



VPCW20 is a microprocessor controlled unit that can perform 2 functions:

- A) DC-UPS rated 960W/20A usable in any system 12...48Vdc
- B) DC/DC converter (non isolated) rated 960W/20A usable in any combination of IN/OUT voltages 12...48Vdc

For the UPS function it may use 1 battery of 12V, independently of the operating load voltage. For any supply voltages (12...48Vdc) it may use also multiple battery configuration (10...60Vdc).

VPCW20 monitors the voltage coming from a DC power supply and in case of power failure a backup storage source supplies the energy to the load. In normal condition the battery is kept charged by an integrated battery charger supporting various battery chemistries.

As a DC/DC converter (no battery present), the input voltage is converted to any output voltage as per the set-up (programmable by front keys or communication interfaces).

### ■ Main Features

- Digital power regulation, LCD interface
- Integrated battery charger for 12...48V multi-chemistries batteries with a charging current up to 20A
- Can operate with super capacitors modules
- Battery voltage independent of input and output voltage
- 20A or 960W rated load
- Multiple protections
- Remote ON/OFF or other remote control functions possible through INHIBIT input
- Measures voltages and currents on input, output and battery.
- Battery protection against reverse polarity connection and overcurrent
- Battery health monitoring system: measuring battery internal resistance, battery temperature, charge/discharge cycles and Coulomb counter
- User settable maximum backup time
- Auxiliary output with same voltage as battery (5A max.), protected against overcurrent/shortcircuit

### ■ Embedded user interface

- 4 keys and 1 color graphic TFT LCD display
- Allows online device configuration
- Displays the VPCW20 status and alarms
- Modbus over RS-485 and USB interfaces for control and monitoring
- Dry contacts for programmable status signals

### ■ Suitable for POWERMASTER software

- Connection through USB and RS-485 interfaces
- Remote monitoring and configuration
- Firmware upgrade
- Same functionalities of the embedded user interface with the ease of the PC benefits
- Available for Windows and Android



