

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%

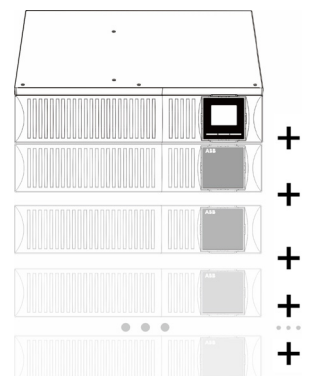
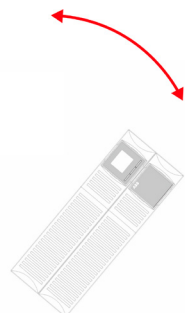
**Input power factor (PF)**  
≥ 0.99

**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°)



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# About this manual

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## Document information

|                        |   |   |
|------------------------|---|---|
| <b>File name</b>       | : | 4NWD005570_ABB_TDS_PVA11_1-3kVA-RT_G2_UL_EN_REV-C |
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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.

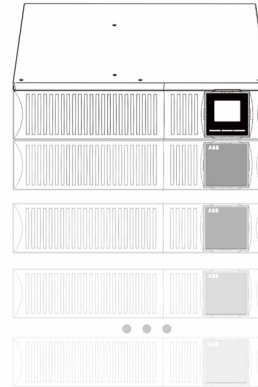


# Batteries

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).



+



+

Up to 6

+

+

+

+

## UPS BATTERY TYPE



|  | Power (kVA) | 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 (kVA) | Dimensions (WxHxD) [mm] | Weight [kg] | Battery    |
|--|-------------|-------------------------|-------------|------------|
|  | 1 kVA       | 438x88x410              | 21.5 kg     | 2 x3 x 9Ah |
|  | 1.5 kVA     | 438x88x510              | 29 kg       | 2 x4 x 9Ah |
|  | 2 kVA       | 438x88x630              | 41.2 kg     | 2 x6 x 9Ah |
|  | 3 kVA       | 438x88x630              | 41.2 kg     | 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      |

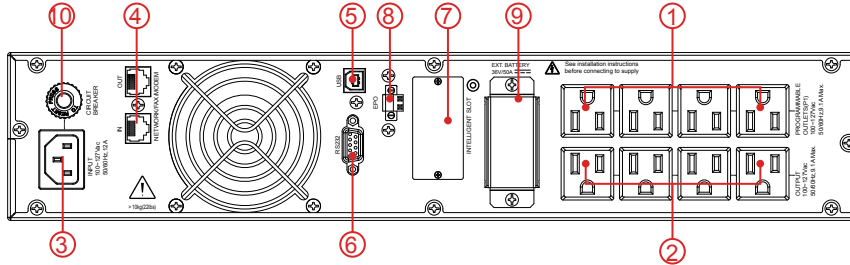
| POWER   | UPS + 5 batt module | UPS + 6 batt module |
|---------|---------------------|---------------------|
| 1 kVA   | 147/209/345/758     | 175/251/417/936     |
| 1.5 kVA | 129/182/299/643     | 160/224/377/839     |
| 2 kVA   | 147/209/350/784     | 175/251/421/958     |
| 3 kVA   | 92/133/217/462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

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

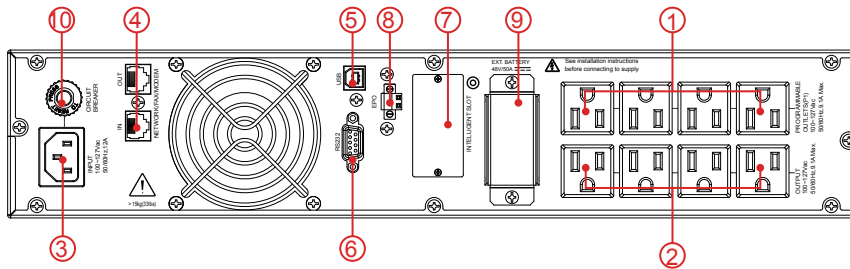
Given runtimes are estimates and valid at 20 degrees Celsius. Actual runtime of the system will depend, among many variables, on the age of the batteries and environmental conditions

