

**VOLTAGE RECTIFIER /
BATTERY CHARGER**
INPUT: 230 VAC
OUTPUT: 24, 48, 60 VDC
POWER: 550 W, 850 W
Type: PFC



Technical description

Rectifier – battery charger is used for power supply of users with nominal value 24 VDC, 48 VDC and 60 VDC, as well as for charging, i.e. maintenance of dry lead acid batteries VRLA technology, or starting batteries. Regulation of battery charging voltage according to the ambient temperature of the battery
 Power factor correction 0,99

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 factor corection, 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, supressor 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 Graetz, electrolytic and foil capacitors and necessary protections.
- Power factor corection. Transform input impulse cutent into sinus form, PF 0,99 and step up voltage to 400 VDC.
- Power modulator modulates instable DC voltage (400 V) into high frequency AC voltage of a rectangular form and frequency of 100 kHz that has controllable changeable impulse band. It consists of a full bridge connection made by MOSFET, necessary RCD cells and other protection elements.
- 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, 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 (while FETs do not perform conduction).
- 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).

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- Control electronics work on the principle of impulse – band modulation and it is used for regulation and electronic protections.
- Excitation devices – drivers start MOSFETs in accordance with the rhythm –defined by the control electronics.
- Electronic protection devices measure input and output parameters, and direct the control electronics.

PFC 550 W output

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|-----------------|---------------|---------------|---------------|
| Type: | PFC 24 - 320 | PFC 48 - 10 | PFC 60 - 8 |
| Output voltage: | 24 / 27,2 VDC | 48 / 54,4 VDC | 60 / 68,1 VDC |
| Output current: | 20 A | 10 A | 8 A |

PFC 550 W output

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|-----------------|---------------|---------------|---------------|
| Type: | PFC 24 - 320 | PFC 48 - 10 | PFC 60 - 8 |
| Output voltage: | 24 / 27,2 VDC | 48 / 54,4 VDC | 60 / 68,1 VDC |
| Output current: | 30 A | 15 A | 16 A |

Technical data

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|---|---|
| Input voltage: | 230 V, 50(60) Hz – nominal |
| Input voltage deviations: | +15%, - 20% , 45 – 66 Hz |
| Over voltage resistance: | up to 270 V |
| Input frequency change resistance: | insensible to changes |
| Input current form: | Sinus, PF = 0,99 |
| Output voltage stability (change of input voltage): | better than 0,5 % |
| Output voltage stability (change of output current): | better than 1 % |
| Ripple: | ~1% |
| Possibility of output voltage adjustment: | ±15 % |
| Regulation of battery charging voltage by temperature | - 3,5 mV / °C / cell |
| Current limit: | I _n |
| Battery charging characteristics: | IU |
| Technology: | PFC + MOSFET bridge + PWM |
| Input protections: | under voltage, surge voltage over voltage, over current |
| Output protections: | over voltage, over current |
| Power modulator design: | PFC + bridge |
| Operating frequency: | 100 kHz |
| Galvanic separation input – output - housing: | 2,5 kV, 50 Hz, 1 min |
| Indication (light): | AC input (green), DC output (reed) |
| Signalization (voltage free contact): | Failure |
| Ambient temperature during operation: | -25°C to +55°C |
| Terminals: | Connectors or by request |
| Comands. | Switch ON - OF |
| Cooling: | Natural |
| Wall case (WxHxD): | 550 W 280 mm x 180 mm x 100 mm 750 W 280 mm x 230 mm x 110mm |
| Standards: | EN 61000-6 (and 3), EN 60950-1 |