



DCW20 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).

DCW20 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 DCW20 status and alarms
- ⌋ Modbus over RS-485 and USB interfaces for control and monitoring
- ⌋ Dry contacts for programmable status signals

## ■ Suitable for POWERMASTER software

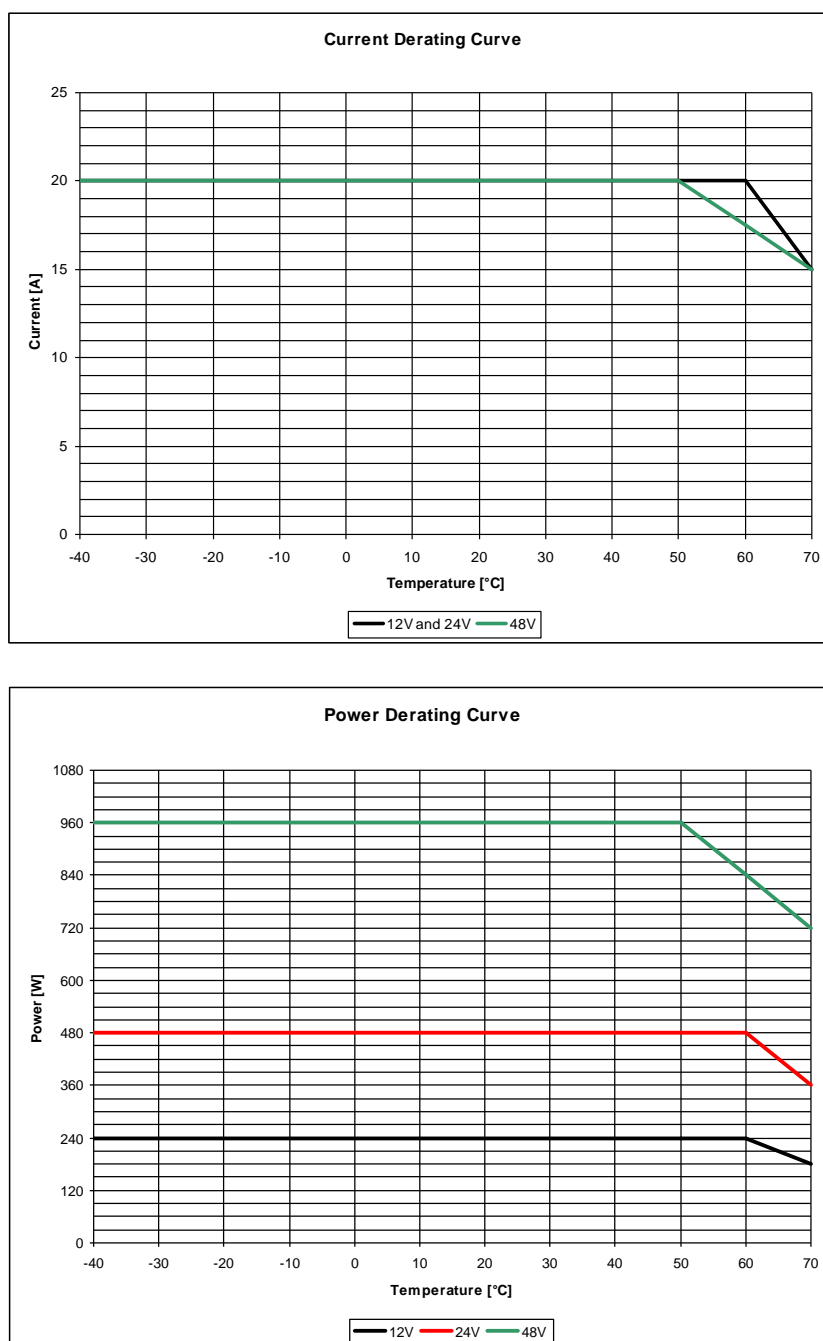
- ⌋ Connection through USB and RS-485 interfaces
- ⌋ Remote monitoring and configuration
- ⌋ Firmware upgrade
- ⌋ Same functionalities of the embedded user interface with the ease of the PC benefits
- ⌋ Available for Windows and Android

