

## DESCRIPTION

Pure sine-wave output UPS on-line double conversion type.



### INPUT AC

Mains voltage	230V <sub>ac</sub> 1 phase
Mains voltage range	184...264V <sub>ac</sub>
Mains frequency range	47...63Hz
Power factor at maximum power	> 0.95
Inrush current at 25°C	< 15A <sub>pk</sub> 10ms
Input current	≤16A <sub>rms</sub>
Efficiency	≥ 91%
Internal fuse	T 20A

### INPUT DC and CHARGER

Nominal battery voltage	48V <sub>dc</sub> Other inputs available, please consult factory
Floating voltage at 20°C	55.2V <sub>dc</sub>
Temperature variation of floating voltage	-72mV/°C (between -20°C to +60°C)
Working battery range	40 .. 58V <sub>dc</sub>
Maximum output charging current	10A <sub>dc</sub>
Check period	At the startup and every 30 seconds
Maximum input current without mains	<82A <sub>dc</sub>
Efficiency without mains	≥ 91%
Input overcurrent protection and switcher	Circuit breaker 85A

### OUTPUT

Output voltage	230V <sub>ac</sub> ± 1.5%
Output frequency	50Hz ± 0.2Hz
Load regulation 10 .. 90%	<2%
Harmonic voltage distortion	<3%
Maximum continuous current	13A <sub>rms</sub>
Total output power	3000VA

**ENVIRONMENTAL**

Storage temperature	-20...70°C																								
Operating temperature range	-20...70°C																								
Cooling	Internal controlled forced air																								
	<table border="1"> <caption>Fan speed vs heatsink temperature</caption> <thead> <tr> <th>Heatsink Temp (°C)</th> <th>%rpm fan</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>10</td><td>0</td></tr> <tr><td>20</td><td>0</td></tr> <tr><td>30</td><td>0</td></tr> <tr><td>40</td><td>80</td></tr> <tr><td>50</td><td>85</td></tr> <tr><td>60</td><td>90</td></tr> <tr><td>70</td><td>95</td></tr> <tr><td>80</td><td>100</td></tr> <tr><td>90</td><td>105</td></tr> <tr><td>100</td><td>115</td></tr> </tbody> </table>	Heatsink Temp (°C)	%rpm fan	0	0	10	0	20	0	30	0	40	80	50	85	60	90	70	95	80	100	90	105	100	115
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Storage relative humidity	5...90% (non-condensing)																								
Operating relative humidity	5...90% (non-condensing)																								
Vibration	0.3 mm <sub>pp</sub> @ 5...35Hz, 1.5g @ 35...80 Hz, 1octave/min, 30 min																								
Environmental regulations	RoHS according to directive 2002/95/EC																								
MTBF (MIL-HDBK-217-E; G <sub>b</sub> , 25°C)	86000hours																								

**EMC**

Emission according to norm/s	EN61000-6-3
Immunity according to norm/s	EN61000-6-2

TEST	NORM	PORT	SEVERITY	CONDITIONS	CRIT.
Magnetic field	IEC61000-4-8	X/Y/Z Axis	30A/m	50/60Hz	A
Radiated high-frequency	IEC61000-4-3	X/Y/Z Axis	10V/m	80 - 1000MHz M. 80% 1kHz	A
		X/Y/Z Axis	3V/m	1.4 - 2GHz M. 80% 1kHz	A
		X/Y/Z Axis	1V/m	2 - 2.7GHz M. 80% 1kHz	A
Conducted RF	IEC61000-4-6	Input	10V	0.15...80MHz M. 80% 1kHz	A
		Output	10V	0.15...80MHz M. 80% 1kHz	A
		Signal	10V	0.15...80MHz M. 80% 1kHz	A
Electrostatic discharge	IEC61000-4-2	Case	±8kV	Air (isolated parts)	B
		Case	±4kV	Contact (conductive parts)	B
Fast transients	IEC61000-4-4	Input	±2kV	Tr/Th: 5/50 ns	B
		Output	±2kV	Tr/Th: 5/50 ns	B
		Signal	±1kV	Tr/Th: 5/50 ns	B
Surges	IEC61000-4-5	AC L to L	±1kV	Tr/Th: 1.2/50µs	B
		AC L to PE	±2kV	Tr/Th: 1.2/50µs	B
		DC L to L	±500V	Tr/Th: 1.2/50µs	B
		DC L to PE	±500V	Tr/Th: 1.2/50µs	B
Voltage DIPS/SAGS	IEC61000-4-11	AC Input	0%	20ms (zero crossing)	B / A
		AC Input	40%	0.2s (zero crossing)	C / A
		AC Input	70%	0.5s (zero crossing)	C / A
		AC Input	0%	4s (zero crossing)	C / A

