

Technical documentation
last changed on: 11.02.2020

ECH 104 / 134 / 108 / 138

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

- 19" and desktop versions
- 4 / 8 MME slots
- 200 W power supply
- CAN or RS232 interfaces



Document history

Version	Date	Major changes
1.0	11.02.2020	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.





Safety

This section contains important security information for the installation and operation of the device. Failure to follow safety instructions and warnings can result in serious injury or death and property damage.

Safety and operating instructions must be read carefully before starting any operation.

We decline all responsibility for damages and injuries caused which may arise from improper use of our equipment.

Depiction of the safety instructions

DANGER!	
 DANGER!	<p>“Danger!” indicates a severe injury hazard. The non-observance of safety instructions marked as “Danger!” will lead to possible injury or death.</p>
WARNING!	
 WARNING!	<p>“Warning!” indicates an injury hazard. The non-observance of safety instructions marked as “Warning!” could lead to possible injury or death.</p>
CAUTION!	
 CAUTION!	<p>Advices marked as “Caution!” describe actions to avoid possible damages to property.</p>
INFORMATION	
 INFORMATION	<p>Advices marked as “Information” give important information.</p>



Read the manual.



Attention high voltage!

HIGH VOLTAGE



Important information.

Intended Use

The device may only be operated within the limits specified in the data sheet. The permissible ambient conditions (temperature, humidity) must be observed. The device is designed exclusively for the generation of high voltage as specified in the data sheet. Any other use not specified by the manufacturer is not intended. The manufacturer is not liable for any damage resulting from improper use.

Qualification of personnel

A qualified person is someone who is able to assess the work assigned to him, recognize possible dangers and take suitable safety measures on the basis of his technical training, his knowledge and experience as well as his knowledge of the relevant regulations.

General safety instructions

- Observe the valid regulations for accident prevention and environmental protection.
- Observe the safety regulations of the country in which the product is used.
- Observe the technical data and environmental conditions specified in the product documentation.
- You may only put the product into operation after it has been established that the high-voltage device complies with the country-specific regulations, safety regulations and standards of the application.
- The high-voltage power supply unit may only be installed by qualified personnel.

Important safety instructions

DANGER!



DANGER!

This device is part of a high voltage supplying systems.
High voltages are dangerous and may be fatal.

USE CAUTION WHILE WORKING WITH THIS EQUIPMENT.
BE AWARE OF ELECTRICAL HAZARDS.

Always follow at the minimum these provisions:

- High voltages must always be grounded
- Do not touch wiring or connectors without securing
- Never remove covers or equipment
- Always observe humidity conditions
- Service must be done by qualified personnel only

WARNING!



WARNING!

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.

WARNING!



WARNING!

Before connecting or disconnecting HV cables or any operation on the HV output or the application, the unit has to be switched off and discharge of residual voltage has to be finished. Depending on application residual voltages can be present for long time periods.

WARNING!



WARNING!

Do not operate the unit in wet or damp conditions.

WARNING!



WARNING!

Do not operate the unit in an explosive atmosphere.

WARNING!



WARNING!

Do not operate the unit if you suspect the unit or the connected equipment to be damaged.

WARNING!



WARNING!

The protective conductor connection must be ensured by an appropriate mains cable. Before connecting to the local power supply, check whether the nominal voltage of the devices corresponds to the mains voltage.

WARNING!



WARNING!

The mains connection is made with basic insulation and protective conductor. The device may only be operated with the protective earth conductor (PE) connected!

The protective conductor connections must be checked for proper function after installation.

CAUTION!



Caution!

When installing the units, make sure that an air flow through the corresponding air inlet and outlet openings is possible.

CAUTION!



Caution!

When controlling, with software, the high voltage systems, make sure that nobody is near the high voltage or can be injured.

INFORMATION



INFORMATION

Please check the compatibility with the devices used.