## TECHNICAL DATA

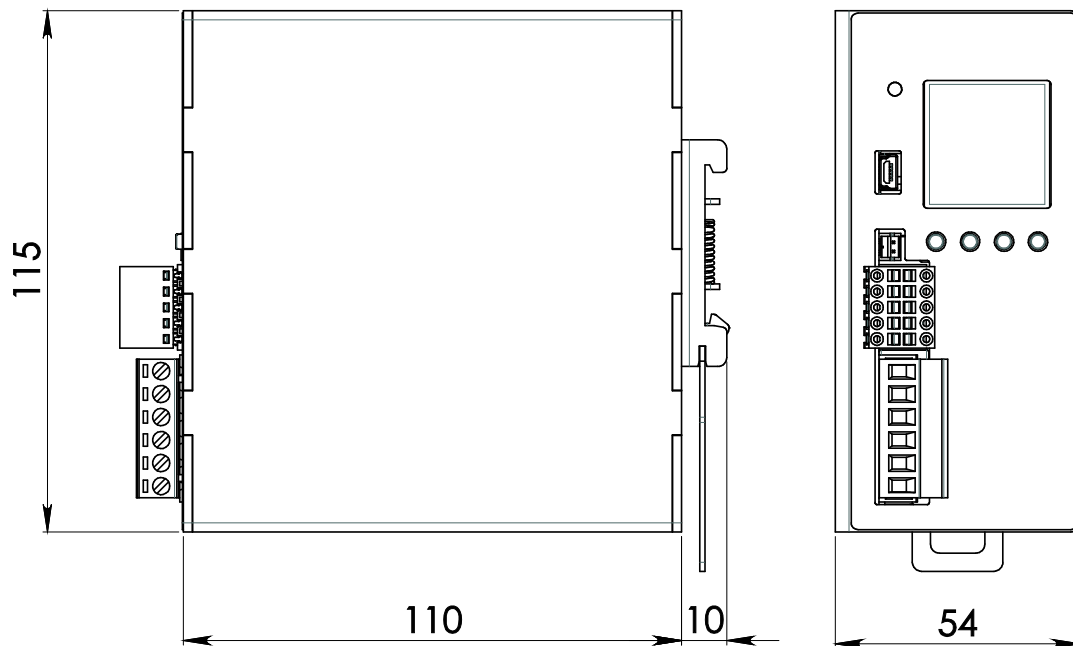
Model type	DCW20	
INPUT DATA		
Input DC voltage	Nominal: 12...48Vdc Range: 10...60Vdc	
Input DC current	20A	
Standby power	< 4W	
MAIN OUTPUT SECTION		
Voltage	Nominal: 12...48Vdc (= Vin for use as UPS; according to set-up for use as DC/DC converter)	
Maximum Current / Power	20A / 960W	
Short circuit Current	21A constant current limited only in DC-UPS Mode	
Load regulation	± 1%	
AUXILIARY OUTPUT SECTION		
Voltage	Nominal: 12...48Vdc (= U battery - non regulated)	
Continuous current	5A	
Overload limit	6A	
BATTERY SECTION		
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 400Ah	
Battery protections	<ul style="list-style-type: none"><li>▪ Overcurrent</li><li>▪ Deep discharge</li><li>▪ Reverse polarity</li></ul>	
BATTERY HEALTH MONITORING		
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>	
USER INTERFACE		
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, 30Vdc / 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</b> over <b>USB</b> and <b>RS-485</b> interfaces</li></ul>	
GENERAL DATA		
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>12</sup>	-40°C...+70°C	
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	▪ EN50178	I
Pollution degree	▪ IEC60664-1	2
Isolation against enclosure	0.75kVdc	
Safety Standards	<ul style="list-style-type: none"><li>▪ UL508 (reference)</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	▪ EN60529	IP20
Vibration sinusoidal	▪ IEC 60068-2-6	(5-17.8Hz: ±1.6mm; 17.8-500Hz: 2g 2hours / axis (X,Y,Z))
Shock	▪ IEC 60068-2-27	(30g 6ms, 20g 11ms; 3 bumps / direction, 18 bumps total)

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) Start-up type tested: - 40°C, possible at nominal voltage with load deration. 2) For temperature ≤ - 20°C the LCD is not operating, but the unit will operate correctly.	
<b>Notes:</b> - For more details, performance and descriptions regarding all parameters not indicated in the above table, please refer to the user manual downloadable from <a href="http://www.nextys.com">www.nextys.com</a> - 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.	

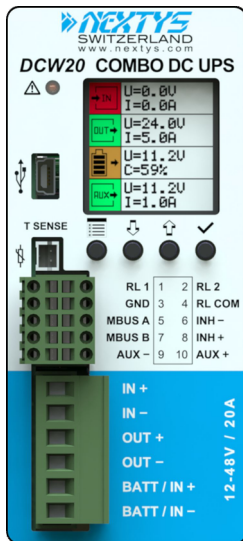
Fig.1



## 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

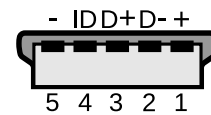
**AUX:** (12...48Vdc not regulated 5A Max.)

- 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