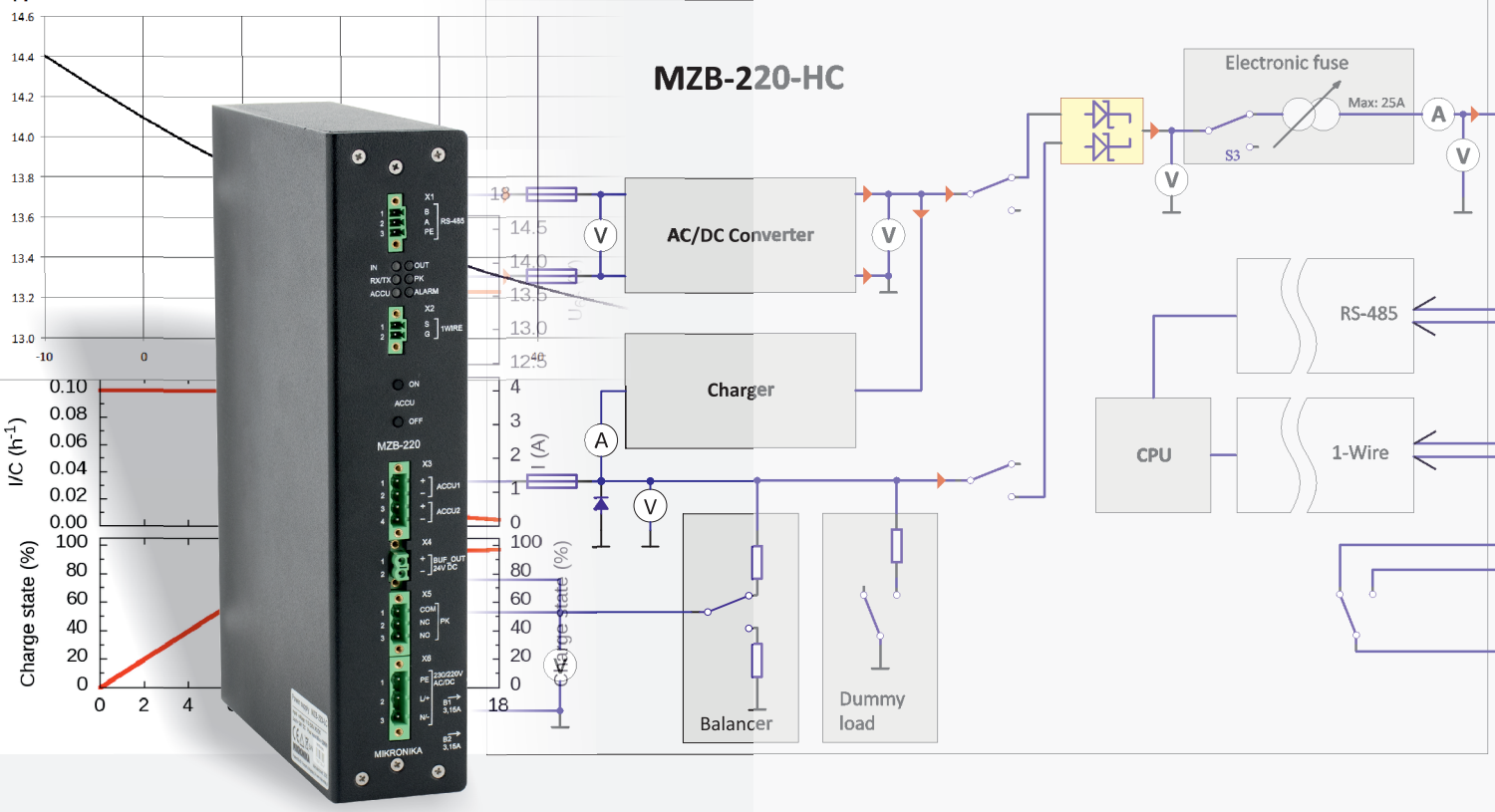


MZB-220-HC

uninterruptible power supply

MZB-220-HC is designed for battery buffered power supply of devices in Smart Grid applications. The device can also be applied to power other electric and electronic for IT, industry automation and telecommunication.

