technical documentation
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ECH 44A

10 Slot 19” Crate for MMS - High Voltage Power Supply Modules

- Up to 10 MMS-HV Power Supply Modules
- Up to 3,000 W power
- wide range of HV-modules
- compatible to CC24 / CC23 Controller boards with integrated iCS Linux Server or Wiener Mpod Controller
- optional UPS
- robust mechanics, module front and back reversible

Document history

Version	Date	Major changes
2.0	28.02.2017	Relayouted version

Disclaimer / Copyright

The information in this manual is subject to change without notice. We take no responsibility for any mistake in the document. We reserve the right to make changes in the product design without reservation and without notification to the users. We decline all responsibility for damages and injuries caused by an improper use of the device.

Important security information

It is strongly recommended to read the operator´s manual before operation. To avoid injury of users it is not allowed to open the unit. There are no parts which can be maintained by users inside of the unit. Opening the unit will void the warranty.

We decline all responsibility for damages and injuries caused by an improper use of the module. It is strongly recommended to read the operators manual before operation.

WARNING!
 WARNING! The non-observance of the advices marked as “Warning!” could lead to possible injury or death.

CAUTION!
 CAUTION! Advices marked as “Caution!” describe actions to avoid possible damages to property.

INFORMATION
 INFORMATION Advices marked as “Information” give important information.

Note

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1 General information

This crate device is used operating iseg High Voltage power supply modules in a 19“ rack compatbile case. It provides module slots for up to 10 MMS HV compatible High Voltage modules. Each module is connected to the backplane of the crate by a vendor specific 96 pin connector, which delivers module power supply and CAN based digital interface connection. Depending on modules features further digital and analog signals are provided be the connector (safety loop, thermal sensors etc.).
For control and network communcation of the MMS modules a crate controller needs to be plugged into a special Crate Controller Slot. The ECH 44A is compatible with iseg CC24 Master, CC23 Slave Controller and Wiener MPOD controller. The CC24 Master controller is equipped with integrated Linux server hardware running iseg iCS System, ethernet and WiFi connectivity. Up to eight CC23 Slave controller can extend a CC24 system by using galvanically isolated CAN connections and auto adressing.

CAUTION!

CAUTION!

It is not allowed to use the unit if the covers have been removed!

ISEG declines all responsibility for damages and injuries caused by an improper use of the module. It is highly recommended to read the manual before any kind of operation.

2 Technical data

SPECIFICATIONS	ECH 44A
Slots	10 x MMS modules and 1 x MMS Controller
Rated AC mains input	100-240 VAC with PFC
AC power connector	Hirschman Schuko 1x16A
HV module supply voltages	+24 V
DC output power	1,200 W (opt. up to 3,000 W)
Cooling	Vertical, integratet fans , bottom air intake
Operation temperature	0... 50°C ambient without derating
Storage temperature	-30 °C ... +85 °C (+55°C with UPS option)
Stability	10 mV or 0.1% / 24 hours, 25 mV or 0,3 % / 6 month under constant conditions
Floating DC Power Supply	+- 50V
M.F.O.T. Maintenance Free Operation Time	Internal fans: 40°C ambient : > 65,000 h, 25°C ambient : 100,000 h electronics: 40°C ambient : > 100,000 h
Dimensions (L/W/H)	600mm / 19“ / 8U
Weight	34kg, (+ 10 kg with UPS option)

3 Order options

OPTION	ORDER CODE
Uninterruptible power supply 1200W	-UPS

4 Operation and maintenance

CAUTION!

CAUTION!

There is no mains fuse inside the crate!
A circuit breaker for overcurrent protection 16A, type B or C (EN / IEC 60898, VDE 0641), has to be installed externaly!

WARNING!

WARNING!

When connected to mains, the unit is powered permanently! All on- / off-signals or power switches only operate as secondary DC on / off only and not as a mains breaker!

CAUTION!

CAUTION!

For UPS option only:
Before operating the first time, please make sure the battery fuse is inserted into the power supply!

Before operation and connecting to mains please make sure, that all cables are connected and airflow is not impeded. The case must not be covered and installed properly. The crate controller and modules must be plugged in, depending on module hotplugging is possible or not.
By connecting the crate to the mains, the controller will start up in standby mode and now is able to switch and monitor the power supply for the inserted Modules. During this start up, the internal fans will begin spinning, the crate now is ready for operation.

4.1 Replacing the power supply

WARNING!

WARNING!

When connected to mains, the unit is powered permanently! All on- / off-signals or power switches only operate as secondary DC on / off only and not as a mains breaker!
Before starting any kind of work inside the crate, disconnect it from mains and wait a couple of minutes with your activities.

