



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

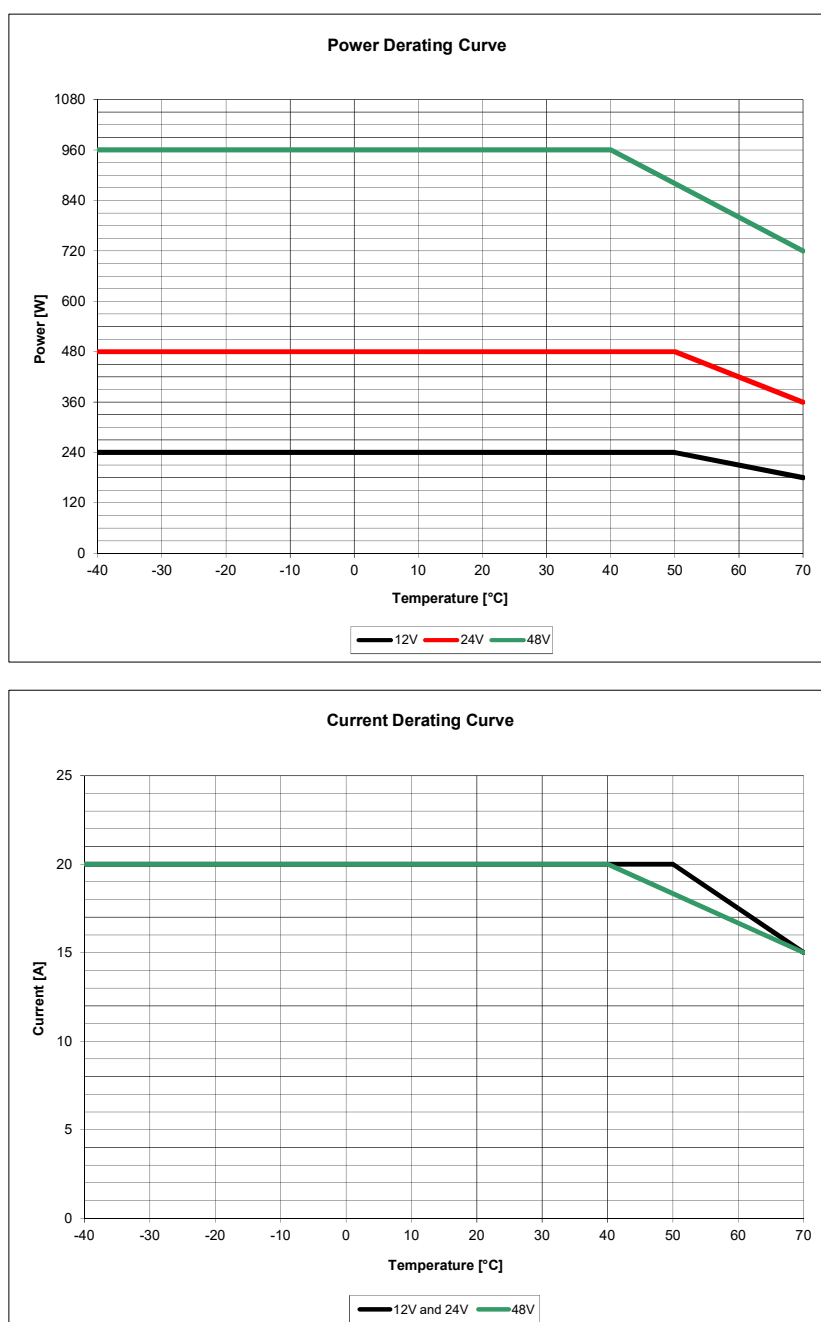
- Connection through USB and RS-485 interfaces
- Remote monitoring and configuration
- Firmware upgrade
- Same functionalities of the embedded user interface with the ease of the PC benefits
- Available for Windows and Android

