

AC-DC Converter REC3200-230-48/60-K20

Modular Battery Charger / Inverter System

General description

Thanks to the variety of modules available, the REC3200-230-48-K20 system offers the perfect solution for all areas of applications requiring a power output of up to 3,2kW.

Starting up from a minimum equipment of 600Watt, the system can be expanded with additional modules to a higher-performance or even redundant system to grow with the requirements of your application. With the controller monitoring and remote control functions which can be easily integrated, the REC3200 system permits the design and setup of system solutions appropriate – for example – for outdoor telecommunication systems.



- 19", 3HE basic module, also appropriate for installation in ETSI racks or cabinets
- Redundant rectifier modules, 600W/800W
- Inverter module for AC Out
- Two redundant Battery modules for UPS function
- Short-term UPS based on Super-Cap's
- Electronic distribution with shutdown-function
- Comprehensive Controller functions covering alarm contacts, LAN access, SNMP and WEB-interface
- AC and DC connection at the front

Electronic data – Input

Mains voltage	$U_N = 230V_{AC}, 50/60Hz$
Voltage range	$\pm 20\% (184 - 276V_{AC})$
Frequency range	45-66Hz, sine wave-form
Mains connection	1-3-phase
Commercial power line	TT and TN-Netz acc. to EN60950

Electronic data – Output

Output voltage	48V _{DC} , potential free
Output power	600W - 3200W, depending on degree of expansion without derating up to ambient temperatures of 60°C
Output voltage tolerance	Temperature controlled battery loading characteristic
Output characteristic	UI characteristic
Output ripple	<100mV _{pp}
Efficiency	>90%, at nominal load
Parallel operating	Redundant decoupling of the 600W/800W modules with diode functions
Load sharing	Activ, accuracy $\pm 10\%$

Mechanical data

Version	Appropriate for installation in ETSI- and 19"racks (flanges can be changed)
Dimensions	19" x 240mm x 3HE (W x D x H)
Weight:	
Subrack	
Controller	
Distribution panel	approx. 12kg
Single rectifier	approx. 1,5kg

Cooling

Rectifier module	Horizontal forced ventilation with fan failure detection
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Protection functions

AC Input	Overvoltage acc. to EN61000-4-1 (VDE 0160): 750V _{AC} 0,1/1,3ms
DC Output	Overvoltage protection, repetitive trace function, tripping value $\leq 60V_{DC}$ ($\leq 72V_{DC}$)
Leakage current	Fixed protection earth (PE) connection is obligatory. At AC connection via contact plug an additional PE connection is not necessary.

EMV, safety

Emission	EN55022, class B
Immunity to interference	EN55024, EN61000-6-2 (industrial area)

Connection terminals

AC Input	Phoenix HDFK4 3-phase
DC Input	Battery connector: Phoenix HDFK10
DC Output, OUT 1-3	Phoenix HDFK16
Alarms/Signals	D-SUB, 44-pole, female
Remote control + LCT	2 x RJ 45

Environmental conditions

Isolation group	Acc. to EN60950, pollution degree 2
Ambient temperature during operation	-25°C to +60°C
Maximum ambient temperature	+70°C, beginning from +60°C derating with 2,5% per 1°C
Relative air humidity	0% to 100%, operation after drying
Protection	IP 20

Signals

Optical signals:	
Controller	LED red: Alarm LED green: OK
Rectifier	LED green: AC OK LED green: DC OK
Alarm contacts	2 programmable, potential free alarm contacts, contact load max. 60VDC, 500mA via signal connector

Warranty **24 months**

Order code **REC3200-230-48/60-K20**

AC-DC Converter REC3200-230-48/60-K20

Power Rectifier module for REC3200

General description

MREC600 modules for installation in the REC3200 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 the active load sharing of individual modules with the resulting module redundancy provides a system with a very high availability



Electrical data – Output

Nominal voltage	40V _{DC} - 60V _{DC} , CAN bus controlled
Output voltage	Max. 600W
Constant power range	40V - 60V
Output current	Max. 15A
Efficiency	>92% at nominal load
Output characteristic	UPI characteristic, transit from P to I at ≤ 33V _{DC}
Output ripple	<100mVpp
Parallel operation	Redundant decoupling of 600W modules with diode function
Load sharing	Active, accuracy +/-10%

Signaling

LED green	DC o.k.
LED green	AC o.k.

Warning:

The MREC600 and the MREC800 cannot be mixed in one System.