The device can work with two rechargeable batteries with a nominal voltage of 12V, which are connected in series, or with one rechargeable battery 24V. The common connection point of two 12V rechargeable batteries is used to measure the voltage, resistance of the batteries and to equalize the voltage between the batteries.

The device is equipped with an electronic fuse on the object output, which protects the power supply against overload. The fuse has several security levels

- short-circuit/overcurrent protection
- short-term security
- long-term security

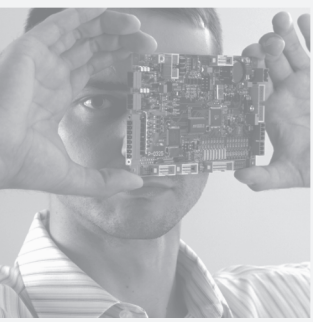
A balancer system is used to equalize the voltage on two batteries. When the voltage on the first battery is higher than on the second, an additional load is connected to the first battery, which equalizes the voltages.

Switching to battery operation can occur for two reasons:

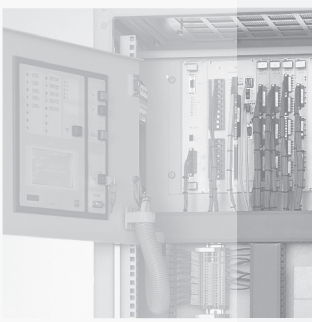
- power failure
- PSU overload

When the mains power is lost, the electronic system switches the power automatically to the backup power supply - from the battery. Power failure detection is based on the 24V output voltage of the internal converter.

An uninterruptible power supply is dedicated to battery buffered power supply of various IED's installed in industry applications.