## TECHNICAL DATA

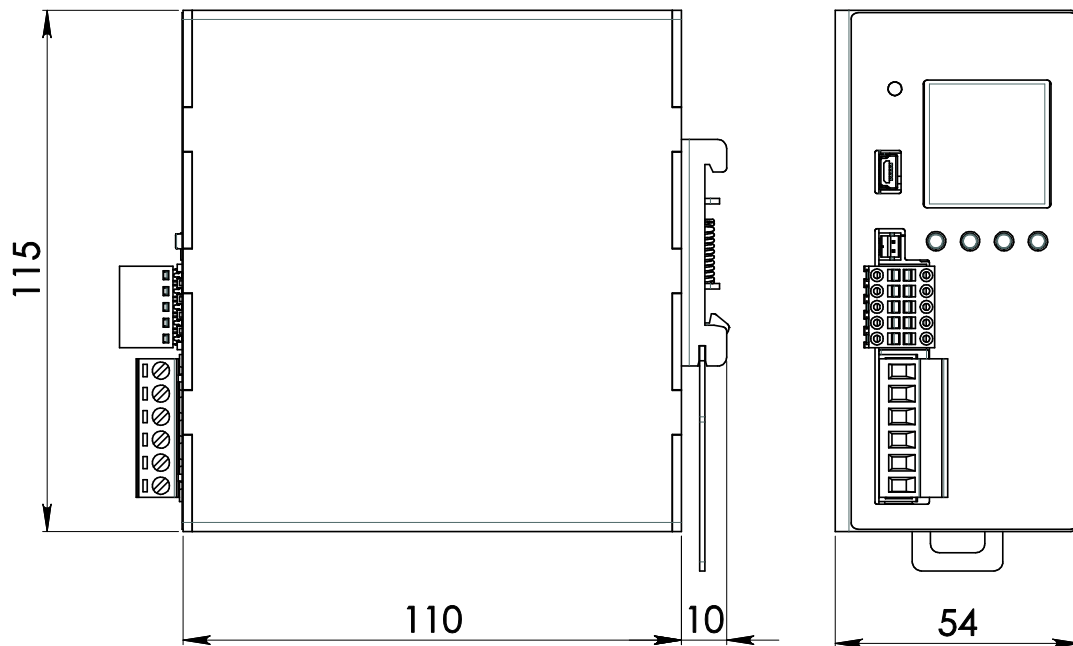
Model type		DCW20	
INPUT DATA			
Input DC voltage	Nominal: 12...48Vdc Range: 10...60Vdc (UL certified)		
Input DC current <sup>1</sup>	20A		
Standby power	< 4W		
MAIN OUTPUT SECTION			
Voltage	Nominal: 12...48Vdc (= Vin for use as UPS; according to set-up for use as DC/DC converter)		
Maximum Current <sup>1</sup> / Power <sup>1</sup>	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 1000Ah		
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, 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</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>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</li></ul> > 600'000h at 25°C ambient full load		
Overvoltage category	<ul style="list-style-type: none"><li>▪ EN50178</li></ul> I		
Pollution degree	<ul style="list-style-type: none"><li>▪ IEC60664-1</li></ul> 2		
Isolation against enclosure	0.75kVdc		
Safety Standards	<ul style="list-style-type: none"><li>▪ UL508 (certified E356563)</li><li>▪ IEC/EN61010-1</li><li>▪ IEC/EN61010-2-201</li><li>▪ IEC/EN60950</li></ul>		
EMC Emission	<ul style="list-style-type: none"><li>▪ EN61000-6-3</li></ul>		
EMC Immunity	<ul style="list-style-type: none"><li>▪ EN61000-6-2</li></ul>		
Protection degree	<ul style="list-style-type: none"><li>▪ EN60529</li></ul> IP20		
Vibration sinusoidal	<ul style="list-style-type: none"><li>▪ IEC 60068-2-6</li></ul> (5-17.8Hz: ±1.6mm; 17.8-500Hz: 2g 2hours / axis (X,Y,Z)		
Shock	<ul style="list-style-type: none"><li>▪ IEC 60068-2-27</li></ul> (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) 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.	
<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.	

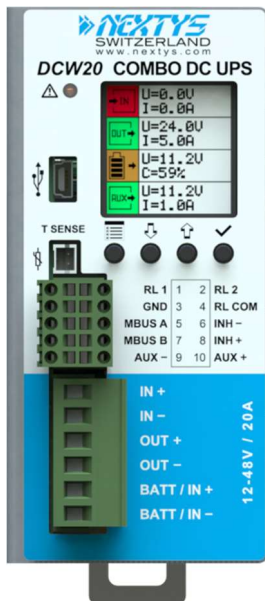
Fig.1



## 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

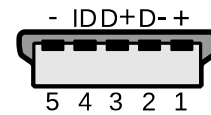
**AUX:** (12...48Vdc not regulated 5A Max.)

- 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