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<sub>DC</sub>
- PFC: according to EN 61000-3-2, >0.98 at 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<sub>N</sub> = 230V<sub>AC</sub>, 50/60 Hz
- Voltage range: +/- 20% (184 – 276) V<sub>AC</sub>
- Frequency range: 45-66 Hz, sine wave
- Mains connection: 1-phase

**Output**
- Output voltage: 52-54V<sub>DC</sub>, 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%

**Environmental conditions**
- Conditions during operation: ETS 300 019-1-3 class 3.3, extended to +60°C ambient temperature
- Conditions during transport: ETS 300 019-1-2 class 2.3
- Conditions 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
- Immunity: ETS 300 385 V1.3.1 EN 55024, EN 61000-6-2 (Industrial areas)

Picture may differ from actual device.
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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 VDC, 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 VAC, 0,1/1,3 ms

DC output overvoltage, repetitive trace function, tripping value ≤ 60 VDC

short circuit current Ic = 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 approx. 5,5 kg

Battery management 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

Battery module: 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

<table>
<thead>
<tr>
<th>Output</th>
<th>Signaling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage</td>
<td>52V&lt;sub&gt;DC&lt;/sub&gt;,</td>
</tr>
<tr>
<td>Output power</td>
<td>max. 250W</td>
</tr>
<tr>
<td>Output current</td>
<td>max. 5A</td>
</tr>
<tr>
<td>Efficiency</td>
<td>&gt;92% at nominal load</td>
</tr>
<tr>
<td>Output characteristic</td>
<td>UI characteristic</td>
</tr>
<tr>
<td>Output ripple</td>
<td>&lt; 100 mVpp</td>
</tr>
<tr>
<td>Parallel operation</td>
<td>redundant decoupling of 250W modules with diode function</td>
</tr>
<tr>
<td>Load sharing</td>
<td>active, accuracy +/-10%</td>
</tr>
</tbody>
</table>

Order code:

MREC250-230-48-K9
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

<table>
<thead>
<tr>
<th>Multifunctional-port</th>
<th>Local Craft Terminal (LCT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS232 Interface: for external sensors (12V auxiliary voltage) e.g. RFID card reader e.g. smoke or gas sensors Temperature measurements with PT1000 (2x)</td>
<td>Connector RJ45</td>
</tr>
<tr>
<td>Switching outputs for external components</td>
<td>Protocol TCP/IP</td>
</tr>
<tr>
<td>8 alarm inputs</td>
<td></td>
</tr>
<tr>
<td>e.g. door contacts e.g. temperature alarms PWM output to external fan control Alarm outputs (2x),</td>
<td></td>
</tr>
<tr>
<td>Freely programmable Floating (potential-free)</td>
<td></td>
</tr>
</tbody>
</table>

**Connector**
D-SUB HD 44

**Signaling**
- LED green ok.
- LED red Alarm (general alarm)

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

General Technical Specifications

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

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.