



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   |  |
|--|---|--|
| <b>INPUT DATA</b>  |   |  |
| Input DC voltage   | Nominal: 12...48Vdc<br>Range: 10...60Vdc (UL certified)   |  |
| Input DC current <sup>1</sup>                                    | 20A   |  |
| Standby power  | < 4W  |  |
| <b>MAIN OUTPUT SECTION</b>                                       |   |  |
| Voltage  | Nominal: 12...48Vdc<br>(= 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<br>(= U battery - non regulated)  |  |
| Continuous current   | 5A  |  |
| Overload limit   | 6A  |  |
| <b>BATTERY SECTION</b>   |   |  |
| Battery voltage<br>(or to be used as input for DC/DC conversion) | Nominal: 12...48Vdc<br>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<br>(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<br>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>   |  |

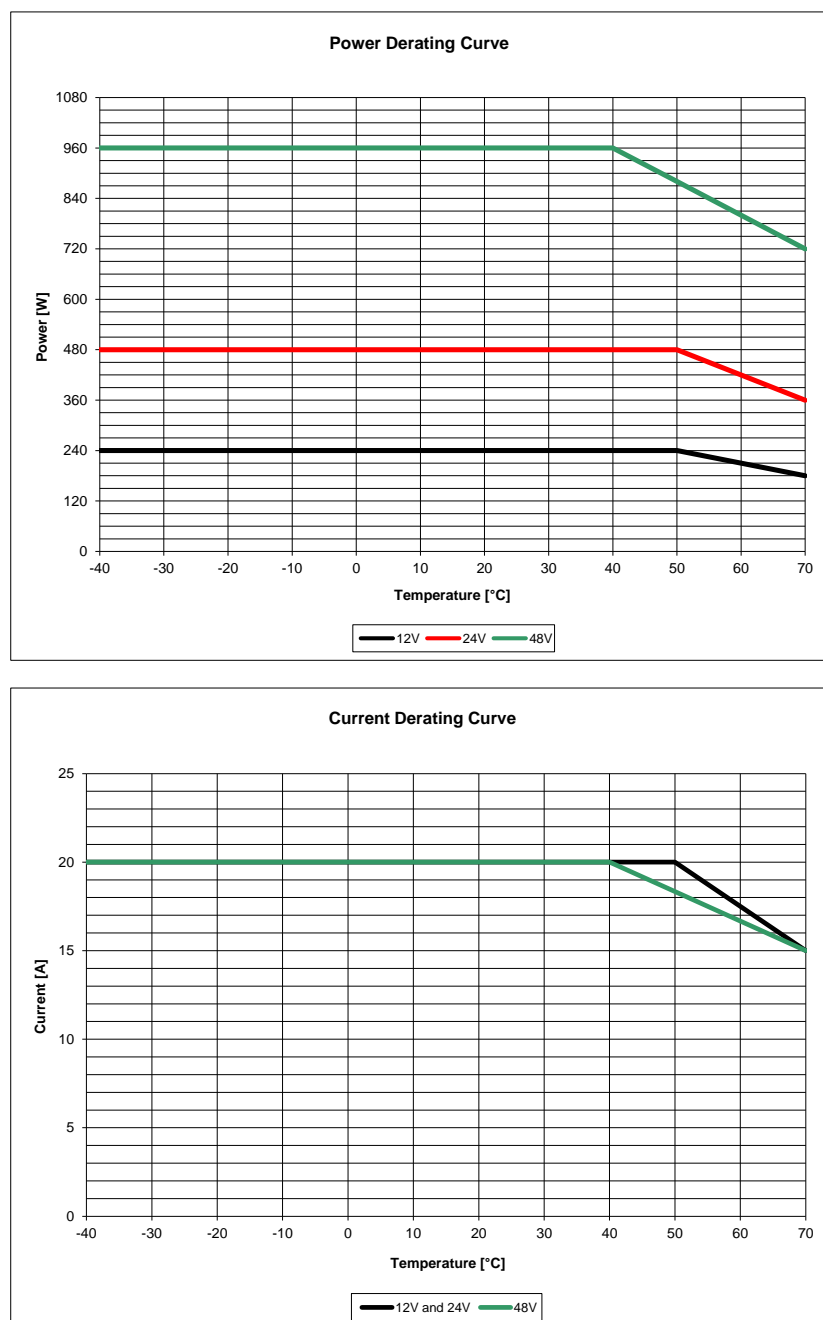
|                                     |  |
|-------------------------------------|--|
| IN/Battery/OUT Connection terminals | 2.5mm <sup>2</sup> (24...12AWG), screw type, pluggable                   |
| Auxiliary connection terminals      | Up to 0.75mm <sup>2</sup> (18AWG), spring type, pluggable                |
| Temperature sensor connector        | Friction lock connector  |
| Communication interface connector   | Mini USB-B Type (virtual Com Port)<br>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.

