead – 0.5 lag | 0.5 lead – 0.5 lag | 0.5 lead – 0.5 lag | 0.5 lead – 0.5 lag |
| DOUBLE CONVERSION EFFICIENCY IN NORMAL MODE, LINEAR LOAD | | | | |
| 100% load | 91% | 91% | 90% | 91% |
| 75% load | 88% | 90% | 89% | 90% |
| 50% load | 88% | 89% | 89% | 90% |
| 25% load | 85% | 88% | 87% | 88% |
| Eco-mode efficiency, linear load | 97% | 97% | 97% | 97% |
| BYPASS—AUTOMATIC: STATIC SWITCH | | | | |
| Transfer time: inverter to bypass / bypass to inverter / inverter to eco-mode / eco-mode to inv. | 0 ms / 0 ms / 0 ms / 10ms | 0 ms / 0 ms / 0 ms / 10ms | 0 ms / 0 ms / 0 ms / 10ms | 0 ms / 0 ms / 0 ms / 10ms |
| Fault clearing capability (bypass mode) for 20 ms | 17.3xIn(400A) | 14.3xIn(400A) | 17xIn(630A) | 15xIn(630A) |
| Overload on bypass mode | continuous @ 110-130% load (cut off when internal temperature > 85 °C) 1 minute @ >130% load | | | |
| Bypass - maintenance | Optional, external | Optional, external | Optional, external | Optional, external |
| Bypass protection fuse or circuit breaker rating | 40A*2P | 40A*2P | 63A*2P | 63A*2P |

¹ With recommended fuses, see section Cables and Fuses

BATTERY CHARACTERISTICS

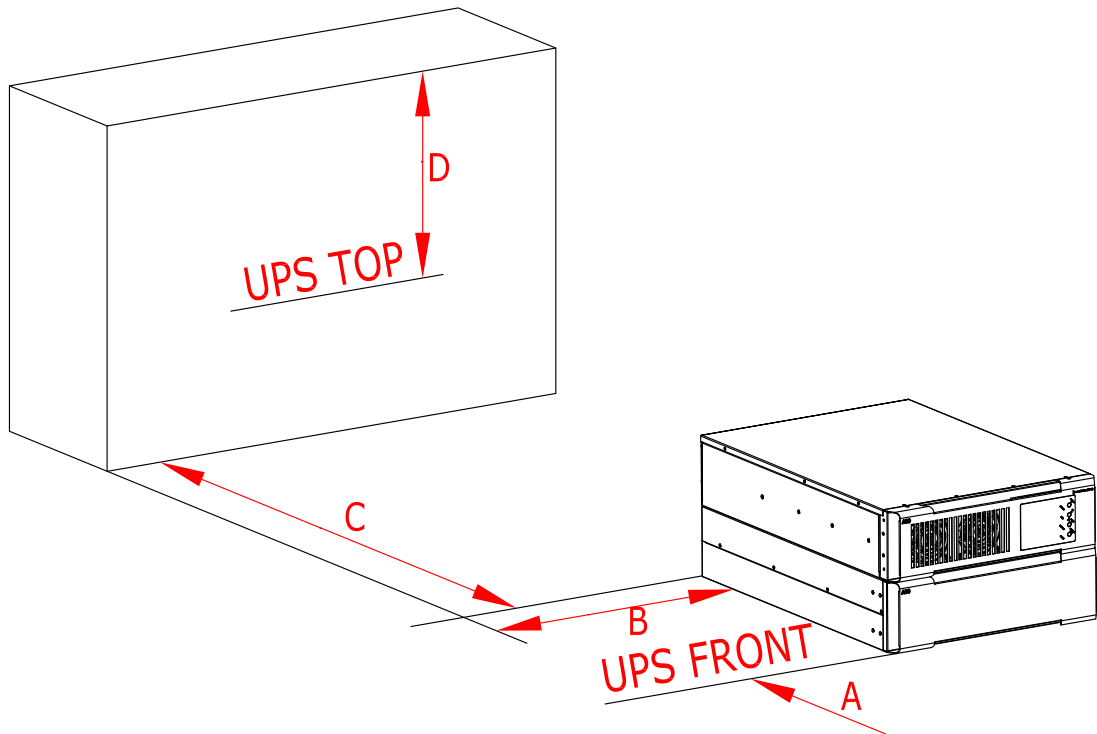
| | 5 kVA | 6 kVA | 8 kVA | 10kVA |
|---|--|--|--|--|
| Technology | VRLA, vented lead-acid | VRLA, vented lead-acid | VRLA, vented lead-acid | VRLA, vented lead-acid |
| Number of 12 V blocks (fixed) | 20/10AH | 20/10AH | 20/10AH | 20/10AH |
| Battery system voltage | ±120V | | | |
| Battery charger max. current capability | 8A | 8A | 8A | 8A |
| Battery charger max. power capability | +/-1128 W | +/-1128 W | +/-1128 W | +/-1128 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, 1.6 VDC/cell@100% Load | Load dependent, 1.6 VDC/cell@100% Load | Load dependent, 1.6 VDC/cell@100% Load | Load dependent, 1.6 VDC/cell@100% Load |
| Temperature compensation | No | No | No | No |
| 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) |

