

AC-DC Converter REC2400-230-110-K10

Rectifier System for Telecom-, Industry- and Rail applications

General

Electrical Safety	EN 60950, UL 94
Protection class	1
Pollution degree	2
Isolation	primary – secondary 3.75kV _{DC}
PFC	EN 6100-3-2, >0,98 at 100% load; >0,95 at 60% load
Ventilation	Forced ventilation, electronically monitored fans
MTBF	140.000h



Picture may differ from actual device

Electrical data – Input

Mains input voltage nom.	U _N =230V _{AC} , 50/60Hz
Voltage range	± 20% (184-276V _{AC})
Frequency range	45-66Hz, sine wave
Mains connection	1+1-phase
Commercial power line	TT and TN-Net, EN 60950

Electrical data – Output

Output voltage	110V _{DC} , potential free
Output voltage tolerance	Temperature controlled battery loading characteristic
Output power	From 600-2400W, without derating up to 60°C ambient temperature
Output characteristic	UI characteristic
Output ripple	<100mV _{pp}
Efficiency	>91% at nominal load
Parallel operation	Redundant decoupling of the 600W modules with diode function
Load sharing	Active, accuracy ± 10%

Cooling

Rectifier modules	Horizontal forced ventilation, with fan failure detection
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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	EN 60950, pollution degree 2
Ambient temperature during operation	-25°C to +70°C, at 60°C derating 2,5% per 1°C, non condensing
Cold start	-40°C, adherence of tolerances from -25°C
Rel. humidity	0% to 100%, start-up after drying
Max. operation altitude	3000 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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Signals

Optical signals:	
Controller	LED red: Alarm LED green: o.k.
Rectifier	LED green: DC o.k. LED green: AC o.k.
Alarm inputs (8)	For potential free alarm contacts
Alarm outputs	2 potential free alarm-contacts, max.125V _{DC} , 500mA
Temperature sensor	PT 1000 Inputs
TCP/IP Ethernet	Interface for data reading, parameter adjustment

Battery management (optional with battery module)

Symmetry control	2 monitoring inputs
LVD	Integrated low voltage disconnect relay
Battery test	Adjustable via Ethernet interface in combination with a monitoring software
Temperature monitoring	PT 1000 sensor

Protection functions

AC Input	Overvoltage, EN 61000-4-1 (VDE 0160): 750V _{AC} 0,1/1,3ms
DC Output	Overvoltage, repetitive trace function, tripping value $\leq 135V_{DC}$ Short circuit current $I_{K=5,3A}$ each Rectifier module (without accumulator), short-circuit proof
Leakage current	a fixed protective earth (PE) connection must be setup

Mechanical data

Construction	For mounting into ETSI- and 19"-racks (flange can be changed)
Dimension	19" x 240mm x 3HE (W x D x H)
Weight	
Module rack + Controller + Fuse panel	approx. 12kg
Single Rectifier	approx. 1,5kg

Connection terminals

AC Input	5 x 1.5mm ² connecting cable
DC Output	OUT 1: HDFKV 10 OUT 2: HDFKV 10 OUT 3: HDFKV 10
Alarm contact	D-SUB, 44-pole, female (programmable)
Signal contact	D-SUB, 44-pole, female (programmable)
LCT	RJ45
Battery (optional)	HDFKV 10
Battery Signal (optional)	Phoenix MC 1,5/5-63,5

Distribution / Fuse panel

DC OUT 1	10A, 1-pole, circuit breaker
DC OUT 2	10A, 1-pole, circuit breaker
DC OUT 3	10A, 1-pole, circuit breaker

Order code

System rack with distribution **MBGT2400-110-K10**

Warranty **24 months**

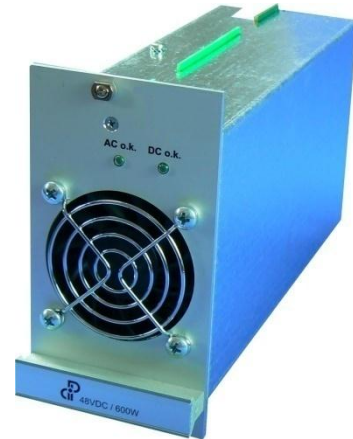
AC-DC Converter REC2400-230-110-K10

Rectifier Module for the REC2400

General description

The MREC600 modules for installation in the REC2400 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 between the single modules with the resulting module redundancy provide a system with a very high availability.