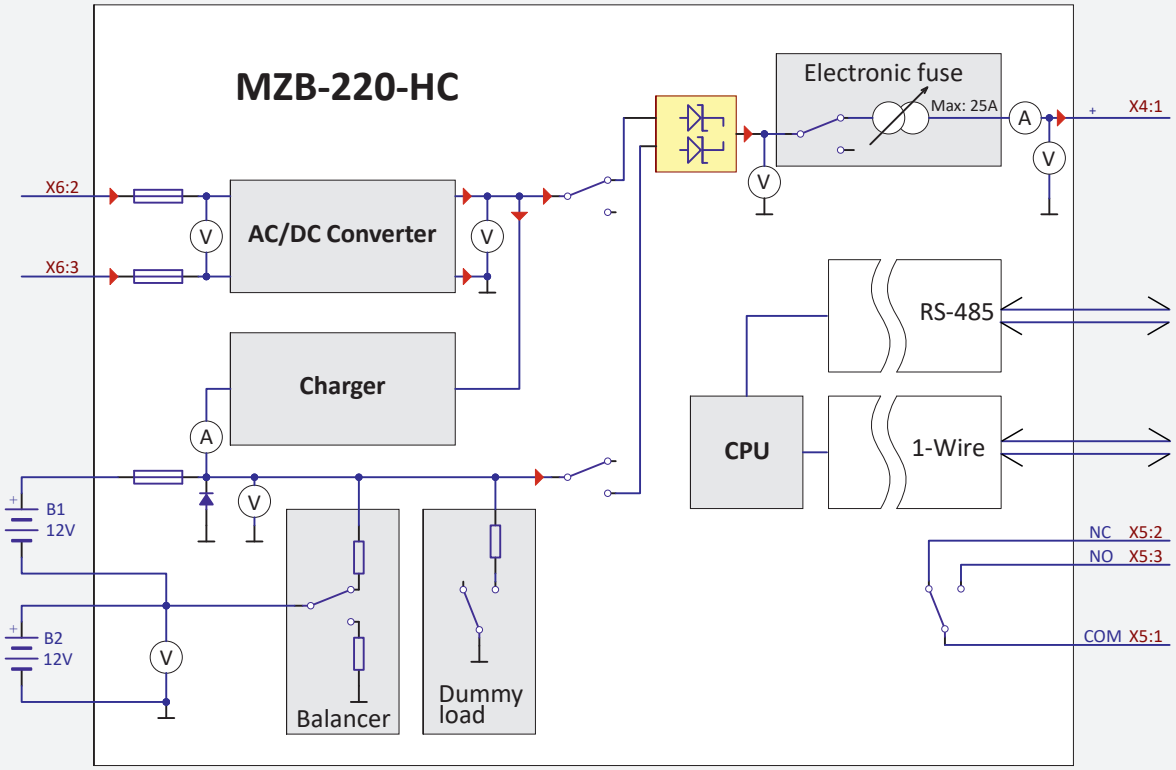


Features

- 230V AC/220V DC nominal power supply input
- 1x 24V DC or 2x 12V DC backup battery
- 24V DC output
- short-circuit / overload / overvoltage protection
- measurements of:
  - PSU and battery temperature
  - input/output/charger voltage
  - charger current
  - output/charger power load
  - battery internal resistance
- binary indication with configurable thresholds of:
  - overload
  - voltage failure
  - battery failure
  - battery/output fuses failure
  - temperature failure
- configurable Alarm Relay output
- 6 LEDs for internal status indication
- RS-485 Modbus transmission for supervisory
- wall mounting / cabinets / DIN rail holders

Operation



Device is powered from the mains input. Mains power input and battery input are protected with glass fuses, which can be replaced without opening the device housing. The converter module produces a basic voltage of 24V. This voltage is used for:

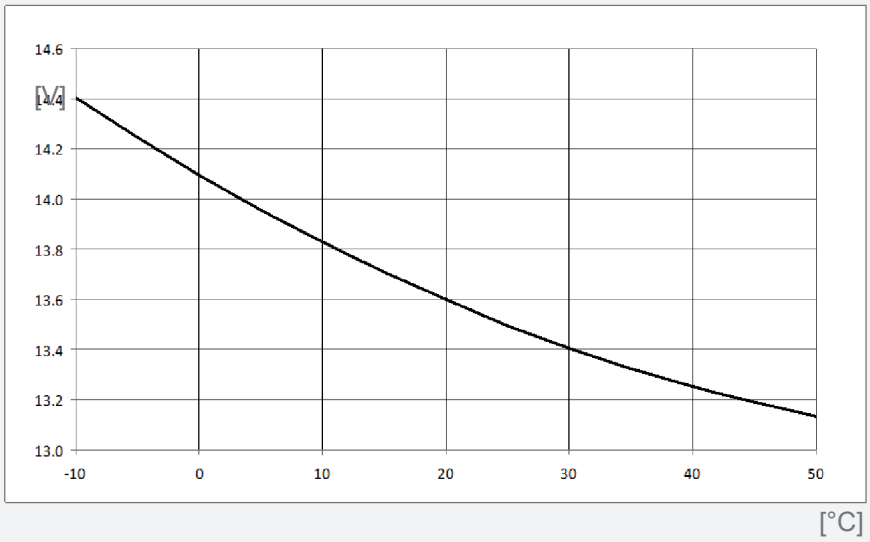
- battery charger
- object voltage

An internal controller supervises the operation of the power supply. The following tasks are performed:

- RMS voltage measurement at the mains supply input
- voltage measurement at the output of the main 24V converter
- battery voltage measurement
- measurement and control of the battery charging current
- measurement of the load current and calculation of the load percentage
- measurement of energy consumed from the battery
- calculation of remaining battery life
- warning signal for too low battery status
- temperature measurement
- communication with a diagnostic program or a supervisory system via the RS-485 interface
- LED status located on the front of the power supply

Charging

In normal operation, when the mains supply is present, the battery charging circuit monitors the battery charging voltage and charging current. The charging voltage to which the battery will be charged depends on the temperature. In the device the battery temperature is measured with an additional external temperature sensor.