# Rear view

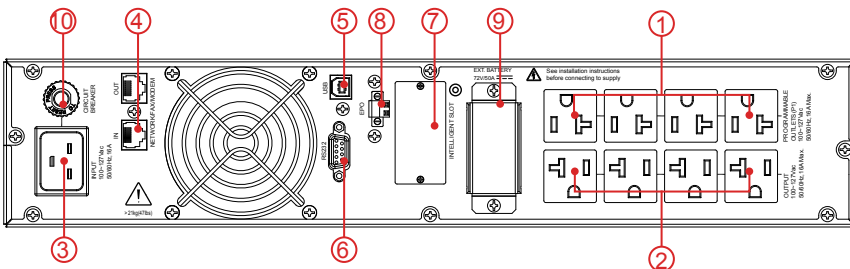
## 1 kVA



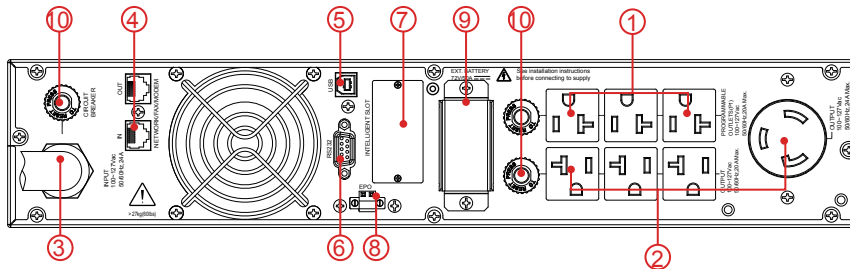
## 1.5 kVA



## 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 well<sup>1</sup>:

- 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,<br>transformer-free   | On-line,<br>transformer-free | On-line,<br>transformer-free | On-line,<br>transformer-free |
| Battery  | Included   | Included                     | Included                     | Included                     |
| <b>MECHANICAL</b>  |  |                              |                              |                              |
| Dimensions (width×height×depth) [mm]                       | 438 x 88 x 310   | 438 x 88 x 610               | 438 x 88 x 630               | 438 x 88 x 630               |
| Weight (with batteries)                                    | 14.4 kg  | 19.5kg                       | 22.5 kg                      | 27.5 kg                      |
| <b>ACOUSTIC NOISE (acc. To IEC 62040-3)</b>                |  |                              |                              |                              |
| In normal mode (at <=25°C)<br>at 100 / 50 % Load           | <50 dBA  | <50 dBA                      | <55 dBA                      | <55 dBA                      |
| In battery mode (at <=25°C)<br>at 100 / 50 % Load          | <50 dBA  | <50 dBA                      | <55 dBA                      | <55 dBA                      |
| <b>SAFETY</b>  |  |                              |                              |                              |
| Access   | Operator   | Operator                     | Operator                     | Operator                     |
| Degree of protection against<br>hazards and water ingress  | IP 20  | IP 20                        | IP 20                        | IP 20                        |
| <b>ELECTROMAGNETIC COMPATIBILITY</b>                       |  |                              |                              |                              |
| Compliant to FCC part 15                                   | Yes  | Yes                          | Yes                          | Yes                          |
| Category Emission / Immunity                               | Class A  | Class A                      | Class A                      | Class A                      |
| <b>ENVIRONMENTAL</b>                                       |  |                              |                              |                              |
| Storage temperature range                                  | -20°C – +50°C  | -20°C – +50°C                | -20°C – +50°C                | -20°C – +50°C                |
| Operative temperature range                                | 0°C – +40°C  | 0°C – +40°C                  | 0°C – +40°C                  | 0°C – +40°C                  |
| Storage (models with batteries)                            | 0°C – +35°C  | 0°C – +35°C                  | 0°C – +35°C                  | 0°C – +35°C                  |
| Relative humidity  | ≤ 95% (non-condensing)   |                              |                              |                              |
| Max. altitude without de-rating                            | 1000m (above 1000m, 1% de-rating every 100m according to IEC/EN 62040-3)           |                              |                              |                              |
| <b>ADDITIONAL AND USUAL INFORMATION</b>                    |  |                              |                              |                              |
| 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                         |
| <b>OPTIONS</b>   |  |                              |                              |                              |
| 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  |  |                              |                              |                              |
| <b>INCLUDED (DEFAULT)</b>                                  |  |                              |                              |                              |
| Sea freight packaging (carton box)                         | Included   | Included                     | Included                     | Included                     |
| Back-feed protection                                       | Internal   | Internal                     | Internal                     | Internal                     |