\* with battery

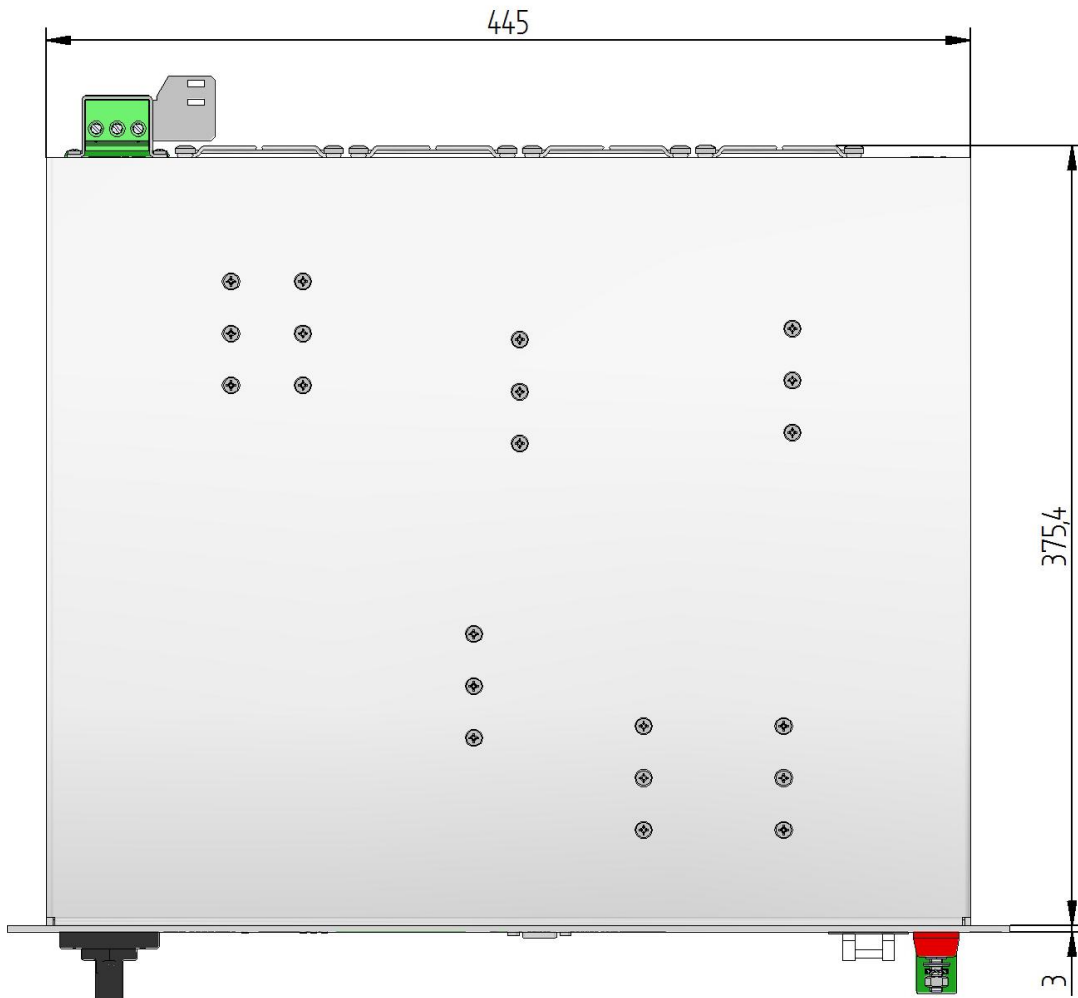
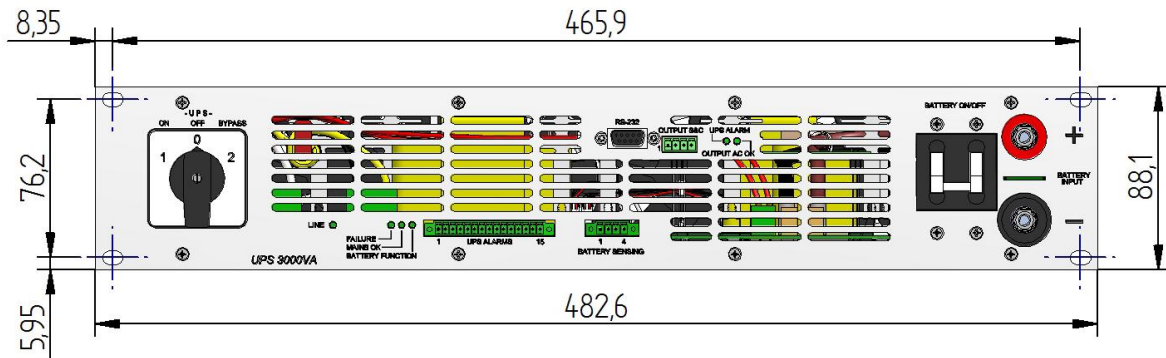
**SAFETY**

