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

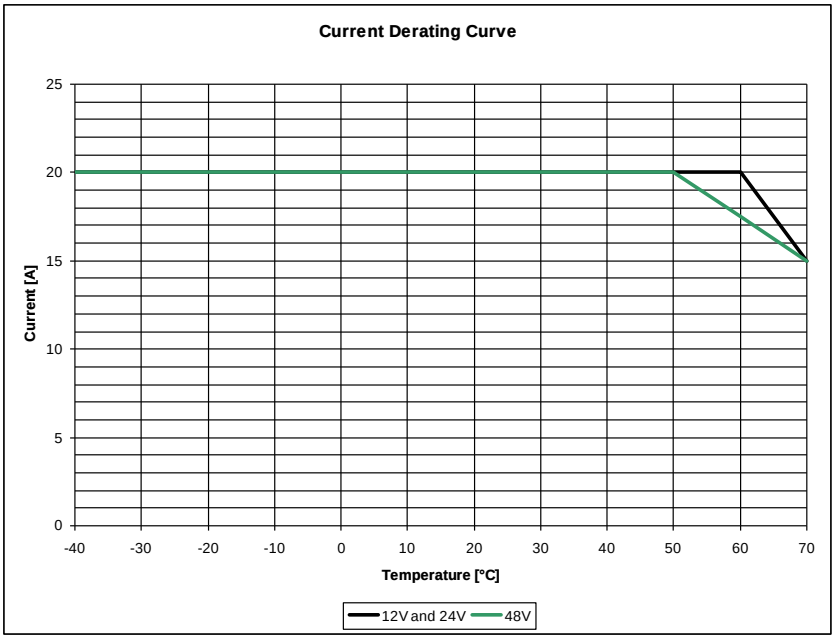
| Model type | DCW20 | |
|---|---|---|
| **INPUT DATA** | | |
| Input DC voltage | Nominal: 12…48Vdc<br>Range: 10…60Vdc | |
| Input DC current | 20A | |
| Standby power | < 4W | |
| **MAIN OUTPUT SECTION** | | |
| Voltage | Nominal: 12…48Vdc<br>(= Vin for use as UPS; according to set-up for use as DC/DC 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<br>(= U battery - non regulated) | |
| Continuous current | 5A | |
| Overload limit | 6A | |
| **BATTERY SECTION** | | |
| Battery voltage<br>(or to be used as input for DC/DC conversion) | Nominal: 12…48Vdc<br>Range: 10…60Vdc | |
| Battery chemistries | ▪ Lead Acid<br>▪ Nickel<br>▪ Lithium<br>▪ Supercap capacitors | |
| Maximum battery charge current | 20A | |
| Maximum battery discharge current | 20A | |
| Allowed battery capacity | up to 400Ah | |
| Battery protections | ▪ Overcurrent<br>▪ Deep discharge<br>▪ Reverse polarity | |
| **BATTERY HEALTH MONITORING** | | |
| Battery internal resistance range | 1mΩ…300mΩ | |
| Additional monitoring functions | ▪ Coulomb counter<br>▪ Battery temperature through 10kΩ NTC sensor (optional WNTC-2MT)<br>▪ Battery operating time since installation<br>▪ Number of cycles | |
| **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 | ▪ Constantly ON: generic failure on the system, details on the LCD<br>▪ Blinking: battery backup function active | |
| 2 dry contact relays<br>(NO, 30Vdc / 1A) | ▪ **RL1 / RL2** - Configurable<br>▪ **RL COM** - Common Pin | |
| Other interfaces | ▪ **INH** - (INHIBIT) Isolated remote ON/OFF input, active for 5…30Vdc<br>▪ **T SENSE** - optional, remote temperature sensor for battery charging (WNTC-2MT)<br>▪ **Modbus** over **USB** and **RS-485** interfaces | |
| **GENERAL DATA** | | |
| Efficiency at full load<br>Power loss (in UPS mode with Vin present) | > 98%<br>< 7W | |
| Efficiency at full load<br>Power loss (in UPS mode during backup) | > 97%<br>< 15W | |
| Efficiency at full load<br>Power loss (DC-DC mode) | > 97%<br>< 15W | |
| Battery charge efficiency<br>Power loss | > 96%<br>< 20W | |
| Maximum backup time | User programmable, up to battery deep discharge threshold | |
| Operating temperature[12] | -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 | ▪ MIL-HDBK-217F | > 600'000h at 25°C ambient full load |
| Overvoltage category<br>Pollution degree | ▪ EN50178<br>▪ IEC60664-1 | I<br>2 |
| Isolation against enclosure | 0.75kVdc | |
| Safety Standards | ▪ UL508<br>▪ EN60950 | (reference)<br>(reference) |
| EMC Emission | ▪ EN55011 (CISPR11)<br>▪ EN55022 (CISPR22) | Class B<br>Class B |
| EMC Immunity | ▪ EN61000-4-2<br>▪ EN61000-4-3<br>▪ EN61000-4-4<br>▪ EN61000-4-5 | Level 3<br>Level 3<br>Level 3<br>Level 1 |
| Protection degree | ▪ EN60529 | IP20 |
| Vibration sinuosoidal | ▪ 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) |

