

Technical documentation  
last changed on: 28.02.2017

# ECH 242 / 244

2 / 4 Slot 19" MMS-Crate Series for iseg MMS High Voltage Power Supply Modules

- up to 4 MMS High Voltage Power Supply Modules
- 200 / 300 W power supply
- wide range of HV-modules
- compatible to CC24 / CC23 Controller boards with embedded iCS Linux Server
- vertical and horizontal desktop use (2 slot version)



## Document history

Version	Date	Major changes
2.0	28.02.2017	Relayouted version

## Disclaimer / Copyright

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**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!**



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

WARNING!

**CAUTION!**



Advices marked as "Caution!" describe actions to avoid possible damages to property.

CAUTION!

## Note

The information in this manual is subject to change without notice. We take no responsibility for any errors in the document. We reserve the right to make changes in the product design without notification to the users.

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## 1 General information

These crate devices are used for operating iseg high voltage power supply modules in a desktop compatible case. Up to 4 slots for MMS high voltage modules are provided. 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 by the connector (safety loop, thermal sensors etc.).

For control and network communication of the MMS modules a crate controller needs to be plugged into the special Crate Controller Slot. The ECH 242 / 244 is compatible with iseg CC24 Master and CC23 Slave 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 addressing.

### 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 242	ECH 244
Slots	2 x MMS modules and 1 x MMS controller	4 x MMS modules and 1 x MMS controller
Rated AC mains input	100-240 VAC with PFC	100-240 VAC with PFC
AC power connector	IEC 320 C14	
DC module supply voltages	+24 V	
DC output power	202 W	312 W
Cooling	Vertical, integrated fans, bottom airintake	
Operation temperature	0... 50°C ambient without derating	
Storage temperature	-20 °C ... 70 °C	
Floating PE to DC 0V	Clamped ±47 V	Clamped ±47 V
M.F.O.T. Maintenance Free Operation Time	Internal fans: 40°C ambient : 70,000 h, electronics: 25°C ambient : > 180,000 h	Internal fans: 40°C ambient : 70,000 h, electronics: 25°C ambient : > 200,000 h
Dimensions (L/W/H)	345 mm / 115 mm / 309.5 mm	345mm / 226.2 mm / 309.5 mm
Weight	4 kg	5.4 kg

Table 1: Technical data

## 3 Operation and maintenance

### WARNING!



WARNING!

There are no user serviceable parts inside the unit.

**WARNING!**



Removed covers can lead to severe injury or death as parts of the crate which are live when connected to mains get touchable.

**WARNING!**

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.

Turn on the mains switch on the back of the crate, 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.

### 3.1 Replacing the fuse

The crates are equipped with user replaceable fuse-links which are accessible via the fuseholder of the mains input socket on the back.

FUSE SPECIFICATIONS	ECH 242	ECH 244
Fuse	2 x Fuse-link 5x20mm 4,0A time-lag	2x Fuse-link 5x20mm 6,3A time-lag

Table 2: Fuse specifications

### 3.2 Bridging the internal clamping diode

The ECH series crates are designed to provide an internal GND which is connected with the modules, but is galvanically isolated from protective earth and the crate case to avoid ground loops. The maximum floating voltage between GND and protective earth is limited by a protection circuit to 47V. If necessary, the crate GND can be tied hard to protective earth and the housing by bridging the protection circuit on the backplane. To do so, shut down the system properly and disconnect the crate from mains, remove any module present on slot one and bridge the pinheader on the backplane shown in the photo below with an 0.1 inch pitch jumperlink.