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1 General description

The crate series ECH 104/134/108/138 stands for iseg MME systemcrates in half 19" or 19" racksize, 3U height and integrated 200 W power supply. By the compact form factor they are suitable for desktop or mobile use. 4 or 8 MME slots are available. The crates can either be equipped with 4 or 8 separate RS232 connectors or with a common CAN interface connector.

2 Package contents / Accessories

Hardware	included	optional
ECH 104	Genuine power cable – EU Plug	
ECH 134	Genuine power cable – EU Plug CANbus terminating resistor Sub-D 9 male	CAN cable
ECH 108	Genuine power cable – EU Plug	
ECH 138	Genuine power cable – EU Plug CANbus terminating resistor Sub-D 9 male	CAN cable

Table 1: Package content

3 Technical data

SPECIFICATIONS	ECH 104	ECH 108
Slots	4 x MME	8 x MME
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	200 W	200 W
Interface	4 • RS 232	8 • RS 232
System connector	96 PIN (MME compatible, according to DIN 41612)	
Operation temperature	0 ... 50°C ambient without derating	
Storage temperature	-20 °C ... 70 °C	
Dimensions (L/W/H)	375 mm / ½ • 19" / 3U	350 mm / 19" / 3U
Weight	3.8 kg	4.6 kg

Table 2: Technical data ECH104/ ECH108

SPECIFICATIONS	ECH 134	ECH 138
Slots	4 x MME	8 x MME
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	200 W	200 W
Interface	CAN	
System connector	96 PIN (MME compatible, according to DIN 41612)	
Operation temperature	0 ... 50°C ambient without derating	
Storage temperature	-20 °C ... 70 °C	
Dimensions (L/W/H)	375 mm + 45mm / ½ • 19" / 3U	308 mm / 19" / 3U
Weight	3.8 kg	4.6 kg

Tabelle 3 Technical data ECH134/ ECH 138

4 Operation and maintenance

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. In case of desk operation above and under the unit a free space of 20 mm must be guaranteed. 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. For the control of the HV modules, the connections (RS232 or CAN) are on the back of the device.

The devices can be controlled via the iseq terminal. For more information please refer to the description "SCPI Common Programmers-Guide", see 9 Appendix.

