

Technical documentation
last changed on: 09.07.2019

ECH 124 / 128 / 12A / 14A

MMC-Crate Series for iseq MMC High Voltage Power Supply Modules

- up to 10 MMC High Voltage Power Supply Modules
- 150 / 300 / 480 W power supply
- wide range of HV-modules (CPS, DPS, EPS series)
- for the use with MICC controller



Document history

Version	Date	Major changes
1.1	09.07.2019	Improved documentation
1.0	24.06.2019	Initial relayouted version

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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!



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

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 description

ECH crates of 124 / 128 / 12A / 14A are ideally suited for mobile and stationary usage by it's compact construction. In MMC system crates analog controlled DC/DC converters of CPS, DPS or EPS series can be digitally controlled by the MICC crate controller. Thereby versatile HV supply systems can be composed, which are either powerful (EPS), highly precise (DPS) or providing a cost saving coverage of a wide HV range (CPS).

Up to 10 slots for MMC (and 1 Hybrid MMC / MMS slot ⁽¹⁾) high voltage modules are provided. The versatile combination of different modules (CPS, DPS, EPS) in the MMC system allows the user to configure the device for his needs.

Each module is connected to the backplane of the crate by a vendor specific connector, which delivers module power supply and control signals provided by a MICC controller board. Depending on modules features further digital and analog signals are provided by the connector (safety loop, Inhibit, KILL Enable etc.).

For control and network communication of the MMC modules the iseq MICC crate controller needs to be plugged into the special Controller Slot. The MICC connects the analog interfaces of the MMC HV devices in a 3U Euro cassette with digital standard interfaces. This allows devices with analog I/O to be integrated into digitally controlled systems. The high resolution of the analog inputs and outputs allows very precise control of the current and voltage of the connected devices.

Note: ⁽¹⁾ Only ECH14A with hybrid MMC/MMS-3U slot (no.10)

2 Package contents / Accessories

Hardware	included	optional
ECH 124	Genuine power cable – EU Plug (Z592069) CANbus terminating resistor Sub-D 9 male (Z510245)	MICC controller See also ACCESSORY ITEM
ECH 128	Genuine power cable – EU Plug (Z592069) CANbus terminating resistor Sub-D 9 male (Z510245)	MICC controller See also ACCESSORY ITEM
ECH 12A	Genuine power cable – EU Plug (Z592069) CANbus terminating resistor Sub-D 9 male (Z510245)	MICC controller See also ACCESSORY ITEM
ECH 14A	Genuine power cable – EU Plug (Z592069) CANbus terminating resistor Sub-D 9 male (Z510245)	MICC controller See also ACCESSORY ITEM

3 Technical data

SPECIFICATIONS	ECH 124	ECH 128
Slots	4 x MMC modules and 1 x MMC controller 4 slots 4 • 8HP OR 2 • max. 12HP	8 x MMC modules and 1 x MMC controller 8 slots 7 • 8HP AND 1 • 12HP
Rated AC mains input	100 - 264 VAC with PFC	100 - 264 VAC with PFC
Fuse	5x20mm 4.0AT	5x20mm 4.0AT
AC power connector	IEC 320 C14	
DC module supply voltages	+24 V	
DC output power	150 W	150 W
Connection	CAN, USB ⁽¹⁾ , Ethernet ⁽¹⁾	
Interfaces ⁽¹⁾	16 x 20 bit analog OUT 32 x 24bit analog IN 24 digital I/O	
Inhibit	Lemo-hub on the rear, connected with INHIBIT-signal from all HV-modules TTL level, LOW = active → V _{OUT} = 0 Volt see also Connectors and PIN assignments	
Operation temperature	0 ... 50°C ambient without derating	
Storage temperature	-20 °C ... 70 °C	
Dimensions (L/W/H)	315 mm / 249 mm / 3U	308 mm / 19" / 3U
Weight	3,4 kg	4,1 kg
Note:	⁽¹⁾ Requires the use of MICC controller, not included with ECH	