The power supply is build to be user replaceable. A Phillips- and a slotted-head screwdriver, a side cutter and a replacement cable tie are needed. Begin with setting the crate into standby-mode, disconnect it from mains and wait a few minutes, now pull off the cap of the „POWER ON“-button and proceed with removing the four Phillips screws and detach the lid.

Figure 1- Remove back cover to replace power supply

You now see the power supply, cut loose the cable tie and unplug the mains cable. Take the slotted-head screwdriver and unscrew the two slotted-knurled screws in an alternating manor to avoid tilting the power supply inside the frame. Sometimes a firm pull is needed to completely remove the power supply from the crate.

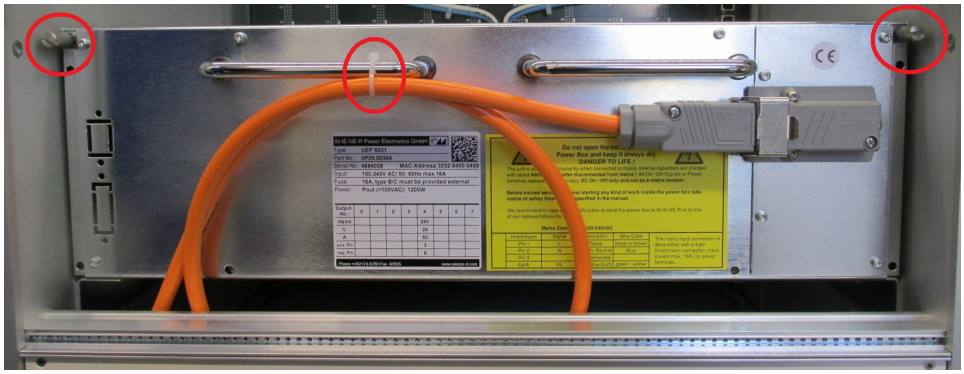


Figure 2 - remove wire tie and loosen screws

Now replace the power supply and reassemble in reverse order, tie down the internal mains cable on the handle like seen in the picture.

4.2 Forced air cooling

The crate offers an internal forced air cooling with temperature dependent speed regulation by the crate controller. The fresh air intake is on the bottom, for proper ventilation it needs to be sure that the airflow is not blocked. Further it is recommended to cover unused module slots with blind front panels to provide optimal airflow and cooling performance.

4.3 Replacing the fan tray

Before replacing the fan tray, set the power supply into standby-mode, disconnect from mains and wait a few minutes. Needed tools are a Phillips- and an Allen-head (size three) screw driver. Begin with removing the blue sticker on the module side of the crate, unscrew the four Phillips-head screws and detach the lid.

Figure 3 - remove cover to replace fan tray

After removing the case lid, use the Allen-head screw driver to unscrew the two tray retainers and pull out the fan tray on the handle in the middle. Reassemble in reverse order.

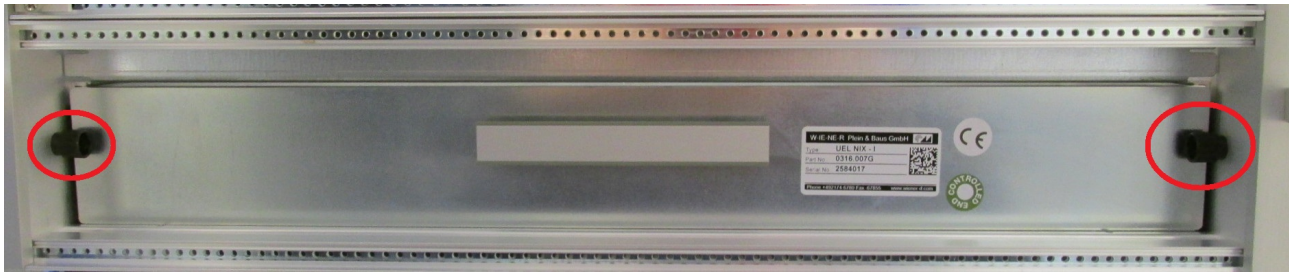


Abbildung 1: Figure 4 - remove fan tray

5 UPS – uninterruptible power supply (optional)

The ECH 44A can be optionally equipped with a battery driven uninterruptible power supply (UPS). Its purpose is to provide emergency power to the crate in case the mains power is failing. The battery backup is intended to securely shut the running system down, to prevent damage on the high voltage source- and load-side.

5.1 UPS maintenance and security advice

The valve regulated lead acid batteries used inside the UPS-option power supply are free from any maintenance during their operational lifespan of 5 years. After this time the batteries need to be replaced, in this case, please contact the iseg support for further information.