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 | Yes |
| USB (monitoring software, HID) | Yes |

CLEARANCES

| | 5 kVA | 6 kVA | 8 kVA | 10 kVA |
|--|-------------|-------------|-------------|-------------|
| MINIMUM CLEARANCES FOR SINGLE UPS | | | | |
| A | 25cm/10inch | 25cm/10inch | 25cm/10inch | 25cm/10inch |
| B | 0 cm | 0 cm | 0 cm | 0 cm |
| C | 25cm/10inch | 25cm/10inch | 25cm/10inch | 25cm/10inch |
| D | 0 cm | 0 cm | 0 cm | 0 cm |
| MINIMUM CLEARANCES FOR UPS PLUS OTHER CABINETS IN ROW | | | | |
| A | 25cm/10inch | 25cm/10inch | 25cm/10inch | 25cm/10inch |
| B | 0 cm | 0 cm | 0 cm | 0 cm |
| C | 25cm/10inch | 25cm/10inch | 25cm/10inch | 25cm/10inch |
| D | 0 cm | 0 cm | 0 cm | 0 cm |

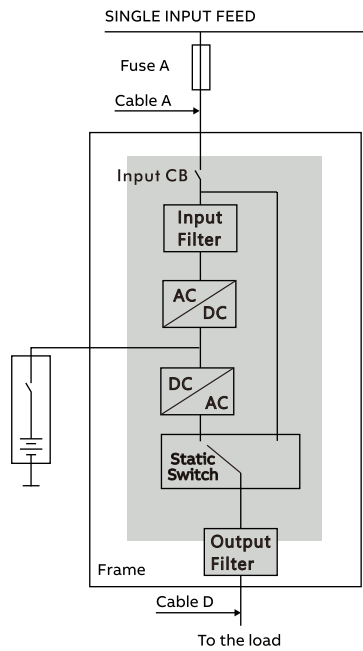


HEAT DISSIPATION

| | 5 kVA | 6 kVA | 8 kVA | 10 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 | 495W | 593W | 889W | 1000W |
| Heat dissipation with 100% non-lin. load (acc. to 62040-3) | 495W | 593W | 889W | 1000W |
| Air-flow (25° - 30°) with 100% non-linear load | 367.2 m ³ /h | 367.2 m ³ /hh | 367.2 m ³ /h | 367.2 m ³ /h |
| Heat Dissipation without load | 110 W | 110 W | 120 W | 120 W |

CABLE & FUSE

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



RATINGS

| | 5 kVA | 6 kVA | 8 kVA | 10 kVA |
|----------------------------------|------------|------------|-----------|-----------|
| SINGLE INPUT FEED | | | | |
| Input CB:Type D [L1, L2] | 2 x 40A | 2 x 40A | 2 x 63A | 2 x 63A |
| Input cable A [L1, L2, N, PE] | 4 x AWG 10 | 4 x AWG 10 | 4 x AWG 8 | 4 x AWG 8 |
| Output cable D [L1, L2, N, PE] | 4 x AWG 10 | 4 x AWG 10 | 4 x AWG 8 | 4 x AWG 8 |
| External Battery CB:Type K [+,-] | 2 x 63A | 2 x 63A | 2 x 63A | 2 x 63A |

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