5 Dimensional drawings

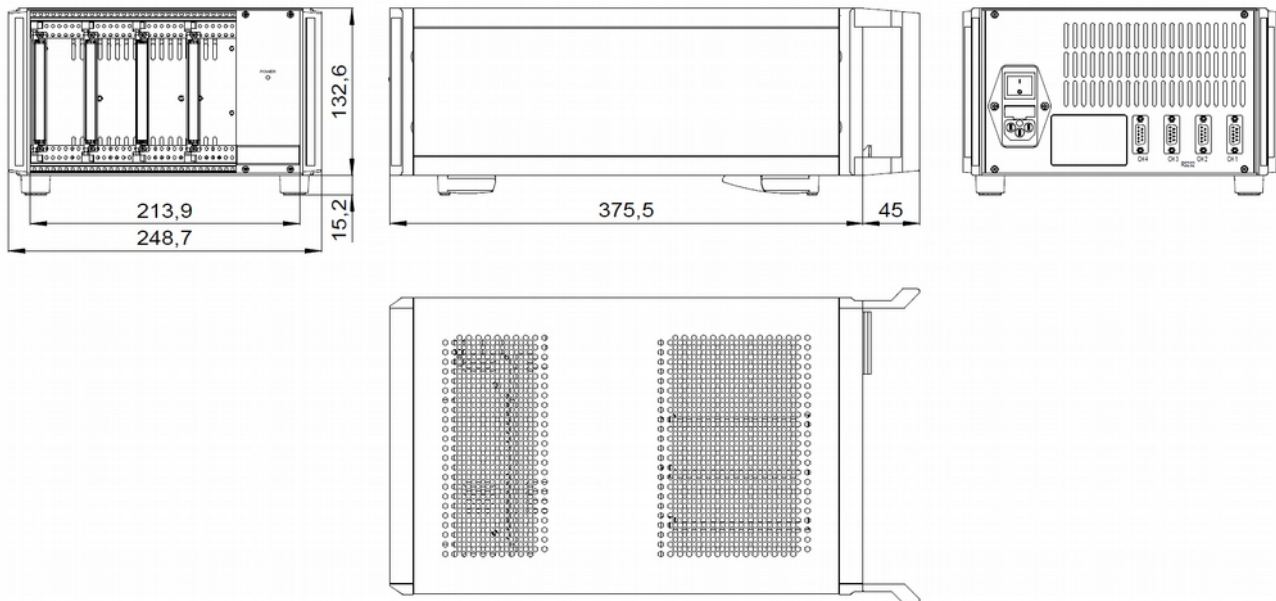


Figure 1: ECH 104

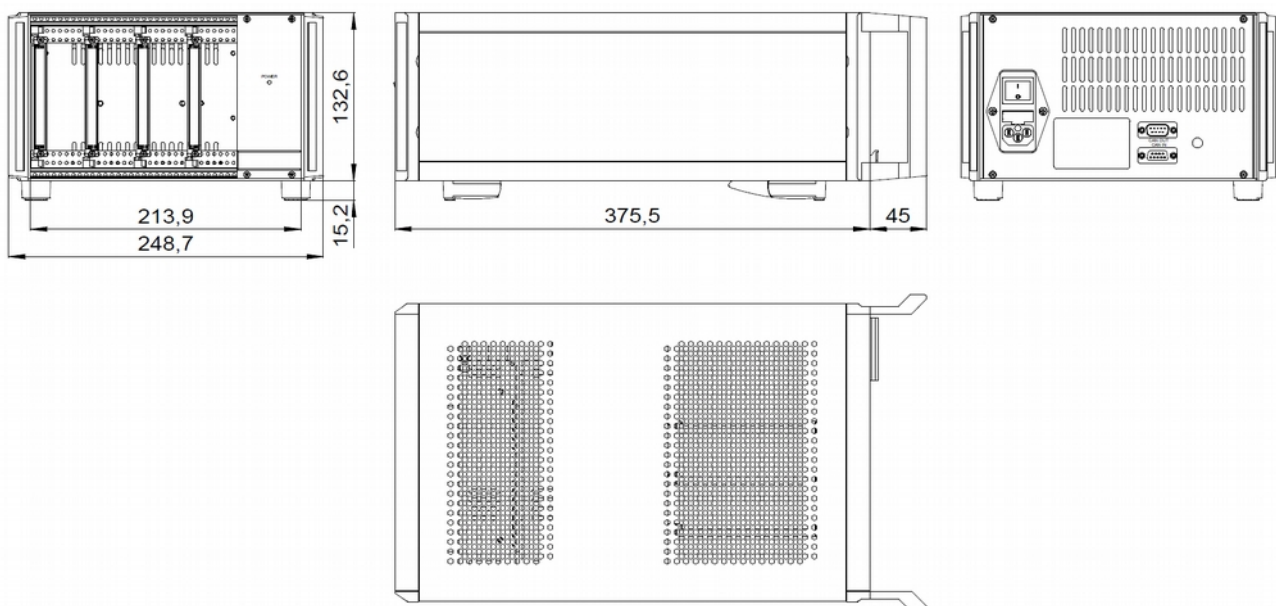


Figure 2: ECH 134

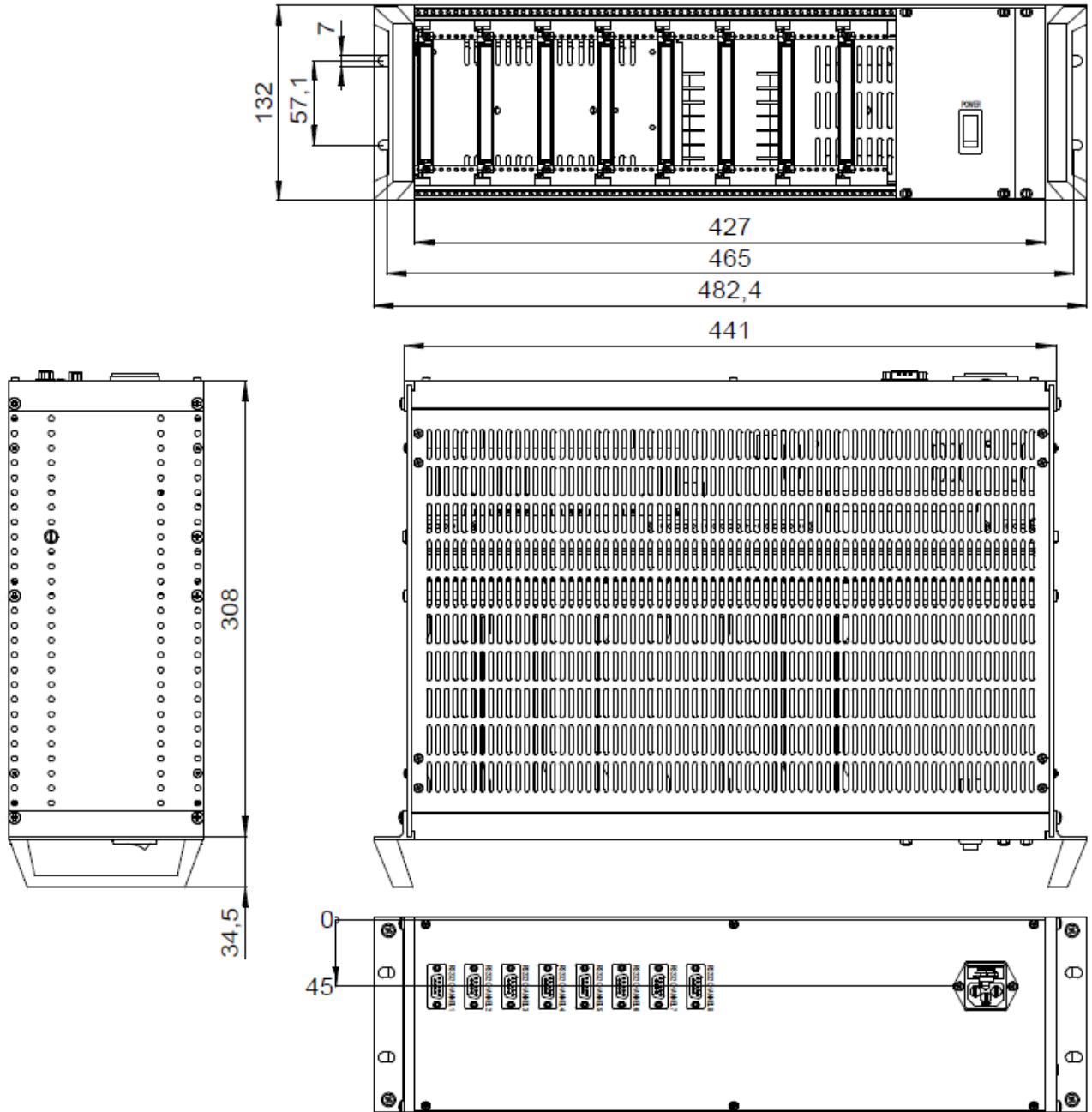


Figure 3: ECH 108

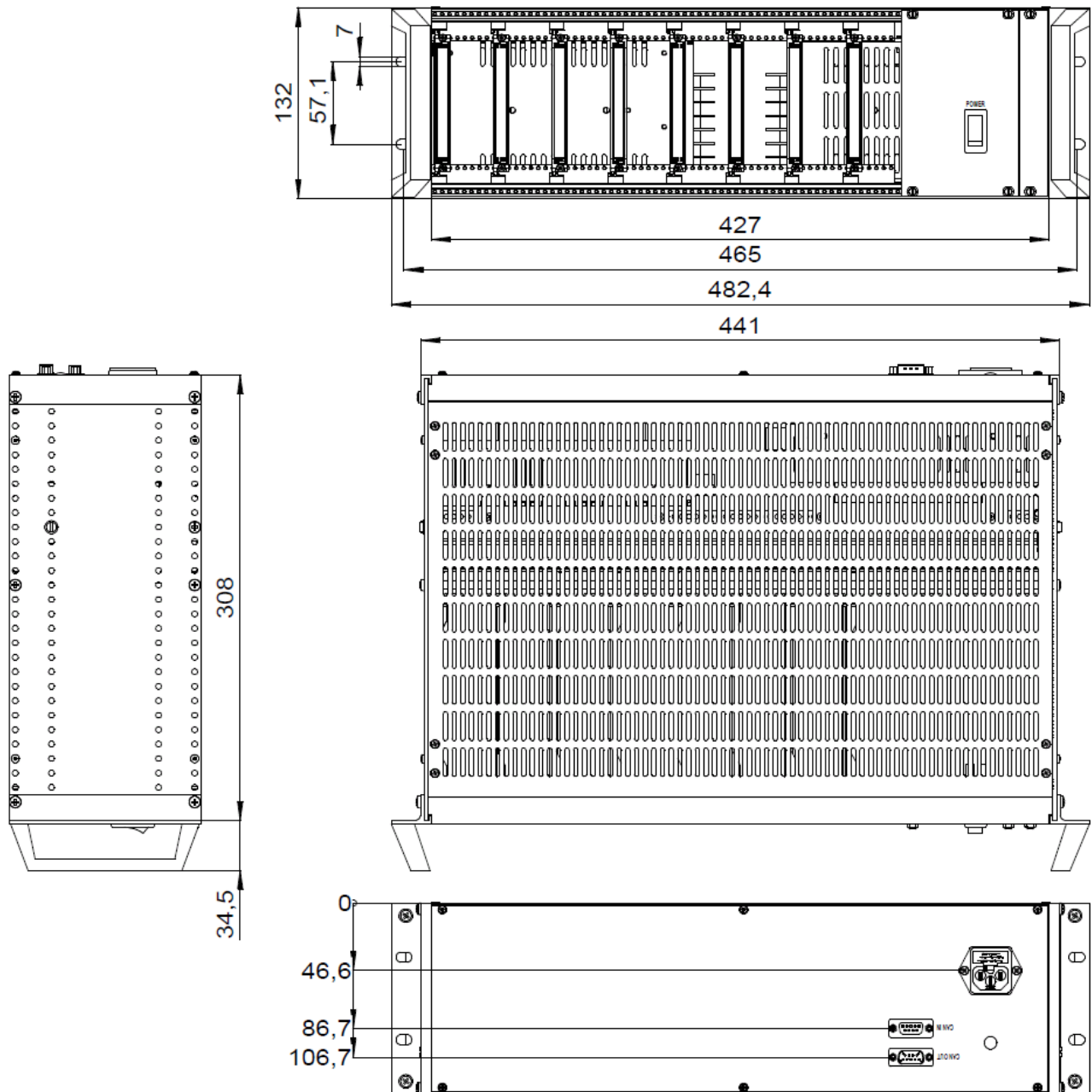


Figure 4: ECH 138

6 Connectors and PIN assignments


6.1 ECH 104 and ECH 108 with RS232

You will find on the rear for 104 and 108 module slot one female D-Sub-9 connector to connect the RS232 interface to the according EHQ 10x module with help of an 1:1 cable. The pin assignment when a PC is used is given in the table. Control signals to be bridged on the PC side when a three lead cable is used, are given also.

Signal	HV Supply		PC	PC	Connection
RS 232	D-SUB9	Internal	D-SUB9	D-SUB25	3-lead cable
RxD	2		2	3	
TxD	3		3	2	
GND	5		5	7	
	4	└	4	20	└
	6	┌	6	6	┌
	8	┘	8	5	┘

6.2 ECH 134 and ECH 138 with CAN

The external CAN-Bus is connected through 9-pin Sub-D connectors on the rear panel.

