

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	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"> ▪ Lead Acid ▪ Nickel ▪ Lithium ▪ Supercap capacitors 	
Maximum battery charge current	20A	
Maximum battery discharge current	20A	
Allowed battery capacity	up to 400Ah	
Battery protections	<ul style="list-style-type: none"> ▪ Overcurrent ▪ Deep discharge ▪ Reverse polarity 	
BATTERY HEALTH MONITORING		
Battery internal resistance range	1mΩ...300mΩ	
Additional monitoring functions	<ul style="list-style-type: none"> ▪ Coulomb counter ▪ Battery temperature through 10kΩ NTC sensor (optional WNTC-2MT) ▪ Battery operating time since installation ▪ 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	<ul style="list-style-type: none"> ▪ Constantly ON: generic failure on the system, details on the LCD ▪ Blinking: battery backup function active 	
2 dry contact relays (NO, 24Vdc / 1A)	<ul style="list-style-type: none"> ▪ RL1 / RL2 - Configurable ▪ RL COM - Common Pin 	
Other interfaces	<ul style="list-style-type: none"> ▪ INH - (INHIBIT) Isolated remote ON/OFF input, active for 5...30Vdc ▪ T SENSE - optional, remote temperature sensor for battery charging (WNTC-2MT) ▪ Modbus over USB and RS-485 interfaces 	
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 ^{1,2}	-40°C...+70°C UL certified up to 60°C at 12...24Vdc or up to 50°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"> ▪ MIL-HDBK-217F > 600'000h at 25°C ambient full load 	
Overvoltage category	<ul style="list-style-type: none"> ▪ EN50178 1 	
Pollution degree	<ul style="list-style-type: none"> ▪ IEC60664-1 2 	
Isolation against enclosure	0.75kVdc	
Safety Standards	<ul style="list-style-type: none"> ▪ UL508 (certified E356563) ▪ EN60950 (reference) 	
EMC Emission	<ul style="list-style-type: none"> ▪ EN55011 (CISPR11) Class B ▪ EN55022 (CISPR22) Class B 	
EMC Immunity	<ul style="list-style-type: none"> ▪ EN61000-4-2 Level 3 ▪ EN61000-4-3 Level 3 ▪ EN61000-4-4 Level 3 ▪ EN61000-4-5 Level 1 	
Protection degree	<ul style="list-style-type: none"> ▪ EN60529 IP20 	
Vibration sinusoidal	<ul style="list-style-type: none"> ▪ IEC 60068-2-6 (5-17.8Hz: ±1.6mm; 17.8-500Hz: 2g 2hours / axis (X,Y,Z) 	
Shock	<ul style="list-style-type: none"> ▪ IEC 60068-2-27 (30g 6ms, 20g 11ms; 3 bumps / direction, 18 bumps total) 	

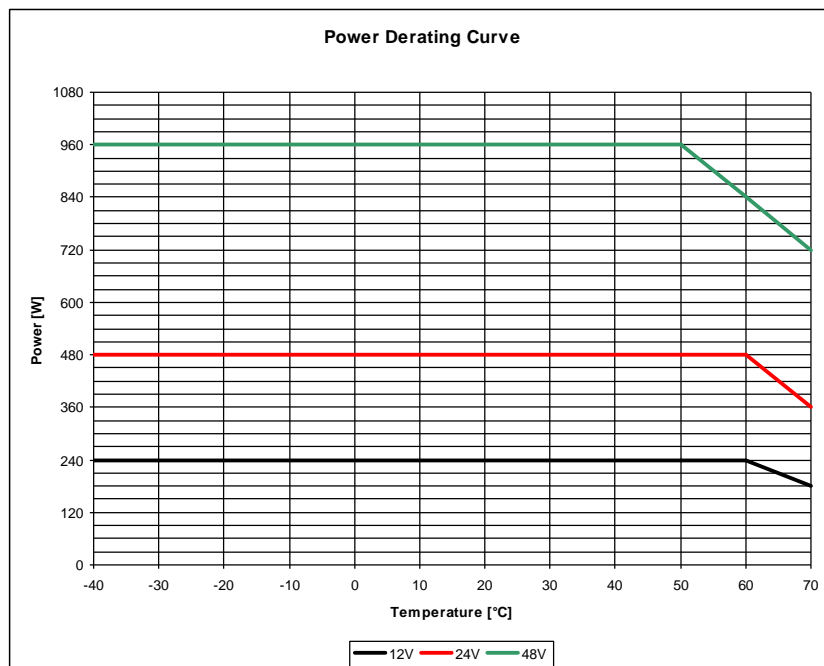
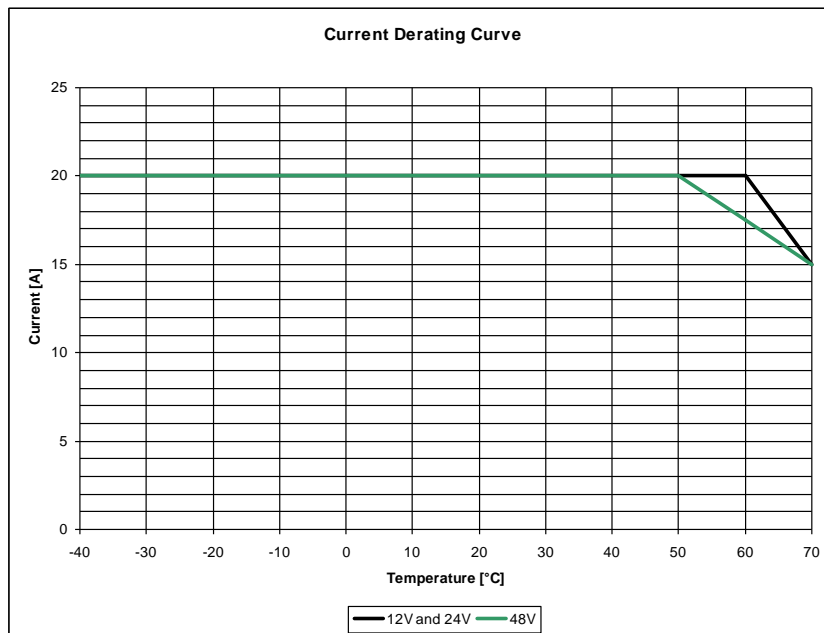
IN/Battery/OUT Connection terminals	2.5mm ² (24...12AWG), screw type, pluggable
Auxiliary connection terminals	Up to 0.75mm ² (18AWG), spring type, pluggable
Temperature sensor connector	Friction lock connector
Communication interface connector	Mini USB-B Type (virtual Com Port) RS-485 through auxiliary 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, for temperature ≥ +60°C the display reduce its life time, but the unit will operate correctly.