Electrical data - Output

Nominal voltage	100V _{DC} -130V _{DC} , CAN bus controlled
Output power	Max. 600W
Constant power range	Max. 5A
Efficiency	>92% at nominal load
Output characteristic	UI characteristic
Output ripple	<100mVpp
Parallel operation	Redundant decoupling of the 600W modules with diode function
Load sharing	active, accuracy ±10%

Signaling

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

Order code

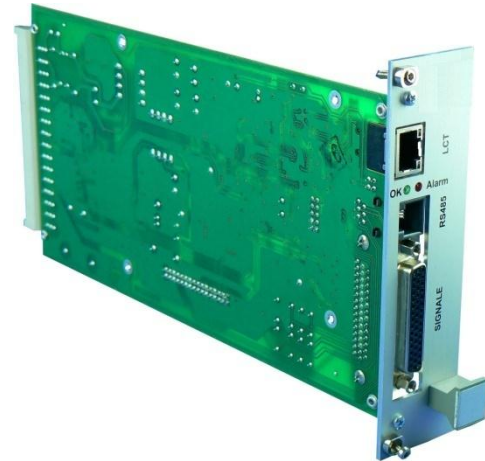
MREC600-230-110-K10

AC-DC Converter REC2400-230-110-K10

Controller Module for the REC2400

General description

The controller module is used for controlling and monitoring the REC2400 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.



Further features are:

- 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 inputs
- PCBs protected against humidity
- Optional:
Expandable with Management System

Signals

- RS232 interface:
For external sensors (12V auxiliary voltage)
e.g. RFID card reader
e.g. smoke or gas sensors
- Temperature measurements PT 1000 (2x)
- Switching outputs for external components
- 8 alarm inputs
e.g. door contacts
e.g. temperature alarms
- PWM output for external fan control
- 2 alarm outputs
 - freely programmable
 - floating (potential-free)

Signal connector

D-Sub HD 44-pole

Signaling

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

Local Craft Terminal (LCT)

Connector	RJ 45
Specification	IEEE 802.3™ compatible Ethernet Controller, 10Base-T Port, data rate: 10 Mbit/s
Supported network protocols	IPv4, UDP, TCP

Order code **MCON2400-230-110**

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Battery Connection Module for the REC2400

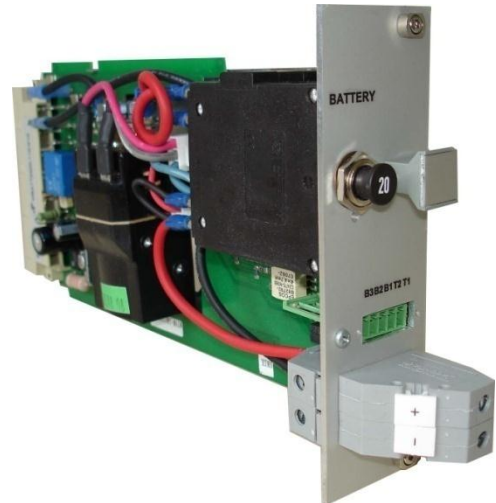
General description

The battery connection module is required for connecting a battery to the REC2400 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 are:

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



Battery connection

Nominal voltage	110V _{DC}
Temperature sensor	PT 1000
Fuse	2-pole, magneto-hydraulic
Max. output current	20A
Symmetry measurement	Via battery connecting cable, with 10kΩ in the line
Deep-discharge protection	Via LVD (low voltage disconnect)
Battery connector	Phoenix HDFK 10
Recommend power reserve for battery charging	500W

Signals

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

MBATT2400-110-K10