INFORMATION	
 INFORMATION	Please use a CAN-Bus termination from 120Ω between CAN_L and CAN_H on both ends of the bus.

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

Table 4: CAN Interface connector (DSUB9)

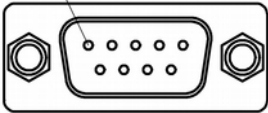
CONNECTOR ASSIGNMENTS				
Name	DSUB9			
Figure	PIN 1 			

Table 5: Connectors

7 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
Genuine power cable – EU Plug	Z592069
Front panel (blind) RAL9001 3U/8HP	Z580789
CANbus terminating resistor Sub-D 9 male	Z510245
CAN cable, SUB-D-9 socket/plug, length 2m	Z592341
CAN cable, SUB-D-9 socket/plug, length 10m	Z592610

Table 6: Accessory items

8 Order guides

CONFIGURATION ORDER GUIDE (item code parts)						
G	1	0	4	201	000	00
Type	System height	System modules	Number of available inserts	Output Power	Option (hex)	Customized Version
Crate	1 = 3U	0 = EHQ with RS232 3 = für EHQ 10x with CAN bus or MMP	one significant digits. 4 = 4 Slot 8 = 8 Slot	two significant digits • exponent For Example: 201 = 20 • 10 ¹ [W] = 200W	not available	00 = none

Table 7: Configuration item code

9 Appendix

For more information please use the following download links:

This document
https://iseq-hv.com/download/SYSTEMS/MME/ECH/iseq_manual_ECH1x4-1x8_en.pdf
iseqTERMINAL
https://iseq-hv.com/download/SOFTWARE/iseqTERMINAL/current/
SCPI Programmers-Guide
https://iseq-hv.com/download/SOFTWARE/iseqSCPI/SCPI_Programmers-Guide.pdf

10 Glossary

SHORTCUT	MEANING
V_{nom}	nominal output voltage
V_{out}	output voltage
V_{set}	set value of output voltage
V_{mon}	monitor voltage
V_{meas}	digital measured value of voltage
V_{p-p}	peak to peak ripple voltage
V_{in}	input / supply voltage
V_{type}	type of output voltage (AC, DC)
V_{ref}	internal reference voltage
V_{max}	limit (max.) value of output voltage
$\Delta V_{out} - [\Delta V_{in}]$	deviation of V_{out} dep. on variation of supply voltage
$\Delta V_{out} - [\Delta R_{load}]$	deviation of V_{out} dep. on variation of output load
V_{bounds}	Voltage bounds, a tolerance tube $V_{set} \pm V_{bounds}$ around V_{set}
I_{nom}	nominal output current
I_{out}	output current
I_{set}	set value of output current
I_{mon}	monitor voltage of output current
I_{meas}	digital measured value of current
I_{trip}	current limit to shut down the output voltage
I_{in}	input / supply current
I_{max}	limit (max.) value of output current
I_{limit}	Current Limit.
I_{bounds}	Current bounds, a tolerance tube $I_{set} \pm I_{bounds}$ around I_{set}
P_{nom}	nominal output power
P_{in}	input power
$P_{in,nom}$	nominal input power
T	temperature
T_{REF}	Reference temperature
ON	HV ON/OFF
/ON	HV OFF/ON
CH	channel(s)
HV	high voltage
LV	low voltage
GND	signal ground
INH	Inhibit
POL	Polarity
KILL	KillEnable

11 Warranty & Service

This device is made with high care and quality assurance methods. The standard factory warranty is 36 months. Please contact the iseg sales department if you wish to extend the warranty.

CAUTION!



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

12 Disposal

INFORMATION



INFORMATION

All high-voltage equipment and integrated components are largely made of recyclable materials. Do not dispose the device with regular residual waste. Please use the recycling and disposal facilities for electrical and electronic equipment available in your country.

13 Manufacturer contact

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