| <b>INPUT CHARACTERISTICS</b>  | <b>1 kVA</b>   | <b>1.5 kVA</b>      | <b>2 kVA</b>        | <b>3 kVA</b>        |
|---|--|---------------------|---------------------|---------------------|
| 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,<br>-41% / +25% at <80% load,<br>-50% / +25% at <70% load,<br>-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 <sub>cw</sub> )   | 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<br>(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<br>(steady state, r.m.s.)                           | 100 VAC(Derating 80%) /<br>110 VAC / 115 VAC /<br>120 VAC / 125 VAC   | 100 VAC(Derating 80%) /<br>110 VAC / 115 VAC /<br>120 VAC / 125 VAC | 100 VAC(Derating 80%) /<br>110 VAC / 115 VAC /<br>120 VAC / 125 VAC | 100 VAC(Derating 80%) /<br>110 VAC / 115 VAC /<br>120 VAC / 125 VAC |
| Variation in normal mode /<br>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<br>normal mode --> battery mode                     | 0 ms  | 0 ms  | 0 ms  | 0 ms  |
| Frequency (steady-state), rated                                   | Synchronized with the input mains:<br>47-53 Hz for 50 Hz systems<br>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<br>(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)<br>1.5s @140% load; 10s @130% load; 120s @110% load (Battery Mode) |   |   |   |
| Fault clearing capability normal mode<br>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<br>(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 /<br>bypass to inverter / inverter to<br>eco mode / eco mode à inv. | <10 ms / <10 ms /<br><10 ms / <10ms   | <10 ms / <10 ms /<br><10 ms / <10ms | <10 ms / <10 ms /<br><10 ms / <10ms | <10 ms / <10 ms /<br><10 ms / <10ms |
| Fault clearing capability<br>(bypass mode) for 20 ms  | 7.7 x In <sup>1)</sup> (100A)   | 6.2 x In <sup>1)</sup> (100A)       | 5 x In <sup>1)</sup> (100A)         | 6.7 x In <sup>1)</sup> (200A)       |
| Overload on bypass mode   | 30 minute @ 110<120% load<br>10 minute @ 120-130% load<br>1 minute @ >130% load |                                     |                                     |                                     |
| Bypass - maintenance  | Optional, external  | Optional, external                  | Optional, external                  | Optional, external                  |
| Bypass protection fuse<br>or circuit breaker rating   | 13A/16A/20A/30A   |                                     |                                     |                                     |

<sup>1)</sup> With recommended fuses, see section Cables and Fuses

| <b>BATTERY CHARACTERISTICS</b>                | <b>1 kVA</b>                                     | <b>1.5 kVA</b>                                   | <b>2 kVA</b>                                     | <b>3 kVA</b>                                     |
|---|--|--|--|--|
| 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) |

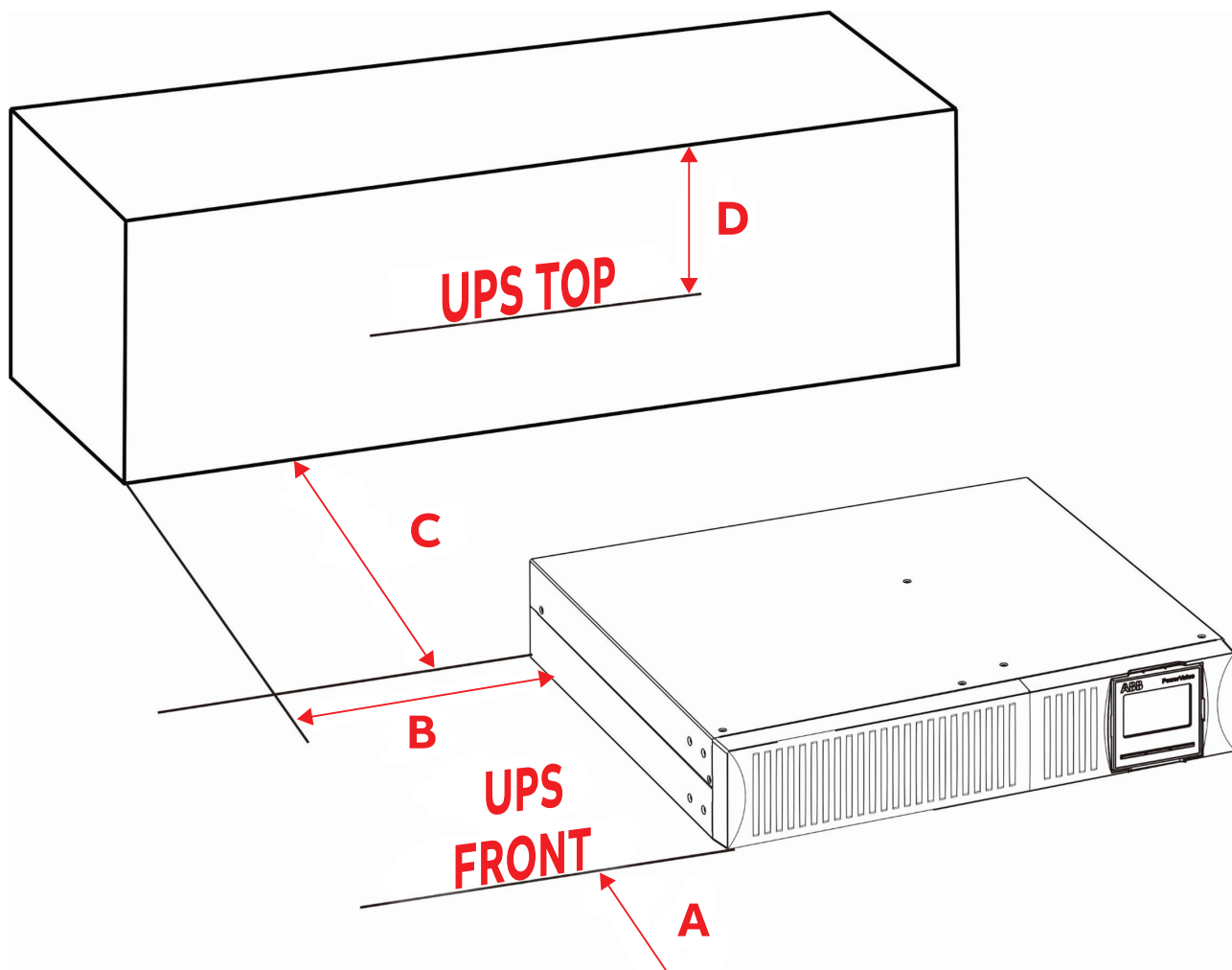
<sup>1)</sup> With recommended fuses, see section Cables and Fuses