WARNING!
WARNING! The electrolyte inside the batteries is highly corrosive! At normal working condition a contact with the electrolyte is impossible. If the batteries get damaged do not touch any exposed electrolyte!

WARNING!
WARNING! When changing the UPS-option power supply: The batteries inside are heavy, handle with care as they are sensitive to mechanical damage!

CAUTION!
CAUTION! Do not dispose a UPS-option power supply in the normal household wastes, as the contained batteries have to be collected and recycled separately! Please contact iseg or a local and authorized waste management company for recollection.

5.2 Storage and transport

To store or decommission a UPS-option power supply for a longer period of time the batteries inside should be fully charged, for that connect the power supply for at least 8h to mains. Store in upright position inside a dry and frost-free room.

WARNING!
It is not allowed to transport the crate with the battery fuse installed. Make sure the fuse is removed to guarantee a safe handling of the product.

WARNING!

CAUTION!

CAUTION!

If the crate is not in use for more than 6 months, it needs to be connected to mains for at least 8 hours to make sure, the batteries are charged to full capacity again.

INFORMATION

INFORMATION

There are no restrictions for rail, road, sea and air transportation (IATA, DGR clause A67).

5.3 Replacing the battery fuse

The batteries inside the power supply are fused to prevent damage in case of failure as they can deliver very high currents. The fuse needs to be inserted by the user, if you operate the crate for the first time. **Also it is mandatory to remove the fuse for transportation, to comply with the safety regulations!** The fuse is accessible on the back of the power supply unit, follow the steps described in 4.1 for detaching the case lid. Insert the fuse firmly in the slot next to the mains connector labeled „ACCU-Fuse“.