Table 1: Technical data ECH124/ ECH128

SPECIFICATIONS	ECH 12A	ECH 14A ⁽³⁾
Slots	10 x MMC modules (8HP) and 1 x MMC controller (MICC)	10 x MMC modules (8HP) and 1 x MMC controller (MICC) OR 9 x MMC (8HP) modules 1 x MMS-3U module 1 x MMC controller (MICC) Instead of 8 HP modules also 12 HP modules can flexible used
Rated AC mains input	100 - 264 VAC with PFC	100 - 264 VAC with PFC
Fuse	5x20mm 6.3AT	5x20mm 6.3AT / 5x20mm 10AT ⁽²⁾
AC power connector	IEC 320 C14	
DC module supply voltages	+24 V	
DC output power	300 W	300 W / 480 W ⁽²⁾
Connection	CAN, USB ⁽¹⁾ , Ethernet ⁽¹⁾	
Interfaces ⁽¹⁾	16 x 20 bit analog OUT ⁽⁴⁾ 32 x 24bit analog IN 24 digital I/O	
Inhibit	Lemo-hub on the rear, connected with INHIBIT-signal from all HV-modules TTL level, LOW = active → V _{OUT} = 0 Volt see also Connectors and PIN assignments	
Operation temperature	0 ... 50°C ambient without derating	
Storage temperature	-20 °C ... 70 °C	
Dimensions (L/W/H)	308 mm / 19" mm / 3U	308 mm / 19" / 3U
Weight	4,1 kg	4,1 kg / 4,6 kg ⁽²⁾
Note:	⁽¹⁾ Requires the use of MICC controller, not included in ECH delivery ⁽²⁾ For ECH 14A with 480W power supply ⁽³⁾ The ECH 14A is configured for the operation with the installed modules. A modification might necessary for the operation of different module types. Please contact our support for this. ⁽⁴⁾ For ECH 12A and 14A, I _{set} is preset to I _{nom} of corresponding HV-module, i.e. no current limit other that I _{nom} can be set.	

Tabelle 2 Technical data ECH12A/ ECH 14A

4 Order options

OPTION	ORDER CODE
Power supply 480W ⁽¹⁾	481
INHIBIT	INH
Note:	⁽¹⁾ Only ECH 14A

5 Operation and maintenance

The following safety instructions are intended to ensure the personal safety of the user, operating personnel as well as the safety of the product described and of the devices connected to it. Failure to observe the safety regulations and warnings can result in serious bodily injury or death and damage to property.

WARNING!



WARNING!

The high voltage supply may only be installed, commissioned, operated and operated by qualified personnel. Qualified specialists are able, based on his training and experience, to identify risks in handling these products/systems and to avoid possible hazards.

WARNING!



WARNING!

Risk of death due to electric shock!
Disconnect the appliance from the mains before carrying out any work. Do not open the housing of the unit!

WARNING!



WARNING!

National safety and accident prevention regulations must be observed.

WARNING!



WARNING!

Repair and maintenance work in the units may only be carried out by trained personnel and authorized technical personnel.

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. For installation in a rack, forced cooling must be provided. After turning on the mains switch of the crate, the controller will start up in standby mode. For more details and handling please read the corresponding manual.

6 Configuration of the HV-Modules slot position

The slot positions of the HV modules in the crate is preconfigured by the factory. This configuration has to be stored in the firmware of the controller board and may be changed through a hardware switch on the backplane. If its necessary to change HV configuration, please [contact the company's support](#), in order to get the correct encoding.

7 Compatibility lists

MMC CRATE CONTROLLERS		NOTES
MICC controller	As of firmware 4.xx	
MMC HIGH VOLTAGE MODULES		NOTES
CPS 3U-series		
DPS 3U-series		
EPS 3U-series	60 W version only	
MMS-3U HIGH VOLTAGE MODULES		NOTES
EBS 3U-series		

