

DCU20 – 20A DIN Rail High Performance DC-UPS

- CPU controlled, LCD interface
- Multiple user settable parameters
- BI VOLTAGE: 12 or 24Vdc
- Battery Chemistry: Lead, Ni-Mh, Li
- Battery charging current: Max. 5A
- Output Current: Max. 20A
- Multiple protections
- Remote shut down
- Cold start
- Monitoring and setup with **POWERMASTER** PC application
- PC shutdown management possible



TECHNICAL DATA

| DCU20 | |
|---|---|
| INPUT DATA | |
| Rated input voltage | 12Vdc or 24Vdc (range 10...29Vdc) |
| Rated input current | 20A |
| No load power consumption | < 3W |
| BATTERY SECTION | |
| Rated battery voltage | 12Vdc or 24Vdc - Other voltages possible by request |
| Battery chemistries | Lead-Acid / NiMH (NiCd) / Li-ION (LiFePO ₄) |
| Maximum battery charge current | 5A |
| Allowed battery capacity | up to 50Ah (charge current @ 0.1C) |
| Maximum battery current | 20A (up to 35A for 5s) |
| Load to Battery switch time | < 5μs |
| Battery protection | <ul style="list-style-type: none"> • Protected against overcurrent • Deep discharge and reverse polarity |
| BATTERY HEALT MONITOR | |
| Battery inter. resistance range | 1mΩ...300mΩ (using Kelvin connection) |
| Additional monitoring functions | <ul style="list-style-type: none"> • Coulomb counter • Battery temperature through optional 10kΩ NTC sensor • Battery operating time since installation • Number of cycles |
| USER INTERFACE | |
| 1.5 inch color graphic LCD | Used to indicate the unit's status and the access the configuration menus |
| 4 buttons | 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 contacts (relays) rated 30V/1A | <ul style="list-style-type: none"> • Indicates that the unit is ready to operate (Ready) • Indicates a battery failure by toggling at 1Hz • Indicates that the load is operating from the battery (Backup) |
| USB interface | <ul style="list-style-type: none"> • Mini USB connector used to interface the unit with a PC • Temperature sensor WNTC-2MT (optional) |
| GENERAL DATA | |
| Efficiency / Power loss at full load (on power supply) | > 97.5% / < 13W |
| Efficiency / Power loss at full load (on battery) | > 96.5% / < 18W |
| Battery charger efficiency / power loss | > 90% / < 16W |
| Maximum backup time | User programmable, up to battery deep discharge threshold |
| Operating temperature | - 40°C...+ 60°C (for T < -20°C the LCD is not operating, but the unit will operate correctly) |
| Storage ambient temperature | - 20°C...+ 85°C |
| Isolation against enclosure | 750Vac |
| Cooling method | Natural convection cooling |
| Standards & Approvals | EN60950 (reference), CE marking |
| EMC Standards | EN61000-6-2, EN61000-6-4 |
| Protection degree | IP20 acc. to EN60529 |
| IN / Battery / OUT Connectors | 2.5mm ² , screw type pluggable (24...12AWG) |
| Auxiliary contacts connectors | 0.5mm ² , pluggable (28...20AWG) |
| Temperature sensor connectors | Friction lock connector |
| USB Connector | Mini USB connector |
| Case material | Aluminum |
| Approx. Weight | 0.5kg |
| Size (W x H x D) | 54 x 115 x 110mm |
| Mounting rail | IEC 60715/H15/TH35-7.5(-15) |
| Rail mounting information | Vertical, allow 10mm spacing between adjacent items |

1 System description

The DCU20 is a microprocessor controlled DC UPS rated 20A (*rating of the power supply connectable to the input*) usable in systems with a nominal voltage between 12V and 28V. The DCU20 monitors the voltage coming from a DC power supply and in case of power failure a backup battery is connected to the load. In normal condition the battery is kept charged by an integrated battery charger supporting various battery chemistries such Lead-Acid, NiMH, NiCd and Lithium.