TECHNICAL DATA

Model type		VPCW20
<b>INPUT DATA</b>		
Input DC voltage	Nominal: 12...48Vdc Range: 10...60Vdc (UL certified)	
Input DC current <sup>1</sup>	20A	
Standby power	< 4W	
<b>MAIN OUTPUT SECTION</b>		
Voltage	Nominal: 12...48Vdc (= Vin for use as UPS; according to set-up for use as DC/DC converter)	
Maximum Current <sup>1</sup> / Power <sup>1</sup>	20A / 960W	
Short circuit Current	21A constant current limited only in DC-UPS Mode	
Load regulation	± 1%	
<b>AUXILIARY OUTPUT SECTION</b>		
Voltage	Nominal: 12...48Vdc (= U battery - non regulated)	
Continuous current	5A	
Overload limit	6A	
<b>BATTERY SECTION</b>		
Battery voltage (or to be used as input for DC/DC conversion)	Nominal: 12...48Vdc Range: 10...60Vdc	
Battery chemistries	<ul style="list-style-type: none"> <li>▪ Lead Acid</li> <li>▪ Nickel</li> <li>▪ Lithium</li> <li>▪ Supercap capacitors</li> </ul>	
Maximum battery charge current	20A	
Maximum battery discharge current	20A	
Allowed battery capacity	up to 1000Ah	
Battery protections	<ul style="list-style-type: none"> <li>▪ Overcurrent</li> <li>▪ Deep discharge</li> <li>▪ Reverse polarity</li> </ul>	
<b>BATTERY HEALTH MONITORING</b>		
Battery internal resistance range	1mΩ...300mΩ	
Additional monitoring functions	<ul style="list-style-type: none"> <li>▪ Coulomb counter</li> <li>▪ Battery temperature through 10kΩ NTC sensor (optional WNTC-2MT)</li> <li>▪ Battery operating time since installation</li> <li>▪ Number of cycles</li> </ul>	
<b>USER INTERFACE</b>		
1.5 inch color graphic LCD	Used to display the unit's status and to access the configuration menus	
4 keys	Used to program the unit and to access various menus	
Red LED	<ul style="list-style-type: none"> <li>▪ Constantly ON: generic failure on the system, details on the LCD</li> <li>▪ Blinking: battery backup function active</li> </ul>	
2 dry contact relays (NO, 24Vdc / 1A)	<ul style="list-style-type: none"> <li>▪ <b>RL1 / RL2</b> - Configurable</li> <li>▪ <b>RL COM</b> - Common Pin</li> </ul>	
Other interfaces	<ul style="list-style-type: none"> <li>▪ <b>INH</b> - (INHIBIT) Isolated remote ON/OFF input, active for 5...30Vdc</li> <li>▪ <b>T SENSE</b> - optional, remote temperature sensor for battery charging (WNTC-2MT)</li> <li>▪ <b>Modbus over USB and RS-485</b> interfaces</li> </ul>	
<b>GENERAL DATA</b>		
Efficiency at full load	> 98%	
Power loss (in UPS mode with Vin present)	< 7W	
Efficiency at full load	> 97%	
Power loss (in UPS mode during backup)	< 15W	
Efficiency at full load	> 97%	
Power loss (DC-DC mode)	< 15W	
Battery charge efficiency	> 96%	
Power loss	< 20W	
Maximum backup time	User programmable, up to battery deep discharge threshold	
Operating temperature <sup>2,3</sup>	-40°C...+70°C UL certified up to 50°C at 12...24Vdc or up to 40°C at 48Vdc	
Temperature and voltage derating	See charts on Fig.1	
Storage temperature	-40°C...+80°C	
Humidity	5...95% r.H. non condensing	
Life time expectation	281'904h (32.2 years) at 25°C ambient full load	
MTBF	<ul style="list-style-type: none"> <li>▪ MIL-HDBK-217F &gt; 600'000h at 25°C ambient full load</li> </ul>	
Overvoltage category	<ul style="list-style-type: none"> <li>▪ EN50178 1</li> </ul>	
Pollution degree	<ul style="list-style-type: none"> <li>▪ IEC60664-1 2</li> </ul>	
Isolation against enclosure	0.75kVdc	
Safety Standards	<ul style="list-style-type: none"> <li>▪ UL508 (certified E356563)</li> <li>▪ EN60950 (reference)</li> </ul>	
EMC Emission	<ul style="list-style-type: none"> <li>▪ EN55011 (CISPR11) Class B</li> <li>▪ EN55022 (CISPR22) Class B</li> </ul>	
EMC Immunity	<ul style="list-style-type: none"> <li>▪ EN61000-4-2 Level 3</li> <li>▪ EN61000-4-3 Level 3</li> <li>▪ EN61000-4-4 Level 3</li> <li>▪ EN61000-4-5 Level 1</li> </ul>	
Protection degree	<ul style="list-style-type: none"> <li>▪ EN60529 IP20</li> </ul>	
Vibration sinusoidal	<ul style="list-style-type: none"> <li>▪ IEC 60068-2-6 (5-17.8Hz: ±1.6mm; 17.8-500Hz: 2g 2hours / axis (X,Y,Z)</li> </ul>	
Shock	<ul style="list-style-type: none"> <li>▪ IEC 60068-2-27 (30g 6ms, 20g 11ms; 3 bumps / direction, 18 bumps total)</li> </ul>	

