

**Technical documentation**  
 last changed on: 16.09.2020

# ECH 238

8 Slot 19" MMS-Crate Series for iseg MMS High Voltage Power Supply Modules

- up to 8 MMS High Voltage Power Supply Modules
- 1200W power
- wide range of HV-modules
- optional fan unit
- optional UPS



## Document history

Version	Date	Major changes
1.0	16.09.2020	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

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



Read the manual.



HIGH VOLTAGE

Attention 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!

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!

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.

**INFORMATION**



INFORMATION

Please check the compatibility with the devices used.

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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 8 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. For control and network communication of the MMS modules a crate controller needs to be plugged into the special Crate Controller Slot.

# 2 Technical data

SPECIFICATIONS		ECH 238
Slots		8 x MMS modules and 1 x Crate controller
Rated AC mains input		190 ... 264 VAC
Fuse		internally fused, not exchangeable
AC power connector		IEC 320 C14T
DC module supply voltages		+24 V   +5V
DC output power		1200 W
Connection		CAN
Cooling		Optional Fan unit
Operation temperature		0 ... 50°C ambient without derating
Storage temperature		-20 °C ... 70 °C
Floating PE to DC 0V		Clamped ±47 V
Dimensions (L/W/H)		450mm / 19" / 7U
Weight <sup>(1)</sup>		Up to 21 kg
Notes: <sup>(1)</sup> with OPTION UPS and FAN		

Table 1: Technical data



## 3 Options

OPTIONS	OPTION CODE	EXAMPLE	ITEM CODE HEX CODING
Additional fan unit	FAN	ECH 238 FAN	-
Uninterruptible power supply	UPS	ECH 238 UPS	-

### 3.1 Option UPS

Together with an UPS and a battery back up, short term power failure (<10s) can be bridged and in case of longer AC power failure a defined shut down procedure for the HV modules is guaranteed. After unpacking the crate has to be installed under the described condition. For crates with UPS option the 16A fuse which is included has to put into the fuse holder on the rear side. Afterwards the battery is activated.

#### CAUTION!



CAUTION!

The crate and the included battery are free from any support. If the crate is not in use for more than half a year it has to be connected to mains and switched ON for at least 8 hours, so that the batteries will be charged to full capacity again. After 5 years time the batteries have to be replaced by new ones.

### 3.2 Option FAN

Optionally the Create can be equipped with the 1U 19" iseg fan unit. This is mounted on the Create.

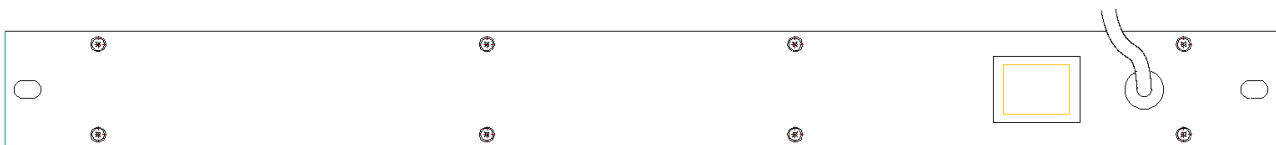


Figure 1: Option: FAN

## 4 Operation and maintenance

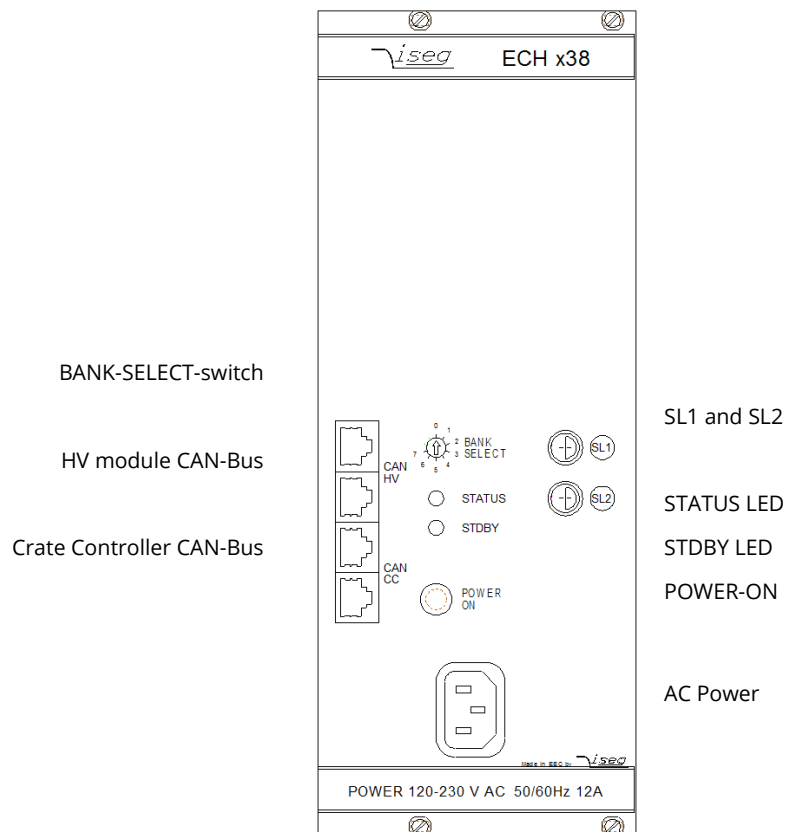
The connection with mains is made through an inlet connector on the rear side of the device. The mains switch is also located at this place. The fuse is permanently installed on the controller. It cannot be changed by the customer.