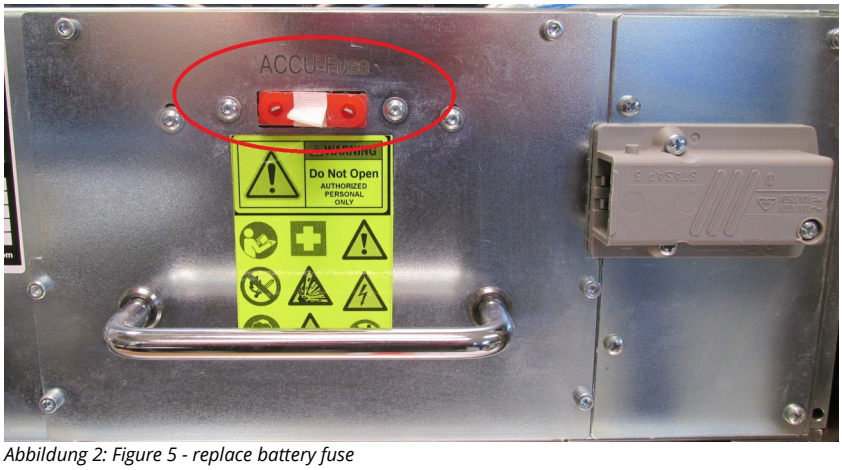


Abbildung 2: Figure 5 - replace battery fuse

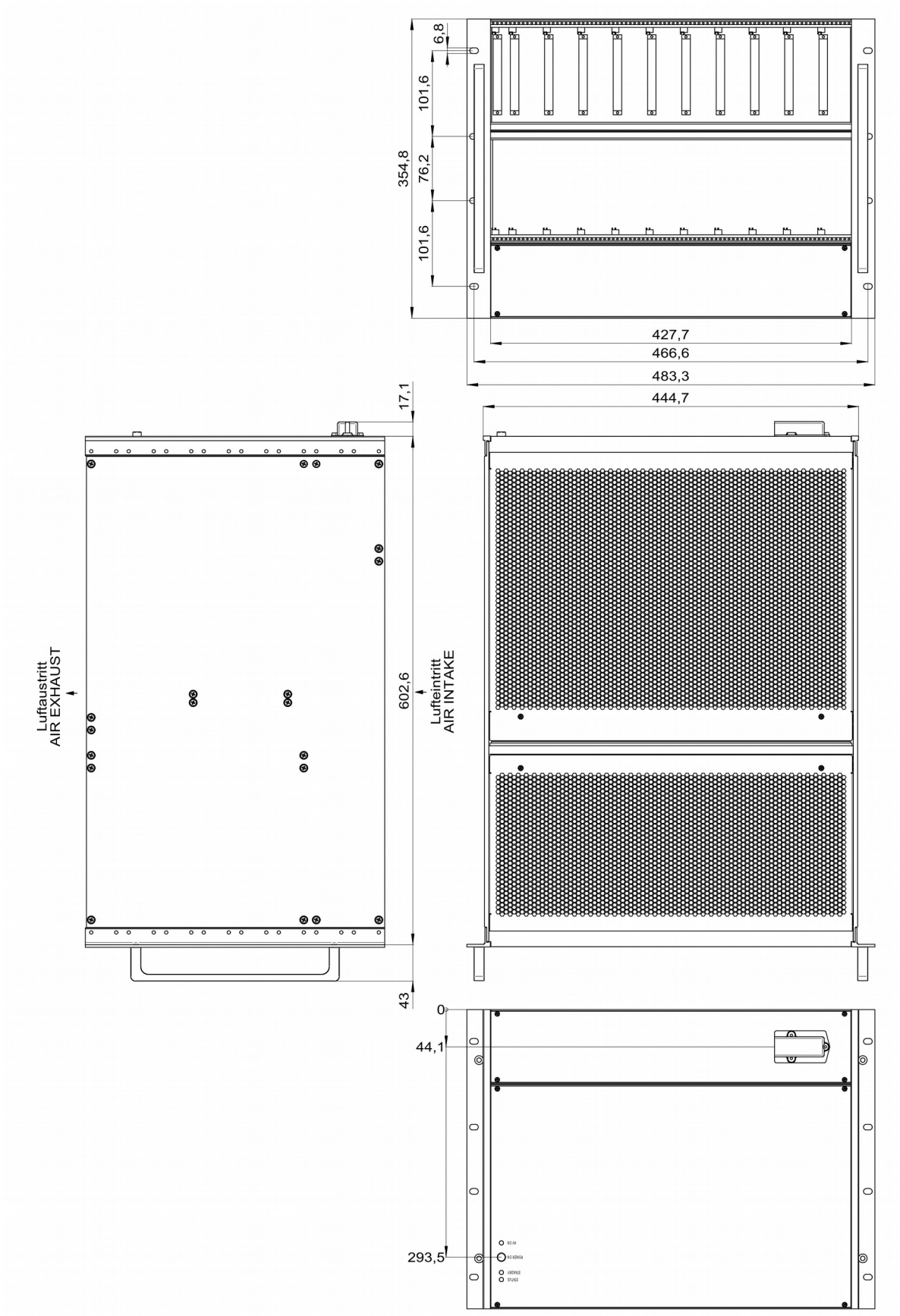
Fuse specification

Automotive blade fuse, size MAXI, rated 32VDC, 50A, time delay

6 Compatibility lists

MMS CRATE CONTROLLERS	NOTES
CC24 – Master controller with Linux and iCS2, Ethernet and WiFi, 2 Slave CAN Lines	All series
CC23 – Slave controller Slave controller for use with CC24 system	All series
Wiener MPOD Controller	MPOD Controller built since 2016
MMS HIGH VOLTAGE MODULES	**NOTES**
EHS series Standard and High precision, CG / CFG / FG Floating, unipolar	All series please refer controller manual for firmware requirments
EDS series Cost effective distributor module. CFG, unipolar	
EBS series Bipolar 4 quadrant module, CFG, bipolar,	
ESS series High power 2 quadrant module, sink and source, FG, unipolar	

7 Dimensional drawing



8 Accesories

CAUTION!
 CAUTION! Only use genuine iseg parts like power cables, CAN cables and terminators for stable and safe operation.

ACCESSORY ITEM	ORDER ITEM CODE
CAN cable RJ45-RJ45 1m, shielded	Z592637
CAN cable RJ45-RJ45 3m, shielded	Z592636
CAN cable RJ45-RJ45 10m, shielded	Z592610
CAN cable RJ45-SUB-D-9 5m, shielded	Z570060
CANbus-Adapter RJ45 to SUB-D-9 male	Z583382
CANbus-Adapter RJ45 to SUB-D-9 female	Z583401
Genuine power cable – EU Plug	Z201447
Front panel (blind) RAL9001 6U/8HP	Z514569
Spare fan-tray	Z520167
Spare power supply 1200W	Z520170
Spare uninterruptible power supply 1200W	Z520168

9 Appendix

For more information please use the following download links:

This document
http://download.iseg-hv.com/SYSTEMS/MMS/EHS/iseg_manual_ECH44A_en_2.0.pdf
Crate Controller CC24/23 manual
http://download.iseg-hv.com/SYSTEMS/MMS/EHS/iseg_manual_CC2x_en_1.3.pdf

10 Warranty & service

This device is made with high care and quality assurance methods. The factory warranty is up to 36 months, starting from date of issue (invoice).

CAUTION!
 Repair and maintenance may only be performed by trained and authorized personnel. For repair please follow the RMA instructions on our website: www.iseg-hv.com/en/support/rma

11 Manufacturer´s contact information

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