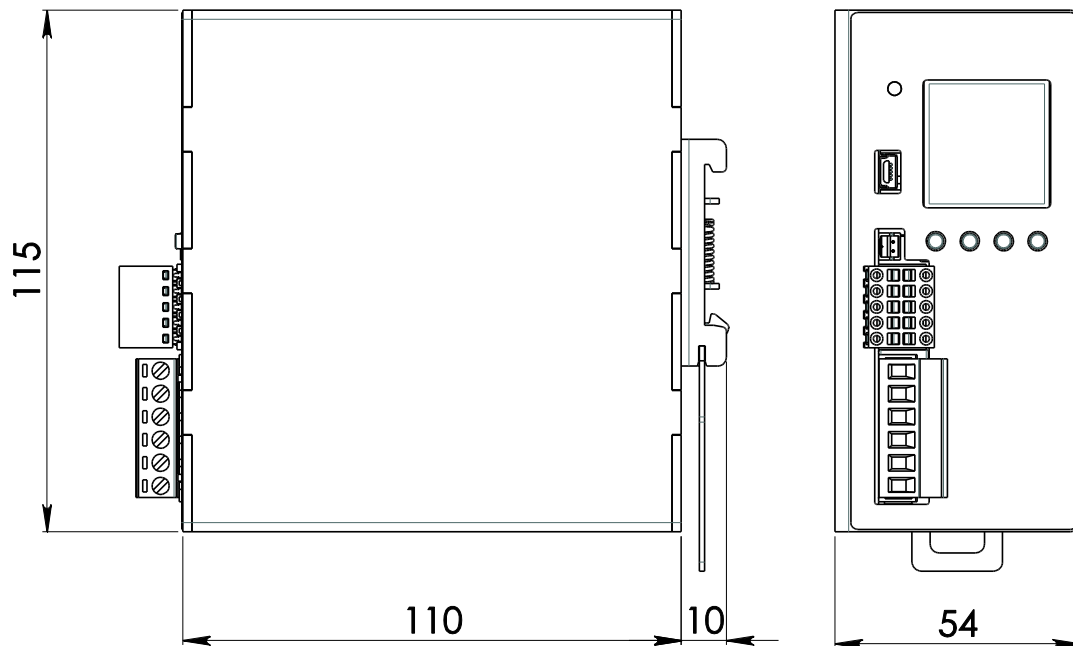
**Notes:**

- For more details, performance and descriptions regarding all parameters not indicated in the above table, please refer to the user manual downloadable from [www.nextys.com](http://www.nextys.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.

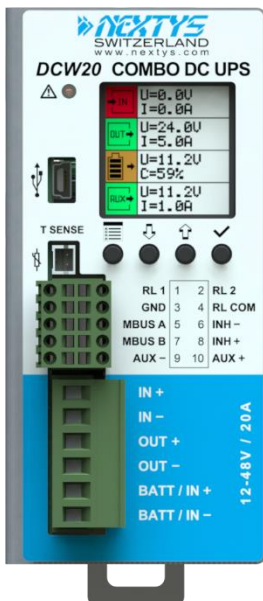
Fig.1



## 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

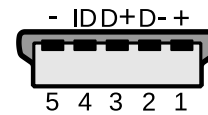
**AUX:** (12...48Vdc not regulated 5A Max.)

- 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