Charging voltage as a function of a battery temperature with default coefficients

Internal battery resistance

The battery resistance is measured by temporary connecting an dummy load to a 24V battery. Based on the known load and the voltage drop across the battery, the device calculates the internal resistance of the battery.

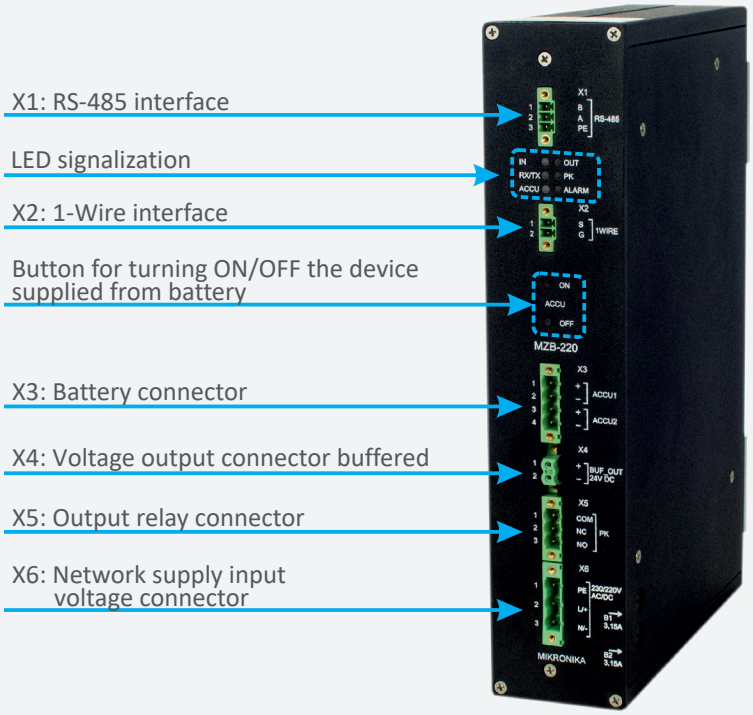
Output relay

The relay can work as a remote-controlled pulse or static control output by the Modbus protocol, or as an alarm output that turns on or off when an alarm occurs in the device. When the relay is controlled from the device as an alarm output, remote control execution will throw a Modbus exception. For the alarm output, the relay will be turned off / on when one of the alarms selected on the list occurs.

RS-485 interface

Communication with the device is possible via the Modbus RTU protocol through a galvanically separated RS-485 interface.

Connectors & interfaces



Technical data

Basic technical parameters of the power supply

GROUP	PARAMETER	VALUE	UNIT
Input	Rated supply voltage	220DC / 230AC	V
	AC input voltage range	110÷250	V AC
	DC input voltage range	155÷350	V DC
	AC input frequency range	47÷63	Hz
	Power consumption (max.)	190	W
Output	Output voltage (network supply)	24.5 ±2	V
	Output voltage (battery supply)	21÷29	V
	Rated power	150	W
	Maximum power (60s) *	300	W
	Charger maximum power	75	W
	Charger current range	0.2÷3.0	A
	Output ripple	100	mV
	Max. DC voltage/current on output relay contacts (resistance load)	220 / 20 30 / 1000	V / mA
	Max. AC voltage/current on output relay contacts (resistance load)	250 / 200	V / mA
	Efficiency	80	%
Battery	Capacity of lead-acid battery (2x 12V or 1x 24V)	3.2÷34.0	Ah
	Internal resistance measurement load	5	Ω
	Battery current consumption (standby, 20°C)	15	µA
	Battery temperature measurement range	-40 ÷ 100	°C
	Battery temperature sensor type **	1-Wire DS18B20	-
Protection	Input overvoltage	430	V
	Output overload	25	A
	Output overvoltage	Electronic	-
	Mains input slow-blow fuses	3.15	A
	Battery slow-blow fuse	12.55	A
Others	Communication protocol	Modbus RTU	-
	RS-485 transmission speed. 8N1 encoding	1200 ÷ 57600	Bods
	Dimensions (height, width, depth) ver. DIN ***	262 x 55 x 171	mm
	Dimensions (height, width, depth) ver. WM ****	262 x 75 x 171	mm
	Weight	2.2	kg
	Protection	IP20 class *****	-

