DESCRIPTION

General purpose power supply and charger unit which can be used wherever a 12V DC (nominal) with battery back-up is required with an average load up to 1A.

The unit includes a switch mode power supply and a charger circuit able to charge and monitor an external lead acid battery.
Two indicators and two associated relay outputs are available for the user or the equipment supplied from the power supply unit, one indicating mains OK the other indicating battery OK.

The unit is made in the standard profile used for other Series 2000 modules. The width of the unit is 54 mm (half module).

VERSIONS/ORDERING CODES

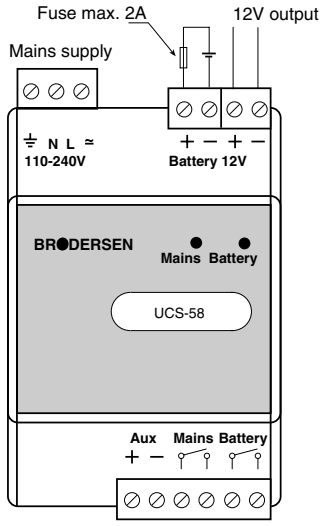
Type: UCS- 58 230 / Aux

Charger / power supply — UCS-58

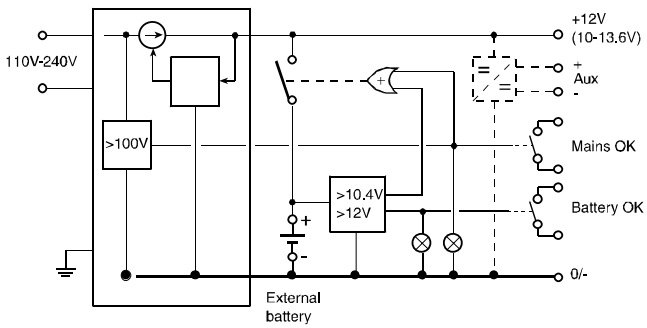
Mains voltage:
110-240 AC/DC — 230

Options
12V Aux output — Aux

WIRING DIAGRAM



BLOCK DIAGRAM



TECHNICAL DATA

Mains supply:
- Supply voltage: 110-240V AC/DC (100-265V).
- Mains frequency: 40-60Hz.
- Power consumption: Max. 23W (mains).

Output:
- Supply: 12V (10-13.6V), max. 2 A (note 4).
- Aux: 12V (10-16V), max. 200mA (note 7).

Battery back-up
- Battery: 12V lead acid.
- External fuse: max. 2A (note 4).
- Battery capacity: 3-12 Ah (note 3).
- Charging current: 0-1.1 A (note 3).
- Charging time: Battery capacity / (1.1A - average load current) (note 4).
- Back-up capacity (battery fully charged): Average load current x 0.8 x battery capacity.
- Cut-off voltage: 10.4V (note 6).
- Off state battery load: <1.5 mA.

Voltage Monitors:
- Mains: >100V: ON (note 1).
- Battery: >12.0V: ON, >80% capacity (note 5).
  <11.0V: OFF, <20% capacity.
- Relay outputs: 2 SPST-NO max. 30V/0.5A (note 5).
- Indicators: 2 (green).

EMC: EN50081-1, EN50082-2.

Isolation
- Mains to 12V out: IEC class II, 4 kV. Safety earth required.
- 12V to AUX out: 2kV (note 7).

Ambient temperature:
- Charging: 5 to 35°C.
- Operation: -10 to 55°C

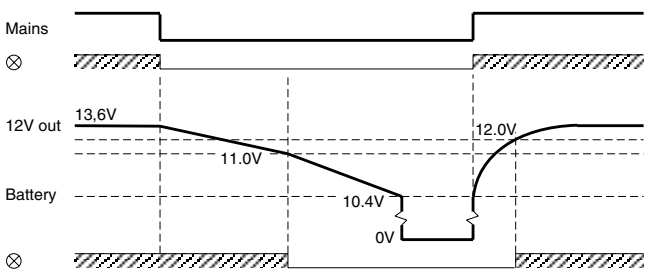
Protection: IP20.

Mounting: 35 mm DIN-rail, EN50022.
Terminals: Plug in screw terminals
Max. 1.5 mm^2 wire.

Housing: Anodised aluminium with plastic ends.
According to DIN 43880.

Dimensions: HxWxD: 80 (+ connectors) x 54 x 62 mm.

TYPICAL CHARGE / DISCHARGE CYCLE



NOTES/REMARKS

1) The mains indicator is activated when the mains voltage is sufficient to enable the power supply to work.

2) The capacity of the battery must be selected according to the actual consumption and required back-up time. Please note that the figures for the battery could degrade dramatically depending on temperature and age.

3) The power supply and charger will act as a constant current source until the battery is charged. The actual charging current will be the difference between the capacity of the power supply (1.1A nominal) and the actual consumption. The following for mula can be used to calculate the actual charging time (hours):

   $$\frac{\text{Battery capacity [Ahours]}}{\text{1.1 - average load [A]}}$$

4) The 12V output is supplied from the power supply/battery circuit. When the battery is fully charged (operating on mains supply) the voltage will typically be13.6V. When operating at battery supply, the voltage drops slowly while discharging until the cut-off voltage is reached (typically at 10.4V).
   If the current exceeds the maximum current of the built-in power supply (1.1A), the excessive current will be drawn from the battery thus discharging the battery. The power supply/charger circuit includes thermal protection. At maximum ambient temperature (55°C) the continuos output current is automatically reduced to approx. 0.8A after a certain time (10-15 minutes). The de-rating is approximately 1% per °C above 25°C.
   If the unit has a battery connected to it, it is possible to supply a high output current (maximum 2A specified) for a period of time, as the battery will deliver the remaining current. At high ambient temperature the recharging time may be prolonged.
   The battery MUST be equipped with an external fuse, max. 2A.

5) The monitor outputs and indicators are activated when mains and battery voltages are OK.
   Please note that the circuit is **NOT** able to detect that the battery is disconnected as the open circuit voltage will be above 12V.

6) To prevent deep discharge, the battery will automatically be disconnected if the battery voltage goes below 10.4V. The battery is automatically reconnected when the mains supply reappear.

7) The Aux output is designed for driving the process I/O and is therefor isolated from the supply. The output is short circuit protected.
   The isolation does not full fil requirements for safety isolation.