VOLTAGE RECTIFIER - BATTERY CHARGER
230 V, 50Hz / 24, 48, 60 or 110 VDC – 250 W
Type: EBP

Technical description

Rectifier – battery charger is used for power supply of users with nominal value 24, 48, 60 or 110 VDC, as well as for charging, i.e. maintenance of dry lead acid batteries made in VRLA technology.

The rectifier is manufactured in high frequency switching technology and it is designed for operation under very hard conditions from the electrical point of view. The rectifier consists of the following functional segments:

Input circuit, diode rectifier, power modulator – inverter, high frequency transformer, quick rectifier, output L-C circuit, output circuit, auxiliary power supplier, control electronics - PWM, electronic protection devices, excitation devices – drivers and peripheral segments.

-Input circuit consists of radio frequency disturbance filters, over voltage protection, over current protection, suppressor voltage and under voltage protection of the input and a soft start device (gradual charging of input electrolytic capacitor).

-Diode rectifier rectifies input AC voltage into DC voltage that is more suitable for further processing; it also rectifies all irregular voltage peaks into middle voltage. It consists of a Gretz, electrolytic and foil capacitors and necessary protections.

-Power modulator modulates instable DC voltage (200-400 V) into high frequency AC voltage of a rectangular form and frequency of 100 kHz that has controllable changeable impulse band.

-High frequency transformer transforms input voltage of one voltage level into the voltage level necessary for usage; it also performs galvanic separation from the DC voltage network. The transformer core is made of ferrite material (N 87), while the winding is made of the wire having the cross section of 0,018 mm2: several wires are formed into a rope. The transformer is impregnated.

-Quick rectifier rectifies transformed AC voltage into DC (in the permeable direction); i.e. it is used as a null diode with the purpose of regulation.

-Output L-C circuit is used for regulation and straightening of output voltage. A current limiting reactor made of a ferrite material and an electrolytic capacitor are used.

-Output circuit is used for measurements of output current and output voltage – with the purpose of regulation and protection as well as to show values on the instruments; it enables parallel connection of more than one rectifiers, detects rectifier failures and incorporates radio frequency disturbance filter.

-Auxiliary power feeder is used for power supply of internal devices of rectifiers with certain voltages (electronics, drivers, instruments).

-Control electronics work on the principle of impulse – band modulation and it is used for regulation and electronic protections.

-Excitation devices – drivers start MOSFET-s in accordance with the rhythm –defined by the control electronics.

-Electronic protection devices measure input and output parameters, and direct the control electronics.

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Technical data

Type:	EBP 24 - 10	EBP 48 - 5	EBP 60 - 4	EBP 110 - 2.3
Input voltage:	230 V, 50 Hz – nominal			
Input voltage deviations:	180 – 260 V, permanently and operationally			
Over voltage resistance:	up to 270 V			
Over voltage peak resistance:	up to 300 V, peak value (under 1 ms)			
Input frequency change resistance:	insensible to changes			
Input voltage form:	sinus			
Output voltage VDC: Nominal / charge	24 / 27,2	48 / 54,4	60 / 68,1	108 / 122,7
Output voltage stability to any change of input voltage:	better than 0,5 %			
Output voltage stability to any change of output current:	better than 1 %			
Ripple:	<1% pp			
Possibility of output voltage adjustment:	20 V to 30 V	40 to 60 V	52 to 72 V	90 to 130 V
Output current:	10 A	5 A	4 A	2,3 A
Current limit:	10 A	5 A	4 A	2,3 A
Battery charging characteristics:	IU			
Input protections:	under voltage, surge voltage over voltage, over current			
Output protections:	over voltage over current			
Power modulator design:	Two transistor forward			
Operating frequency:	100 kHz			
Galvani separation, input – output - housing:	2,5 kV, 50 Hz, 1 min			
Indication:	V-meter, A-meter (option)			
Signalization:	failure – voltage free contact operation– voltage free contact			
Ambient temperature during operation:	-20 ˚C to +50 ˚C			
Vibration (5 – 2.000 Hz):	2,3 / 20 + 2,3/20 + 2,3/20			
Shocks:	20/11 + 20/11 + 20/11			
Insulation resistance:	≥ 200 MΩ			
Terminals:	On demand			
Cooling:	natural			
Wall case (W x H x D): Wal case or plug - in module	RAL 7035 or Aluminum, natural / black 250 x 150 x 120 mm			
Case protection:	IP 20			
Standards:	EN 60950, 50125, 60068, 60050			
Lifetime:	> 25 years			