* - available on battery supply only. A suitable battery is required
** - any other resistance sensor (PT100, PT1000, etc.) available on special request
*** - DIN - casing version with DIN rail holders - MZB-220-HC-DIN
**** - WM - casing version with a wall mounting bracket - MZB-220-HC-WM
***** - protect against solid objects up to 12.5 mm (2), no protection against liquids (0)

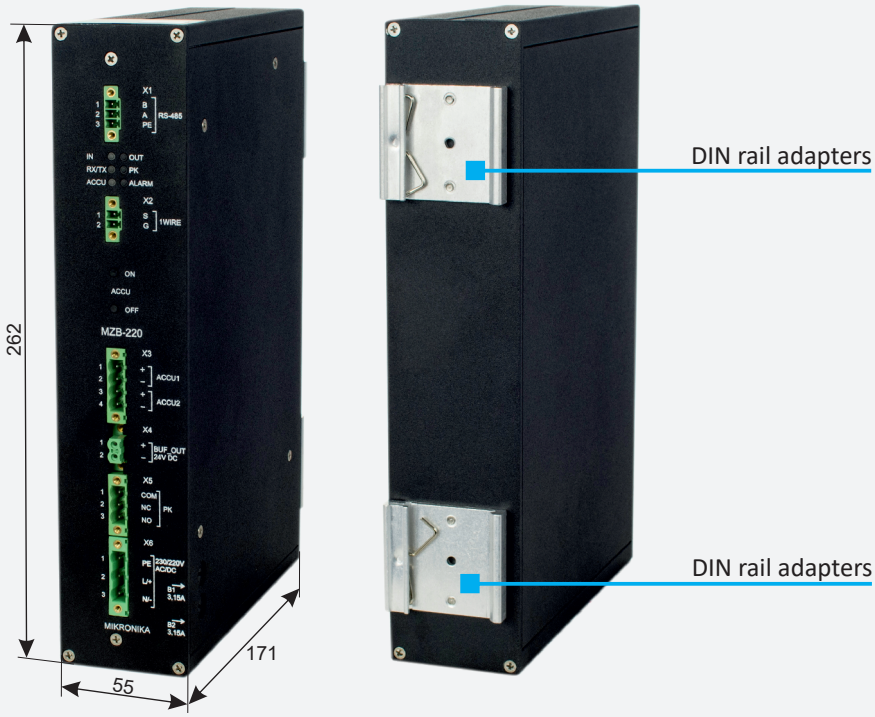
Environment

PARAMETER	VALUE
Ambient temperature	-25 ÷ +55°C
Storage and transport temperature	-40 ÷ +70°C
Relative humidity	10 ÷ 95%
Atmospheric pressure	70 ÷ 106 kPa
Sinusoidal vibrations	amplitude 0.15mm / range 10÷25Hz, acceleration 2.5m/s^2 / range 25÷80Hz
Air composition	without corrosive vapors and gases

Compliance with standards

No.	DESCRIPTION	STANDARD	CLASS
1	Safety of information and electric technology	EN 61010	-
2	Emission of electromagnetic disturbances on supplying wires	EN 55020	class B
3	Emission of electromagnetic disturbances in GTEM chamber	EN 55020	class B
4	Immunity to electrostatic discharges though the air (ESD) 8kV	EN 61000-4-2	class III
5	Immunity to electromagnetic field 3V/m	EN 61000-4-3	class II
6	Immunity to fast transient states (burst) 4kV	EN 61000-4-4	class IV
7	Immunity to surge disturbances 4kV	EN 61000-4-5	class IV
8	Immunity to voltage dips, short breaks and supplying voltage fluctuations	EN 61000-4-11	>95% in 10ms class B 30% in 500ms class C
9	Environmental conditions	EN 60870-2-2	class C2 without humidity condensation, without corrosive vapours or gasses
10	Classifies groups of environmental parameters	EN 60721-3-3	-

View and dimensions



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