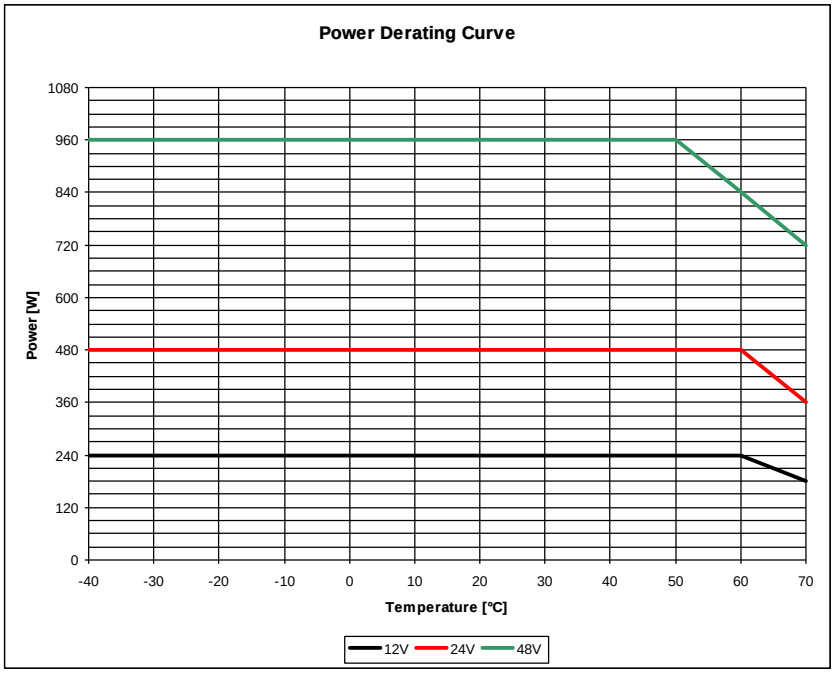
| | |
|---|---|
| IN/Battery/OUT Connection terminals | 2.5mm² (24…12AWG), screw type, pluggable |
| Auxiliary connection terminals | Up to 0.75mm² (18AWG), spring type, pluggable |
| Temperature sensor connector | Friction lock connector |
| Communication interface connector | Mini USB-B Type (virtual 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) 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.

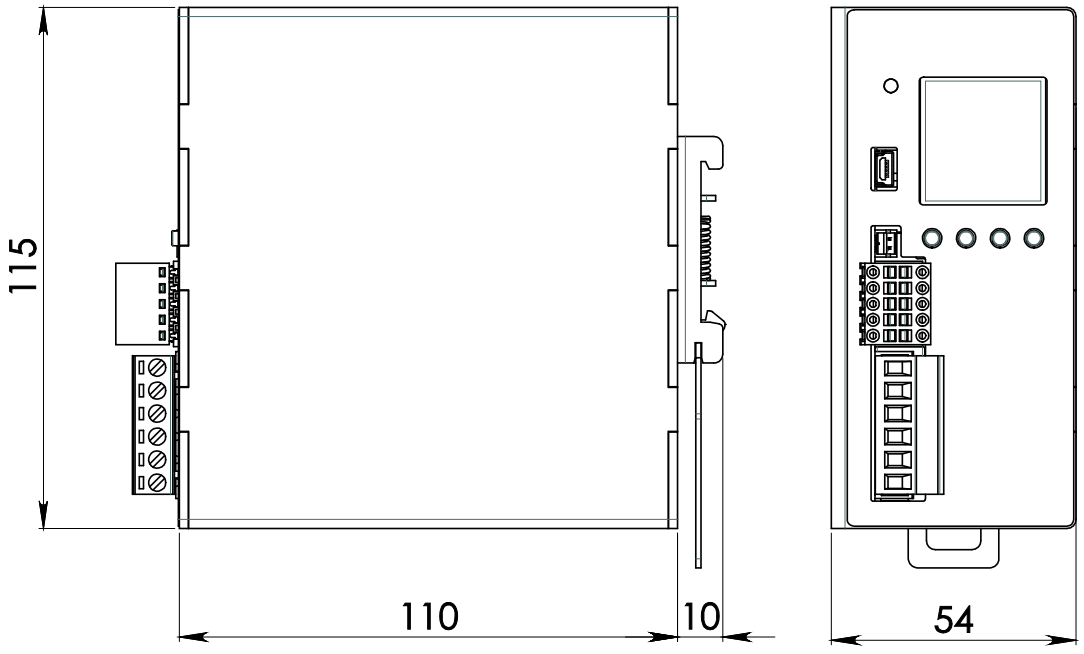
**Notes:**
- For more details, performance and descriptions regarding all parameters not indicated in the above table, please refer to the user manual downloadable from www.nextys.com
- Technical parameters are typical, measured in laboratory environment at 25°C, 24Vdc input and 24V lead acid battery, 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**

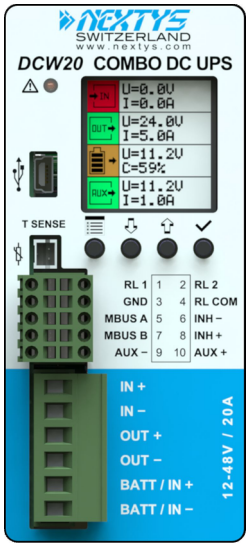


## DIMENSIONS




## 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

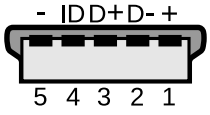
**Modbus:** (over RS-485, 2 wire interface)
- MBUS A = RX/TX
- MBUS B = RX/TX
- GND = Common

**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