Power Innovation
Stromversorgungstechnik GmbH

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AC-DC Converter REC500-230-48-K9

Rectifier System for Telecom-, Industrie- and Railapplications

Specification

General

Electrical safety	EN 60950, UL 94
Protection class	1
Pollution degree	2
Isolation	primary – secondary 3.75 kV_{DC}
PFC at	according to EN 61000-3-2, >0,98 100% load; >0,95 at 60% load
Ventilation	forced ventilation, electronically monitored fans
MTBF	140 000 h

Electrical data

Input

Mains input voltage nom.	U_N = 230V_{AC}, 50/60 Hz
Voltage range	+/- 20% (184 – 276) V_{AC}
Frequency range	45-66 Hz, sine wave
Mains connection	1-phase

Output

Output voltage	52-54V_{DC}, positive mass associated with housing / protective earth
Output voltage tolerance	+/- 2%
Output power	from 250 - 500W, without derating up to 60°C ambient temperature
Output characteristic	UI characteristic
Output ripple	<100 mVpp
Efficiency	>91%
Parallel operation	redundant de-coupling of the 250W modules with diode function
Load sharing	active, accuracy +/-10%

Picture may differ from actual device

Environmental conditions

Conditions during operation	ETS 300 019-1-3 class 3.3, extended to +60°C ambient temperature
during transport	ETS 300 019-1-2 class 2.3
during stocking	ETS 300 019-1-1 class 1.2
Isolation group	according to EN 60950, pollution degree 2
Ambient temperature during operation	-25°C to +60°C
Cold start	-40°C, adherence of tolerances from -25°C
Maximum ambient temperature	+70°C, from +60°C with derating = 2,5% per 1°C
Rel. humidity	0% to 100%, start-up after drying up
Maximum operation altitude	2000 meters
Protection	IP 20

EMC

Emission	EN 55022, class B, ETS 300 386 V1.3.1
Immunity	EN 55024, EN 61000-6-2 (Industrial areas)

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Specification

Signals

Visual	Controller:	LED red = Alarm LED green = o.k.
	Rectifier:	LED green = DC o.k. LED green = AC o.k.
Alarm inputs	8 x for potential free alarm contacts	
Alarm contacts	2 x programmable, potential free alarm contacts, max. 125 V_{DC}, 500 mA	
Temperature sensor	2x PT1000 sensor inputs via signal connector	
TCP/IP Ethernet	interface for data reading at the controller, parameter adjustment via monitoring software	

Battery management (optional with battery module and controller)

LVD	integrated low voltage disconnect relay
Battery test	adjustable via Ethernet interface in combination with a monitoring software
Temperature monitoring	PT1000 sensor
Connecting of	12V battery = 250W 24V battery = 500W

Protection functions

AC input	overvoltage, according to EN 61000-4-1 (VDE 0160): 750 V_{AC} 0,1/1,3 ms
DC output	overvoltage, repetitive trace function, tripping value ≤ 60 V_{DC} short circuit current I_c = 5,3A each rectifier module (without accumulator), short-circuit proof
Leakage current	a fixed protective earth (PE) connection must be setup

Cooling

Rectifier modules	horizontal forced ventilation, with fan failure detection

Mechanical data

Construction	for mounting in ETSI- and 19“-racks (flange can be supplemented)
Dimension	19“ x 240 mm x 1U (W x D x H)
Weight Module rack + controller + fuse panel	approx. 5,5 kg
Single rectifier	approx. 0,7 kg

Connection terminals

AC input	3 x 1mm² connecting cable
DC output at the module	MCV1,5/3-GF-3,81
Alarm contacts	D-SUB, 44-pole, female (programmable)
Signal contacts	D-SUB, 44pole, female (programmable)
LCT	RJ45
Batterymodule: Battery	Type D-SUB 7W2
Distribution	OUT 1 MCV1,5/3-GF-3,81 OUT 2 MCV1,5/3-GF-3,81 OUT 3 MCV1,5/3-GF-3,81

Warranty	24 months
Order code	MBGT500-K9

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Power Rectifier Module for REC500

General Description

Power Rectifier Module 250W
MREC250-modules for installation in the REC500 sub rack are hot pluggable, i.e. they can be mounted in the sub rack or extracted during operation.

The decoupling of the DC bus system and active load sharing of individual modules with the resulting module redundancy provides a system with a very high availability.

General Technical Specifications

Output		**Signaling**	
Nominal voltage	52V_{DC},	LED green	DC ok
Output power	max. 250W	LED green	AC ok
Output current	max. 5A		
Efficiency	>92% at nominal load		
Output characteristic	UI characteristic		
Output ripple	< 100 mVpp		
Parallel operation	redundant decoupling of 250W modules with diode function		
Load sharing	active, accuracy +/-10%		

Order code:

MREC250-230-48-K9

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Controller Module for REC500

General Description

Controller Module
The Controller Module is used for controlling and monitoring the REC500 system via the internal CAN bus. The Local Craft Terminal (LCT) LAN interface permits the connection of a local PC or network. A clear and easy-to-operate user interface facilitates control, programming and linkage of all Controller parameters depending on user requirements.

- Hot plug-in capability
- No AC/DC power supply interruption in case of Controller exchange or failure
- Output voltage control via temperature-dependent charging characteristic
- External alarm inputs
- RS232 for external modules
- Freely programmable alarm relays
- PCBs protected against humidity
- **Optional:**
  Expandable with Management System

General Technical Specifications

Multifunctional-port

- RS232 Interface:
  for external sensors (12V auxiliary voltage)
  e.g. RFID card reader
  e.g. smoke or gas sensors
- Temperature measurements with PT1000 (2x)
- Switching outputs for external components
- 8 alarm inputs
  - e.g. door contacts
  - e.g. temperature alarms
- PWM output to external fan control
- Alarm outputs (2x),
  - Freely programmable
  - Floating (potential-free)

Connector
D-SUB HD 44

Signaling

LED green	ok.
LED red	Alarm (general alarm)

Local Craft Terminal (LCT)

Connector	RJ45
Protocol	TCP/IP

Order code:

MCON500-230-48-K9

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Electronic Connection Panel for REC500

General Description

Connection Module for the REC500 System
The connection module permits an electronically controlled distribution via three DC outputs.
Each output is electronically overcurrent-protected.
The tripping current is adjusted via the software. After tripping, the output can be reset manually by means of a push button. Alternatively, a reset is also possible via the management system.
All outputs can be switched individually.
To save battery capacity, certain outputs can be switched off – for example – by means of a time-control command or triggered by a power supply failure. In this case, the shutdown can take place immediately or with a certain delay.
The power available at the outputs can be measured.

- CAN bus controlled
- All six outputs are electronically protected
- Programmable tripping current
- Power measurement at each output
- Outputs separately switchable
- Manual reset
- Function display via LED

The device has integrated impedance bridging for the connection of 12V or 24V batteries.
The battery connection is made possible by the controller item PI-CRT2004 and can be parameterized via the operating software.

General Technical Specifications

Connecting:	
Battery connect (only possible with controller)	250W at 12V batteries 500W at 24V batteries
Battery current limit	20A
Connectors	Type D-SUB 7W2
DC Out, 1-3	adjustable via controller 0-5A, is given 5A
Max. sum current	10A
Plug connector	Type Phoenix MCV1,5/3-GF-3,81
Signaling	
LED green	Operation
LED red	Failure, shutdown
Reset	Manually via Reset button (protected against unintentional actuation)
Order code:	**MBATT500-24-K9**

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