8 Dimensional drawings

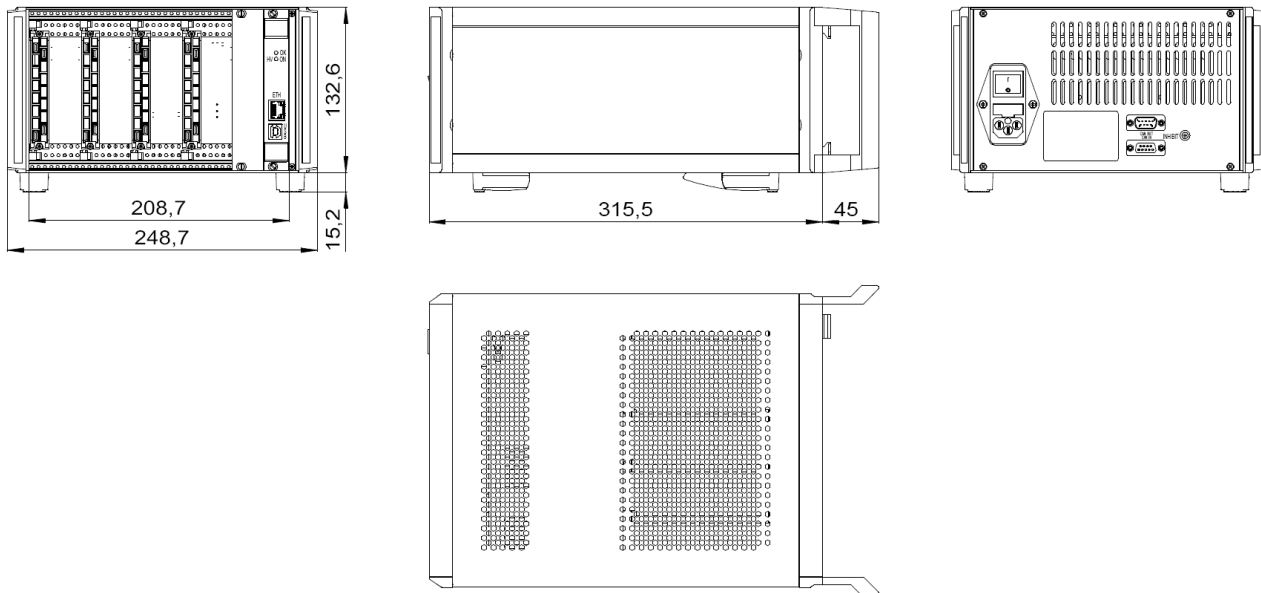


Figure 1: ECH 124, with MICC controller

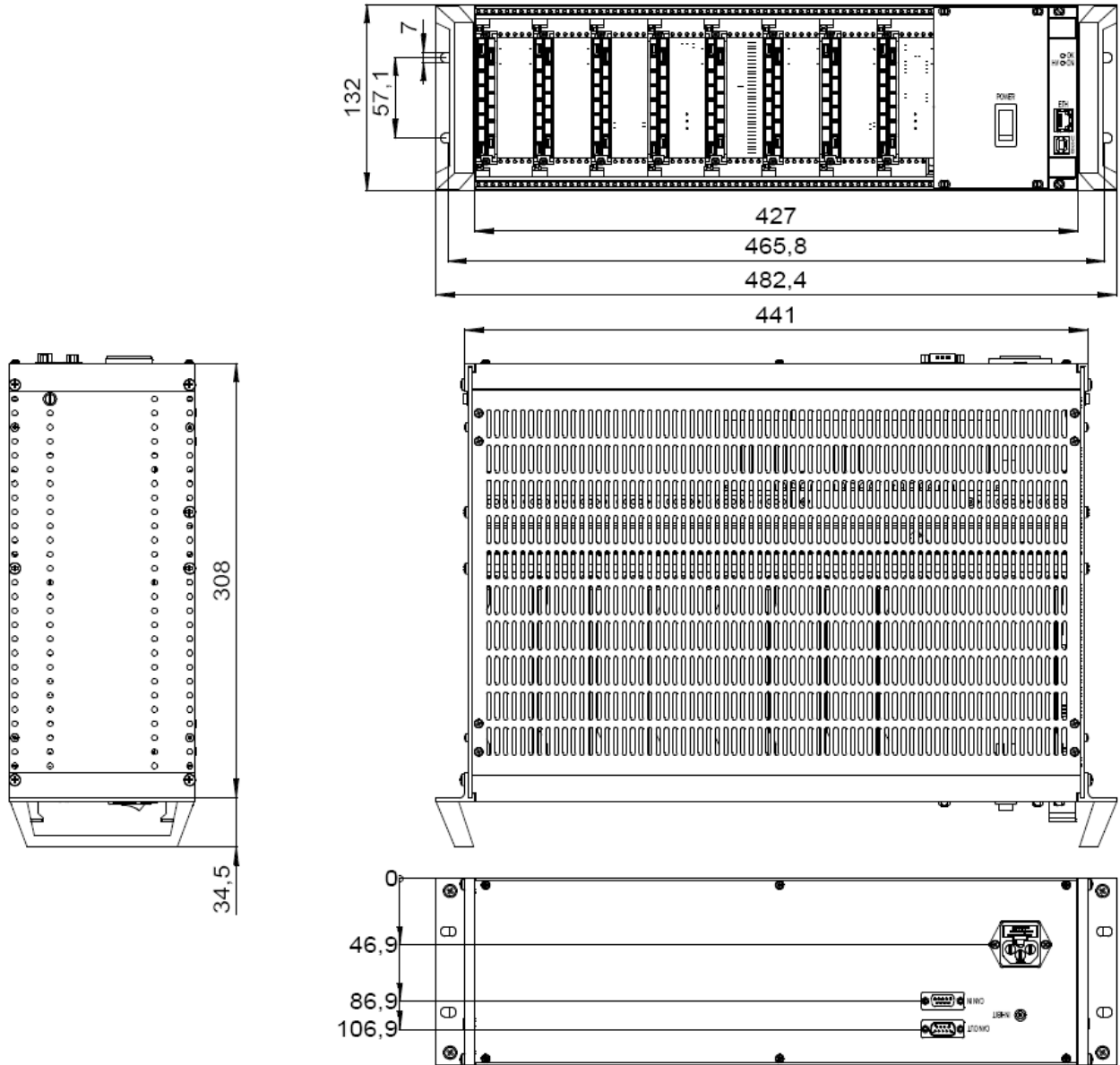


Figure 2: ECH128, with MICC controller

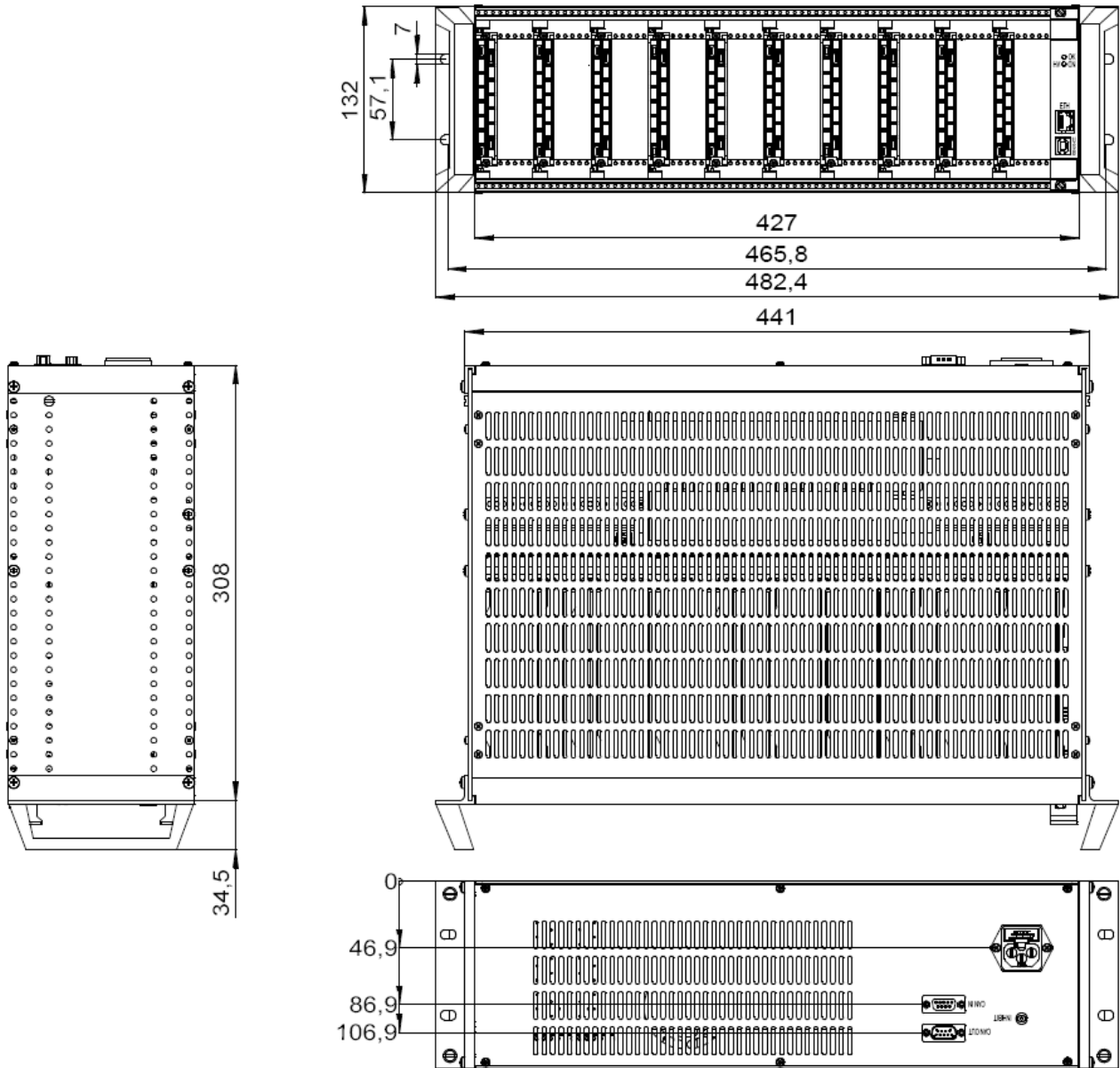


Figure 3: ECH12A, with MICC controller

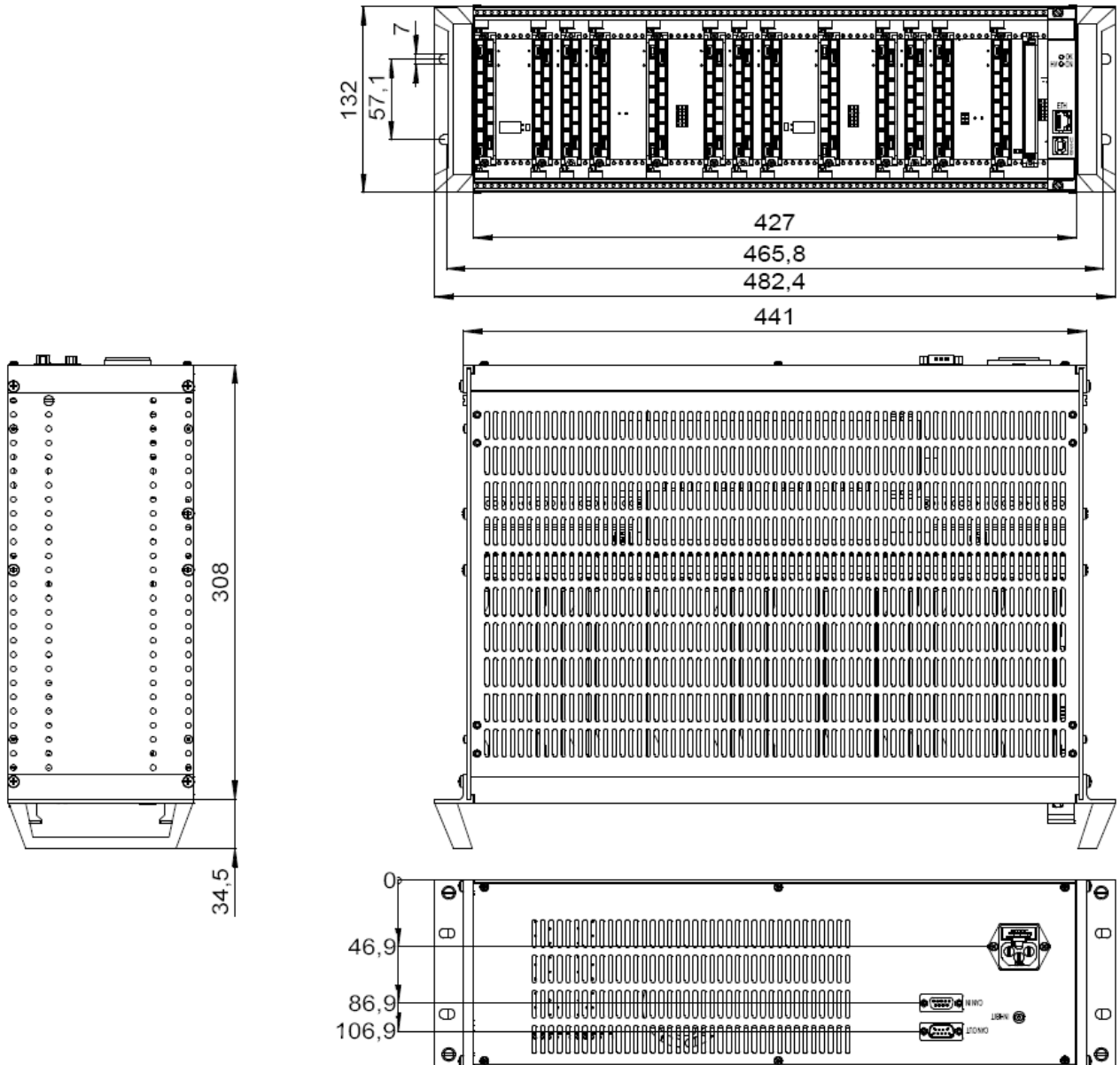


Figure 4: ECH14A, with MICC controller

9 Connectors and PIN assignments

PIN	NAME	DESCRIPTION	VALUE
2	CAN_L	CAN low	
3	CAN_GND	CAN ground	
7	CAN_H	CAN high	

Table 3: CAN Interface connector (DSUB9)

PIN	NAME	DESCRIPTION	VALUE
1	INHIBIT		TTL level, LOW = active → $V_{OUT} = 0$
2	GND		

Table 4: INHIBIT

PIN	NAME	DESCRIPTION	VALUE
8	REF	V_{ref} Internal reference voltage	5 V
10	0V	Supply ground	
12	GND	Signal ground	
14	IMON	I_{mon} Monitor voltage of output current	0 .. 5 V