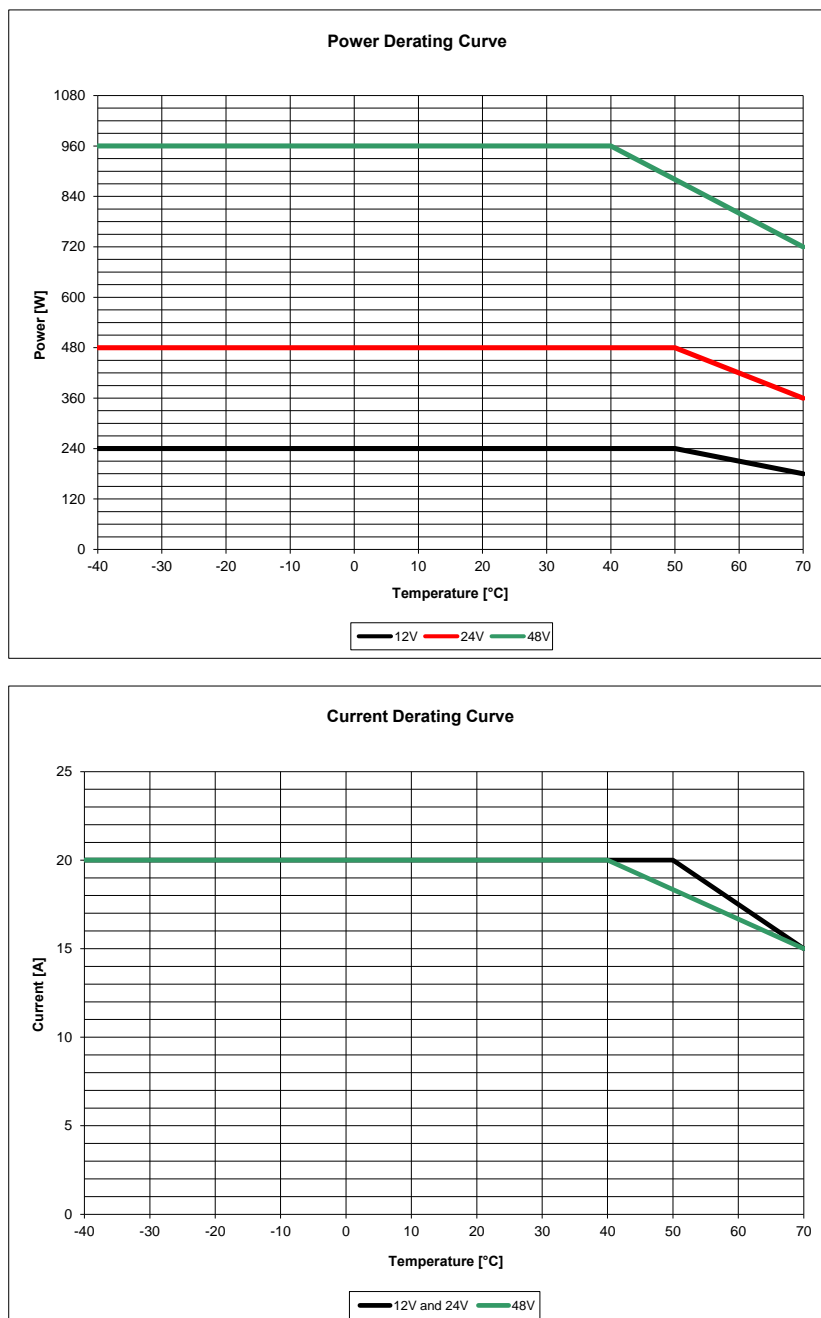
IN/Battery/OUT Connection terminals	2.5mm <sup>2</sup> (24...12AWG), screw type, pluggable
Auxiliary connection terminals	Up to 0.75mm <sup>2</sup> (18AWG), spring type, pluggable
Temperature sensor connector	Friction lock connector
Communication interface connector	Mini USB-B Type (virtual Com Port) RS-485 through auxiliary connector
Case material	Aluminum
Weight	0.50kg
Size (W x H x D)	54.0 x 115.0 x 110.0mm

- 1) Do not use continuously above 18A for periods longer than 2 hours.
- 2) Start-up type tested: - 40°C, possible at nominal voltage with load deration.
- 3) For temperature ≤ - 20°C the LCD is not operating, for temperature ≥ +60°C the display reduce its life time, but the unit will operate correctly.