Safety according to norm/s	EN60950 Class I
Dielectric strength Battery / AC	3000V <sub>ac</sub>
Dielectric strength Battery / Earth	500V <sub>ac</sub>
Dielectric strength AC / Earth	1500V <sub>ac</sub>
Dielectric strength Battery / Isolated signals	200V <sub>ac</sub>
Dielectric strength Battery / Relay contact	200V <sub>ac</sub>
Protection Degree	IP20

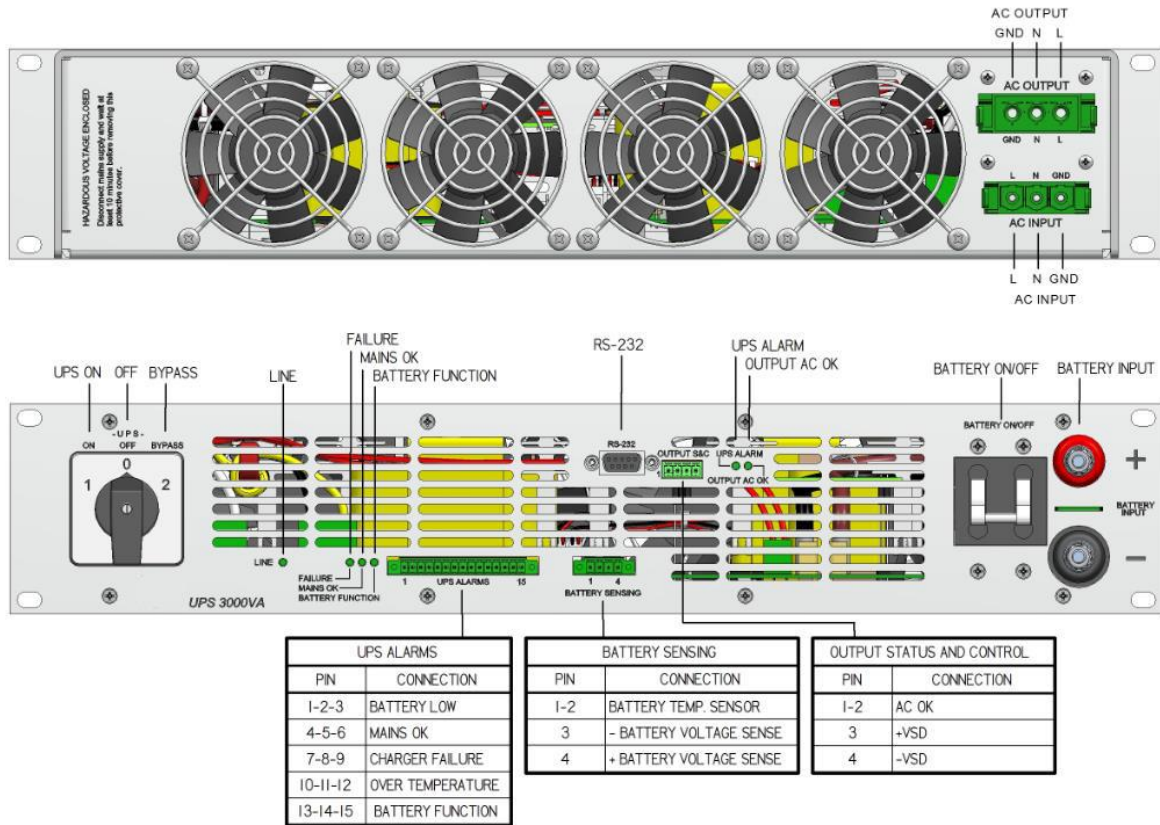
**MECHANICS**

Mechanical shape	19" subrack	
Dimensions	88.1 (2U) x 482.6 x 370mm (H x W x D)	
Weight	11.5 Kg	
Connections:	AC input	Phoenix DFK-PC16/3-ST-10,16. Recommended aerial PC16/3-ST-10.16
	AC output	Phoenix DFK-IPC16/3-ST-10,16. Recommended aerial IPC16/3-ST-10.16
	Battery	Stud terminal M6. Recommended torque 2.5 N·m
	Alarms	Phoenix MC1.5/15-GF-3.50
	Battery sensing	Phoenix MC1.5/4-GF-3.81
	Output OK and remote shutdown	Phoenix MC1.5/4-G-3.81
	RS-232	Sub-DB9 female