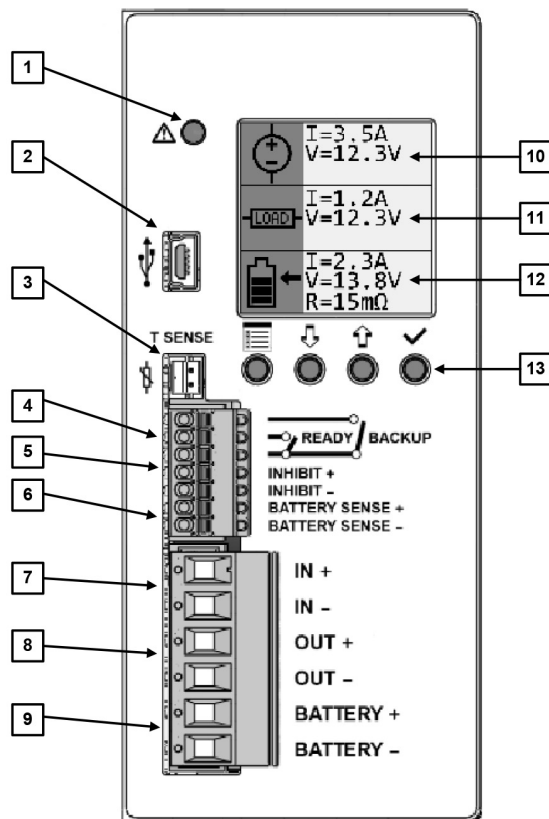


Figure 1: Front panel view

1. **Alarm LED** indicator: It is ON when the unit is in backup. It blinks at 1Hz rate in case of error.
2. **USB Port**: Used to connect a PC running the **POWERMASTER** application for remote monitoring and controlling. Firmware update is also possible through USB connection.
3. **Temperature sensor** connection: Used to connect a temperature sensor (P/N: WNTC-2MT) to measure the battery temperature for protection and temperature compensated charge method.
4. **Relays dry contacts**: 2 relays are present for remote monitoring. See §3.1 for more details.
5. **Inhibit input**: A signal between 5VDC and 30VDC applied to this input inhibits the backup function; this input is programmable to be active high or active low (see §4.5).
6. **“Battery sense” connection**: Used to accurately sense the battery voltage by considering the cables voltage drop. It is recommended to use this input when the battery internal resistance measurement is needed (see §4.7).
7. **Input connection**: 2 poles are provided for input connection. This must be connected to a power supply rated 12...28VDC with a maximum rated current of 20A (see §4.2).
8. **Output connection**: 2 poles are provided for output connection. It must be connected to the load to be backed up with a maximum rated current of 20A (see §4.2).
9. **Battery connection**: 2 poles are provided for battery connection. This must be connected to the battery. Although the unit is protected, please respect the correct polarity. (see §4.3)
10. **Display “Input” area**: provides information regarding the unit’s input (see §5.1).
11. **Display “Output” area**: provides information regarding the unit’s output (see §5.1).
12. **Display “Battery” area**: provides information regarding the battery (see §5.1).
13. **Control keys**: 4 push buttons are provided to navigate through the menus and to select the various functions.

2 Features and benefits

The main features are:

- ▶ Integrated *battery charger* for multi-chemistry batteries with charging current up to 5A.
- ▶ Automatic sensing of *input voltage, load current* and *battery current*.
- ▶ Protections against *battery reverse polarity* connection and *over current* when operating from the battery.
- ▶ Battery “*health monitoring*” system: measuring battery *internal resistance*, battery *temperature* and providing a *Coulomb counter*.
- ▶ User settable *maximum backup time*.
- ▶ Remote input to *inhibit* the UPS function.
- ▶ Connection of a battery *thermal sensor* (optional).
- ▶ *Integrated data logger* with *time stamp*: all events / errors are logged in the internal memory and downloadable through the USB interface.
- ▶ *Automatic PC shutdown/restart function* (see §3.3)

Embedded user interface:

- ▶ *4 buttons* and *1 color graphic CSTN LCD*, Displays the set-up, status, measures and alarms
- ▶ *Online device configuration*.
- ▶ *USB port* for remote monitoring and configuration.
- ▶ *Dry contacts* for status monitoring

“**POWERMASTER**” PC application:

- ▶ Connection through USB interface.
- ▶ Remote monitoring and configuration.
- ▶ Firmware upgrade.
- ▶ Same functionalities of the embedded user interface with the ease of the PC benefits.