**Notes:**

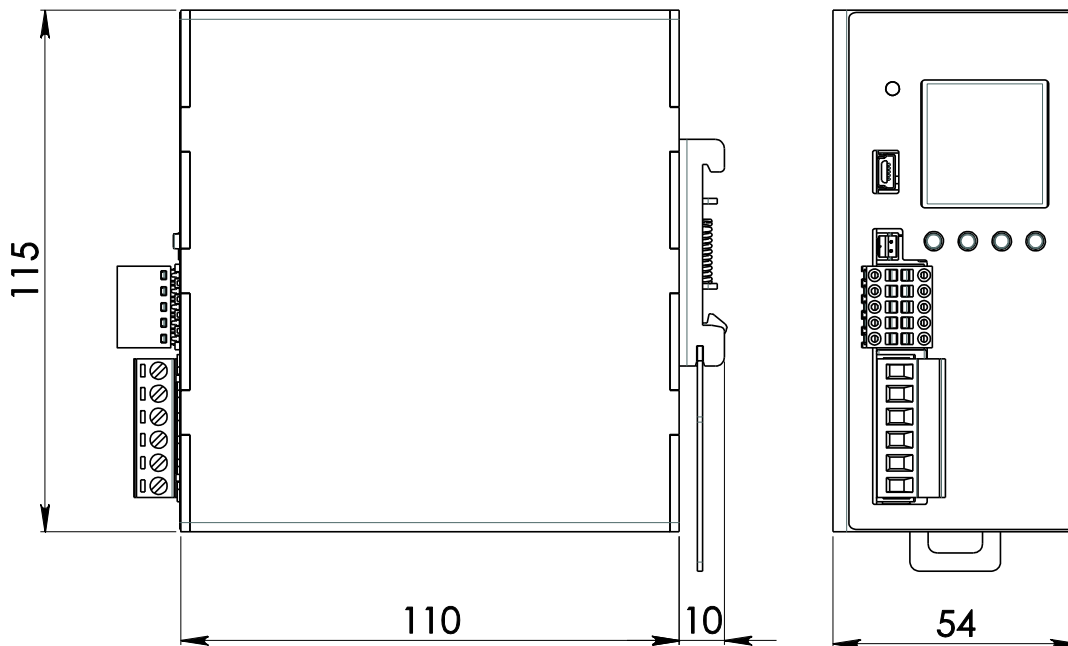
- For more details, performance and descriptions regarding all parameters not indicated in the above table, please refer to the user manual downloadable from [www.nextsys.com](http://www.nextsys.com)
- Technical parameters are typical, measured in laboratory environment at 25°C, 24Vdc input and 24V lead acid battery, at nominal values, after minimum 5 minutes of operation.
- Power rating, losses, efficiency, ripple, thermal behaviour and start-up may change outside of the nominal rated input range. Contact factory for details.
- Data may change without prior notice to improve the product.

Fig.1

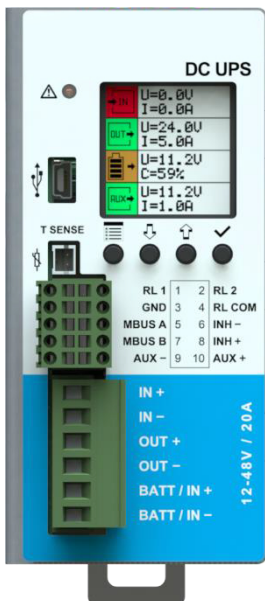




DIMENSIONS



CONNECTION



Main Connections:

**IN:** (connect to power supply in UPS mode)

- + = Positive DC
- - = Negative DC

**BATT/IN:** (connect to battery in UPS mode or power supply in DC/DC mode)

- + = Positive DC
- - = Negative DC

**OUT:** (connect to load)

- + = Positive DC
- - = Negative DC

Auxiliary Connections:

**RL1 / RL2:** (programmable dry contact)

- RL1 = NO
- RL2 = NO
- RL COM = COM

**Modbus:** (over RS-485, 2 wire interface)

- MBUS A = RX/TX
- MBUS B = RX/TX
- GND = Common

**INHIBIT:** (5...30Vdc)

- INH+ = Positive DC
- INH- = Negative DC

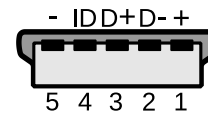
**AUX:** (12...48Vdc not regulated 5A Max.)

- AUX + = Positive DC
- AUX - = Negative DC

**T SENSE:** (remote temperature sensor for battery charging)

- Optional WNTC-2MT

Mini USB-B Type



- 1 = VBUS (+5V)
- 2 = Data (D-)
- 3 = Data (D+)
- 4 = Not connected (ID)
- 5 = GND