**DIMENSIONS**



**FRONT AND REAR VIEW**



**PROTECTIONS AND CONTROL**

- Output protected against overloads and shortcircuits
- Over-temperature protection shutdown
- Battery low alarm by relay contacts
- Battery cut off when battery low
- Manual bypass
- Diagnostics:
  - Battery OK
  - Battery function
  - Mains OK
  - Mains function
  - Output OK

**DESCRIPTION**

Main Switch:

Text	Explanation
OFF	UPS OFF and AC output is floating
UPS ON	The UPS is ON <ul style="list-style-type: none"> <li>• If AC voltage &gt; 184V<sub>ac</sub>, the battery charger works and the output power flows from the mains.</li> <li>• If AC voltage &lt; 180V<sub>ac</sub> and the battery voltage &gt; 40V<sub>dc</sub>, the output power flows from the battery</li> </ul>
BYPASS	UPS OFF and the AC output is connect to AC input

LED indicators:

LED	Front text	Explanation
Green	Line	Voltage present in the AC input
Red	Failure	Charger failure or Battery low < 36V <sub>dc</sub>
Green	Mains OK	AC input voltage >184V <sub>ac</sub>
Green	Battery Function	AC input voltage <180V <sub>ac</sub> and Battery voltage > 40V <sub>dc</sub>
Red	UPS Alarm	Output current >13A <sub>rms</sub> Output voltage < 210V <sub>ac</sub> Overtemperature (semiconductors temperature > 92°C) Battery voltage < 42V <sub>dc</sub> or > 58.4V <sub>dc</sub>
Green	Output AC OK	Output voltage OK > 210V <sub>ac</sub>

Alarms relay contacts:

PIN	Explanation
1- NO	NO - Contact closed if the battery voltage > 42V <sub>dc</sub>
2- C	C - Common
3- NC	NC - Contact closed if the battery voltage < 42V <sub>dc</sub>
4- NO	NO - Contact closed if the AC input > 184V <sub>ac</sub>
5- C	C - Common
6- NC	NC - Contact closed if the AC input < 184V <sub>ac</sub>
7- NO	NO - Contact closed if the battery charger is OK and battery voltage > 36V <sub>dc</sub>
8- C	C - Common
9- NC	NC - Contact closed if the battery charger fails or battery voltage < 36V <sub>dc</sub>
10- NO	NO - Contact closed if the heat sink temperature > 92°C
11- C	C - Common
12- NC	NC - Contact closed if the heat sink temperature < 92°C
13- NO	NO - Contact closed if the AC input < 180V <sub>ac</sub> and the battery voltage > 40V <sub>dc</sub>
14- C	C - Common
15-NC	NC - Contact closed if the AC input > 180V <sub>ac</sub> or the battery voltage < 40V <sub>dc</sub>

Sensing contacts:

PIN	Explanation
1-2	Pins for temperature sensor NTC. If not connect the UPS works like the battery temperature is the same that the UPS temperature (battery float voltage depends of the battery temperature). Recommended type Semitec 103AT11.
3	Sensing- battery voltage (for compensating wire drop). If not connect the battery voltage is the same that the battery input.
4	Sensing+ battery voltage (for compensating wire drop). If not connect the battery voltage is the same that the battery input.

RS-232 connector:

PIN	Explanation
5	GND
2	RXin
3	TXout

RS-232 configuration: 19200 bauds – parity none – 8 bits – 1 bit stop

Communication protocol in ASCII mode:

Header	Function	Parameter	Returns	Explanation	
P	R	L	V	PTV####.■	####.■ is the input battery voltage in Volts
			U	PTU####.■	####.■ is the output voltage in Volts RMS
			I	PTI####.■	####.■ is the output current in Amps RMS
		T	PTT+###.■	###.■ is the temperature of input battery semiconductors in °C for ≥ 0°C	
			PTT-###.■	###.■ is the temperature of input battery semiconductors in °C for < 0°C	
		G	1	####.■	OK
	ERR				####.■ value NO VALID for this parameter
	2		####.■	OK	Stores the minimum alarm battery voltage ####.■ in Volts
				ERR	####.■ value NO VALID for this parameter
	3		####.■	OK	If ####.■ = 999.9 Inverter enable If ####.■ = 000.0 Inverter disable
				ERR	####.■ value NO VALID for this parameter

OUTPUT AC OK and REMOTE SHUTDOWN:

PIN	Explanation
1-2	NO - Contact closed if the output voltage > 210Vac and the UPS main switch is ON
3	+Vsd (if 4V < +Vsd respect -Vsd < 24, output is stopped)
4	-Vsd

Available from:



**RIPEnergy**  
The power conversion company

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