**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   |

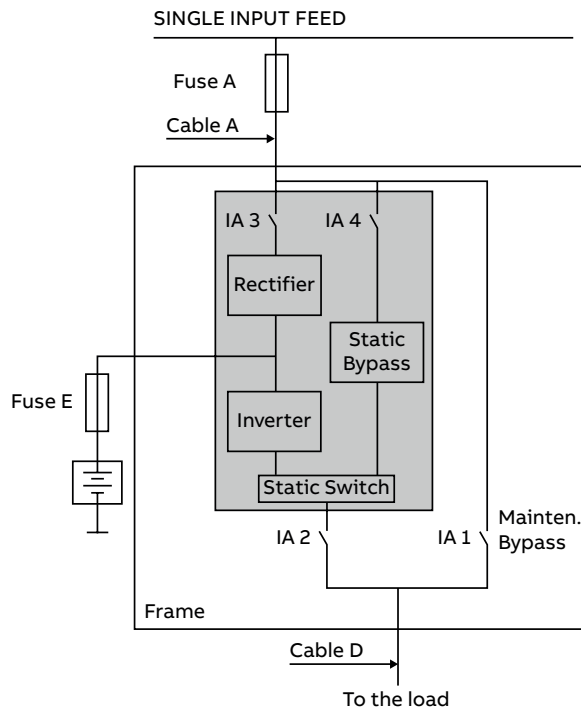
| CLEARANCES   | 1 kVA /1.5kVA | 2 kVA | 3 kVA |
|--|---------------|-------|-------|
| <b>MINIMUM CLEARANCES FOR SINGLE UPS</b>                     |               |       |       |
| A  | 25 cm         | 25 cm | 25 cm |
| B  | 0 cm          | 0 cm  | 0 cm  |
| C  | 25 cm         | 25 cm | 25 cm |
| D  | 0 cm          | 0 cm  | 0 cm  |
| <b>MINIMUM CLEARANCES FOR UPS PLUS OTHER CABINETS IN ROW</b> |               |       |       |
| A  | 25 cm         | 25 cm | 25 cm |
| B  | 0 cm          | 0 cm  | 0 cm  |
| C  | 25 cm         | 25 cm | 25 cm |
| D  | 0 cm          | 0 cm  | 0 cm  |



| 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 m <sup>3</sup> /h | 23.3 m <sup>3</sup> /h | 35.0 m <sup>3</sup> /h | 35.0 m <sup>3</sup> /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     |
|-------------------------------|-----------|-----------|-----------|-----------|
| <b>SINGLE INPUT FEED</b>      |           |           |           |           |
| 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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