Order code

MREC600-230-48-K9

AC-DC Converter REC3200-230-48/60-K20

Power Rectifier module for REC3200

General description

MREC600 modules for installation in the REC3200 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 the active load sharing of individual modules with the resulting module redundancy provides a system with a very high availability



Elektrische Daten – Ausgang

Nominal voltage	40V _{DC} - 60V _{DC} , CAN bus controlled
Output voltage	Max. 800W
Constant power range	40V - 60V
Output current	Max. 16A
Efficiency	>92% at nominal load
Output characteristic	UPI characteristic, transit from P to I at $\leq 33V_{DC}$
Output ripple	<100mVpp
Parallel operation	Redundant decoupling of 800W modules with diode function
Load sharing	Active, accuracy +/-10%

Signalisierung

LED green	DC o.k.
LED green	AC o.k.

Warning:

The MREC600 and the MREC800 cannot be mixed in one System.

Order code

MREC800-230-48-K9

AC-DC Converter REC3200-230-48/60-K20

Controller module for REC3200

General description

The Controller module is used for controlling and monitoring the REC3200 modules 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.

Further features:

- Hot plug-in capability
- No AC/DC power supply interruption in case of a controller failure
- Output voltage control via temperature dependent charging characteristic
- External alarm inputs
- RS232 for external modules
- Freely programmable alarm relays
- PCBs protected against humidity
- Electric meter for MBUS / RS232
- Integrated SNMP function and Web-interface



Signals

- Interface RS232: 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
- Alarm outputs
 - Freely programmable
 - Floating (potential free)
- Battery measuring input for downward compatibility to MCON2400-230-48

Signaling

LED green	o.k.
LED red	Alarm (general alarm)

Local Craft Terminal (LCT)

Connector	RJ45
Protocol	TCP/IP

LAN

Connector	RJ45
Protocol	SNMP and Webinterface

Connector

D-Sub HD 44
Mini Combicon 2x6pol

Order code

MCON2400-24-85-K20/K21

AC-DC Converter REC3200-230-48/60-K20

Battery connection module for REC3200

General description

The battery connection module is required for connecting a battery to the REC3200 system. It includes the battery connector, battery fuse and LVD as well as the control logic for the battery management.

Functions such as symmetry monitoring, current measurement and temperature characteristic are integrated.

Further features:

- CAN-Bus controlled
- Programmable charging characteristic
- Programmable LVD relay
- Battery temperature detection
- Automatic battery test



Battery connection

Nominal voltage	48V _{DC}
Temperature sensor	PT1000
Fuse	2-pole, Magneto-hydraulic
Max. output current	50A
Symmetry measurement	Mini Combicon 6-pole Phoenix MC1,5/6-GF-3,81 10k in the line
Deep-discharge protection	Via LVD
Battery connector	HDFK 10
Recommended power reserve for battery charging	500W

Signals

Alarms	Adjustable and analyzable by means of the controller operating software
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Order code

MBATT2400-48/60-K20

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Electronic connection panel for REC3200

General description

The connection module permits an electronically controlled distribution via six 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.



Further features:

- 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

Outputs

DC OUT, 1-3	adjustable from 0-8A, electronically
DC OUT, 4-6	adjustable from 0-6A, electronically
Max. sum current	30A
Plug connector	Type 3W3

Signaling

LED green	Operation
LED red	Failure, shutdown

Reset

Manually via Reset button or Remote via monitoring software
(Protected against unintentional actuation)

Order code

MSICH-K9

AC-DC Converter REC3200-230-48/60-K20

Inverter module for REC3200

General description

Inverter module for the REC3200 System for a secure and uninterrupted supply of AC units. The MINV500 plug-in module provides a 230V_{AC}, 50Hz sine-wave output signal supplied by the DC bus system. The connection to the power supply is set up via the front of the module.



Further features:

- CAN bus controlled
- Hot plug-in capability
- Temperature range -25°C to +70°C
- Controlled and monitored fans
- PCBs protected against humidity
- Real SINE output
- Short-circuit protected

Electrical data – Output

Output voltage	230V _{AC}
Frequency	50Hz, sine-wave processor controlled
Output power	500VA / 400W
Power factor	0,8
Crest factor	>2,5%
Harmonic factor	<2,5%
Load range	0% - 100%
Overload range	101% - 150% at 30sec. to 3sec.
Efficiency	>88% at nominal load

Connector terminals

Output	Phoenix MC1,5/3-6F-5,08
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Signals

LED green	Output o.k.
LED yellow	Warning over-temperature
LED red	Output switched off (Overload or over-temperature)

Order code

MINV500-48-230-K1