16	ON	HV ON/OFF with voltage ramp	TTL-level, LOW → HV ON HIGH or n.c. → HV OFF
20	VSET	V_{set} Set value of output voltage	0 .. 5 V
22	POL	Polarity	HIGH or n.c. → positive LOW → negative
24	VMON	V_{mon} Monitor voltage	0 .. 5 V
26	VIN	V_{in} Supply voltage	+24 V DC
28	ISET	I_{set} Set voltage of output current	0 .. 5 V
30	KILL_ENA	Killenable, high active	TTL-level
32	INH	Inhibit, LOW = active, shut down the output voltage	TTL-level, LOW → HV OFF HIGH or n.c. → HV ON

Table 5: System connector H15

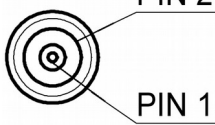
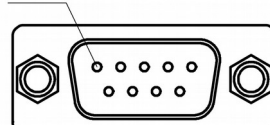

CONNECTOR ASSIGNMENTS			
Name	INHIBIT	DSUB9	
Figure			

Table 6: Connectors

CONNECTORS PART NUMBERS (manufacturer code / iseg accessory parts item code)			
POWER SUPPLY SIDE		CABLE SIDE	
INHIBIT-signal 1pol. (LEMO)			
Socket	ERN.00.250.CTL	Connector	FFA.00.250.CTAC31 / Z200793

Table 7: Connectors part number information

10 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
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 3U/4HP	Z515662
Front panel (blind) RAL9001 3U/8HP	Z580789
CANbus terminating resistor Sub-D 9 male	Z510245
1-pin LEMO connector	Z200793

Table 8: Accessory items

11 Order guides

CONFIGURATION ORDER GUIDE (item code parts)						
G	1	2	4	151	000	00
Type	System height	System modules	Number of available inserts	Output Power	Option (hex)	Customized Version
Crate	1 = 3U 2 = 6U 4 = 8U, 600mm deep 5 = 8U, 460mm deep	2 = MMC 3 = für EHQ 10x with CAN bus or MMP 4 = MMS HV 5 = MMS LV 6 = MMS for HV and LV	one significant digits. 4 = 4 Slot 8 = 8 Slot A = 10 Slot	two significant digits • exponent For Example: $151 = 15 \cdot 10^1 [W] = 150W$	For Example: 004 = INHIBIT	00 = none

Table 9: Configuration item code

12 Appendix

For more information please use the following download links:

This document
https://iseg-hv.com/de/products/detail/MMC Crates/iseg_manual_ECH12x-14x_en.pdf
Crate Controller MICC
Description follows
CPS Series
https://iseg-hv.com/en/products/detail/CPS
DPS Series
https://iseg-hv.com/en/products/detail/DPS
EPS Series
https://iseg-hv.com/en/products/detail/EPS
EBS Series
https://iseg-hv.com/en/products/detail/EBS

13 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

14 Manufacturer's contact

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