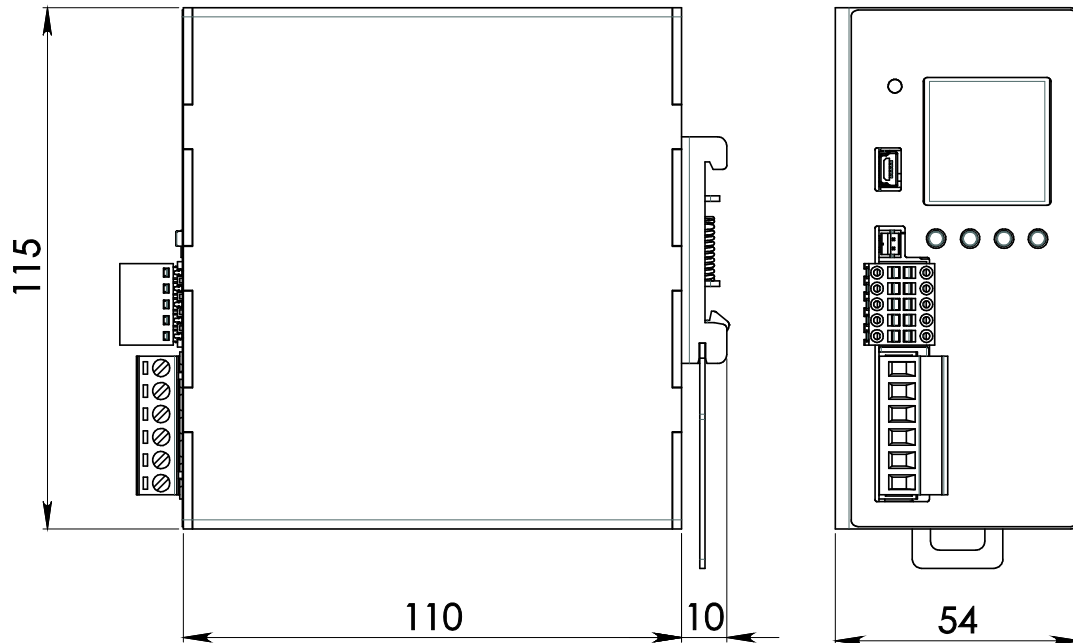
Notes:

- 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
- 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.

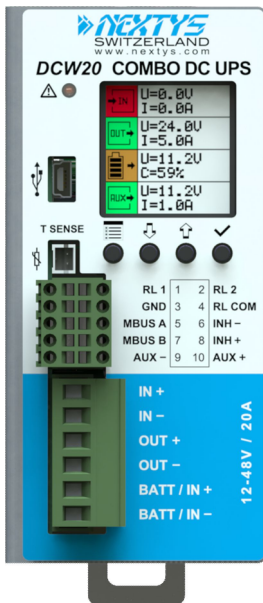
Fig.1



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

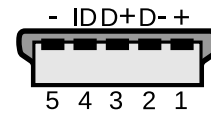
AUX: (12...48Vdc not regulated 5A Max.)

- 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