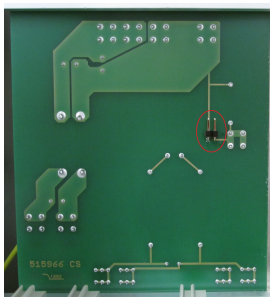


Figure 1: Pinheader for bridging crate GND and protective earth

### 3.3 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 Compatibility lists

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

## 5 Dimensional drawings

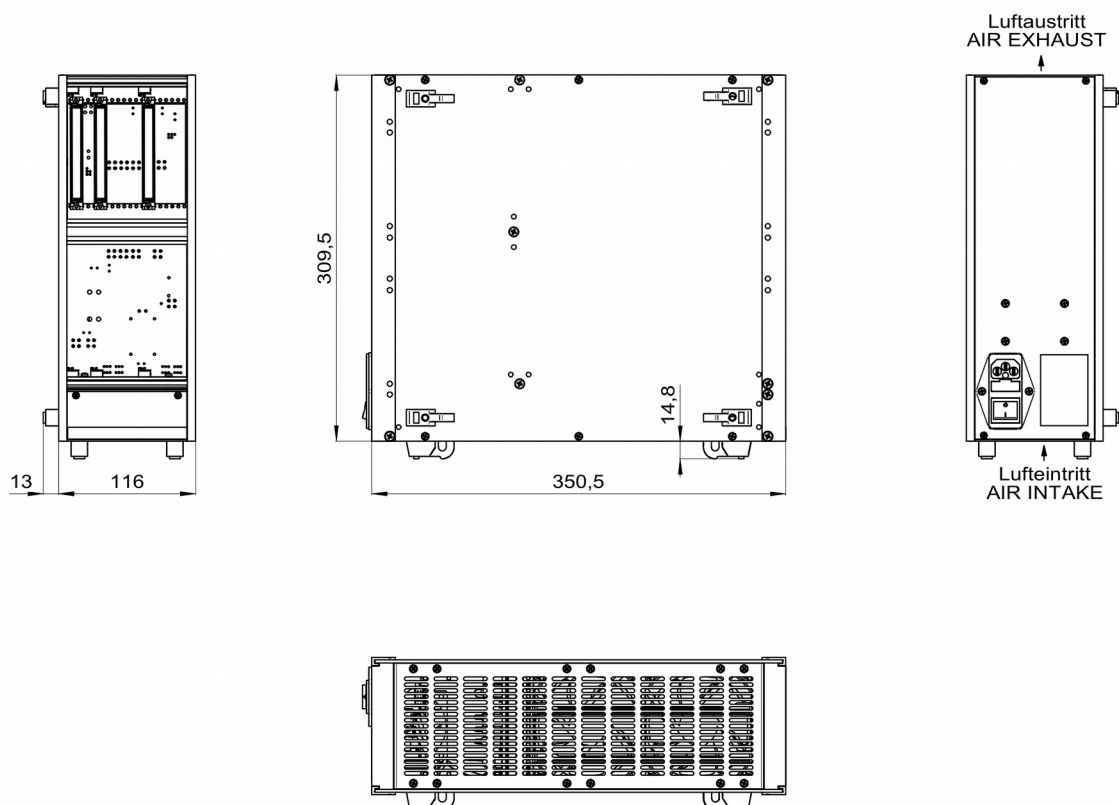


Figure 2 Dimensional drawing ECH 242 – 2 channel MMS crate

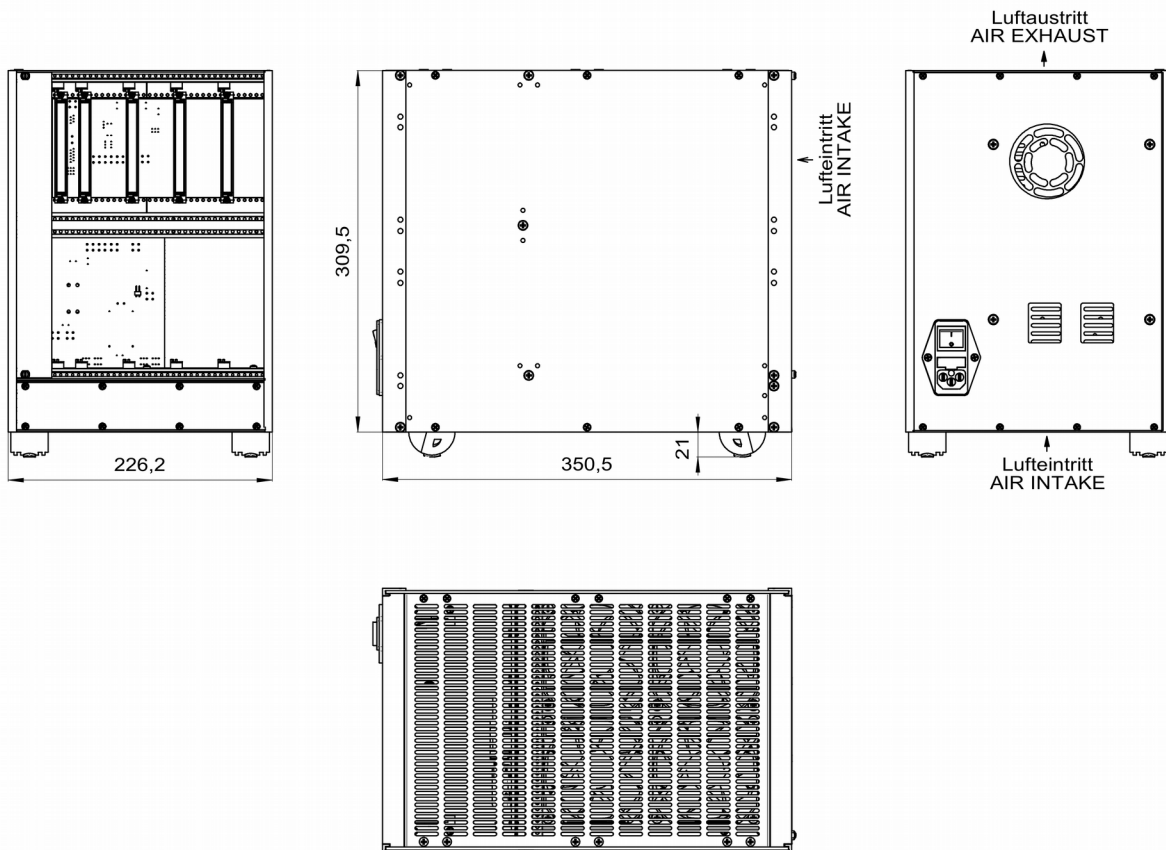


Figure 3 Dimensional drawing ECH 244 - 4 channel MMS HV crate

## 6 Accessories

### 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	Z592069
Front panel (blind) RAL9001 6U/8HP	Z514569

Table 2: Accessory items


## 7 Appendix

For more information please use the following download links:

<b>This document</b>
<a href="http://download.iseq-hv.com/SYSTEMS/MMS/EHS/iseq_manual_ECH24x_en_2.0.pdf">http://download.iseq-hv.com/SYSTEMS/MMS/EHS/iseq_manual_ECH24x_en_2.0.pdf</a>
<b>Crate Controller CC24/23 manual</b>
<a href="http://download.iseq-hv.com/SYSTEMS/MMS/EHS/iseq_manual_CC2x_en_1.3.pdf">http://download.iseq-hv.com/SYSTEMS/MMS/EHS/iseq_manual_CC2x_en_1.3.pdf</a>

## 8 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).

<b>CAUTION!</b>	
	Repair and maintenance may only be performed by trained and authorized personnel. For repair please follow the RMA instructions on our website: <a href="http://www.iseq-hv.com/en/support/rma">www.iseq-hv.com/en/support/rma</a>

## 9 Manufacturer's contact

**iseq Spezialelektronik GmbH**

Bautzner Landstr. 23

01454 Radeberg / OT Rossendorf

GERMANY

FON: +49 351 26996-0 | FAX: +49 351 26996-21

[www.iseq-hv.com](http://www.iseq-hv.com) | [info@iseq-hv.de](mailto:info@iseq-hv.de) | [sales@iseq-hv.de](mailto:sales@iseq-hv.de)