POWER SUPPLIES *Optimizing charger E147*

The lifetime and capacity of a battery used in power supply systems strongly depends on the operational conditions and, in particular, on the charging process. To achieve the maximum usable lifetime, the charging system has to keep the batteries as full as possible while not overcharging them. Overcharging would lead to boiling out of the electrolyte and thus, to the damage the batteries. Therefore, Cybernetica AS has taken special efforts to find the most efficient methods of charging the batteries and, as a result, the optimizing battery charger E147 has been developed. The purpose of the charger is to guarantee the energy supply of autonomous and local control systems from 220 V/50 Hz mains and charging in buffering mode the lead or gel batteries with a parallel load up to 100 W or the operation of the system even without a battery. When optimizing the charging process the type, nominal voltage, capacity and the charge factor of the battery as well as temperature of the ambient air are taken into the consideration. The optimization is performed by a programmable microcontroller. The charger is ready to be integrated into a remote control and monitoring system.

Features

- charging of lead or gel batteries of nominal voltage from 12 up to 18 V in buffering mode, simultaneously supplying the power for a parallel load up to 100W. The voltage converter of the charger follows the voltage of the battery and optimizes the charging process. The charge factor will be determined by the microcontroller measuring of current, voltage, and temperature of the battery
- periodical checking discharges and formation of the battery to be initialized either locally by the maintenance program or remotely by the control and monitoring system
- heating of the battery when the temperature of it lowers below a given value (16°C by default)
- holding the output voltage of the charger on the "holding level" of the battery while operating without a battery
- sending of emergency and diagnostic messages to the control and monitoring system about the voltage of the mains, state of the battery, temperature, and presence of the battery
- storing of statistical data about the last 16 disappearings of the mains voltage and about the last 8 changes of the state of the battery·

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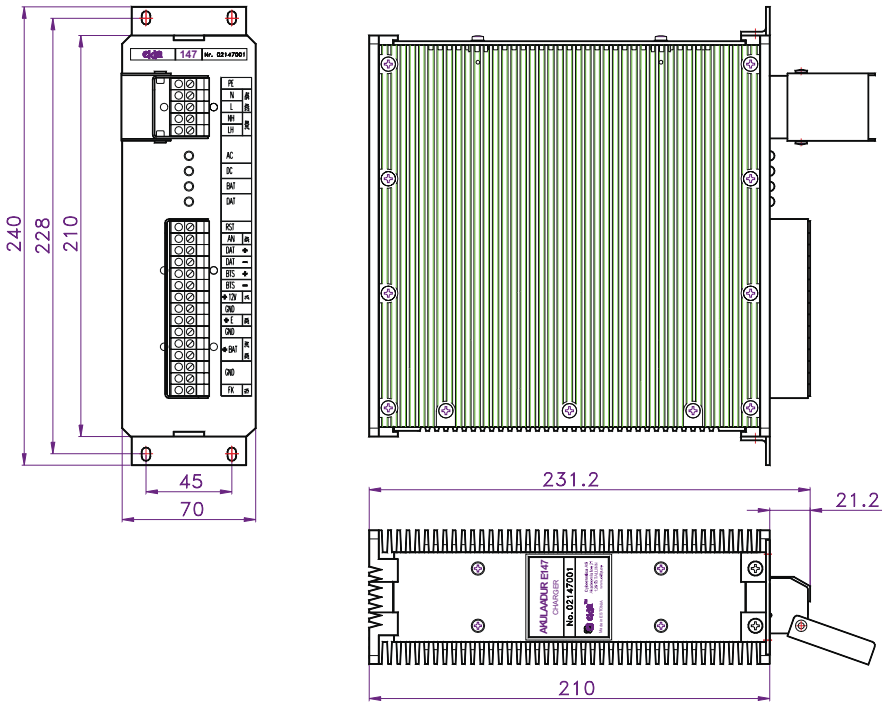
Technical specifications

Parameter	
Energy source	mains 220 V AC 50Hz
Voltage of lead or gel battery	from 12 up to 18 V
Battery charge current	maximal 10 A
Battery formation load current	maximal 15A
Mode of operation	charging battery in buffer mode with parallel load up to 100 W, or operating without battery
Power consumption of battery heating mat	up to 240W
Ambient air temperature	from -30C° up to +50C° (IEC 60068-2-1 IEC 60068-2-2)
Relative humidity	up to 98% at temperature +35C° (IEC 60068-2-30)
Operation in conditions of salt mist	allowed (IEC 60068-2-52)
Mechanical vibration	10 – 500Hz with acceleration up to 2,2 g (IEC 60945 section 8.7)
Ingress protection	charger should be placed into a cabinet with ingress protection at least to IP 64 (IEC 60529)



Layout and dimensions of the optimizing charger E147