### 4.1 CAN Controller

#### 4.1.1 Technical data

SPECIFICATIONS	Controller 238
CAN bus speed	20, 50, 100, 125 and 250 kbit/s
Analogue functions	ADC with 10-Bit resolution, control of supplies voltages and temperature of this crate.
Digital functions	ON – and OFF switch of internal supply voltages via CAN-Bus in Stand-by mode.
Power-ON/OFF	Power cable connected and AC line is ON, now the crate is in Stand-by mode. In Stand-by mode the internal DC supply voltages can be switched ON and OFF with help of a push button, even if no CAN-control is present.
With option UPS	In case of AC power failure the internal voltages are saved by the acc. Battery. If the power is failing more than 10 sec. a signal will be provided , which is going to start a defined shut down procedure.

## 4.1.2 Front Panel



Name	Description
BANK-SELECT-switch	select bank with fixed Module address (up to 8 Crates with 64 modules)
HV module CAN-Bus	CAN-IN, termination or CAN-OUT to more CAN nodes
Crate Controller CAN-Bus	CAN-IN, termination or CAN-OUT to more CAN nodes
STATUS LED	POWER-ON (24V-DC O.K. ) and Option CAN: no error and Option UPS: Battery load
STDBY LED	AC-supply ON Option CAN: remote control possible
POWER-ON	ON - OFF switch Supply
SL1	SAFETY LOOP 1
SL2	SAFETY LOOP 2

### 4.1.3 External CAN Bus

The CANbus interface will be connected by the RJ-45 connectors CAN HV (IN/OUT) on the front panel. In case of using more than one crate the different module address for each module on the CANbus has to be configured with help of the bank select switch, see chapter 4.1.6 Bank select switch, on the front panel. After Switch ON and system initialization of CANbus the connected Multi Channel iseg HV-modules can work under remote control via PC.

If using Multi Channel iseg HV-modules with internal supplied safety loop, bridging the two pins of the SL connector on the front of the crate will be connect the module SL to the current source in the crate. If the module safety loop is active (see the manual of the module) removing the bridge during operation (opening the loop) then the output voltages on all channels are shut off without ramp and the corresponding bit in the 'Status module' will be cancelled. After the loop will be closed again the channels must be switched 'ON' and a new set voltage must be given before it is able to offer an output voltage.

#### INFORMATION



INFORMATION

Please use a CAN-Bus termination.

### 4.1.4 SAFETY LOOP 1

IS (Internal SL current) 2-pin Lemo socket one side connected to + 24 V with ca. 10  $\Omega$  / 3 W, other side connected to module station. If the module safety loop of the built-in multichannel module with option SL is active then an output voltage in any channel of it is only present if this safety loop is closed!

### 4.1.5 SAFETY LOOP 2

INHIBIT 2-pin Lemo socket for external INHIBIT signal to shut down the integrated HV module with ramp. LOW level on the right pins or connecting to the left pins: INHIBIT is active HIGH level or open: Output according setting

### 4.1.6 Bank select switch

The setting of the addresses of the iseg Multi-Channel HV modules is done by setting the address pins at the system connector. From these address pins the module gets the basic information to process the relating identifier bits. In the iseg system crate the address pins are set in same for all modules in the crate. It is set via a so called "Bank Select" switch at the front side of the crate controller.

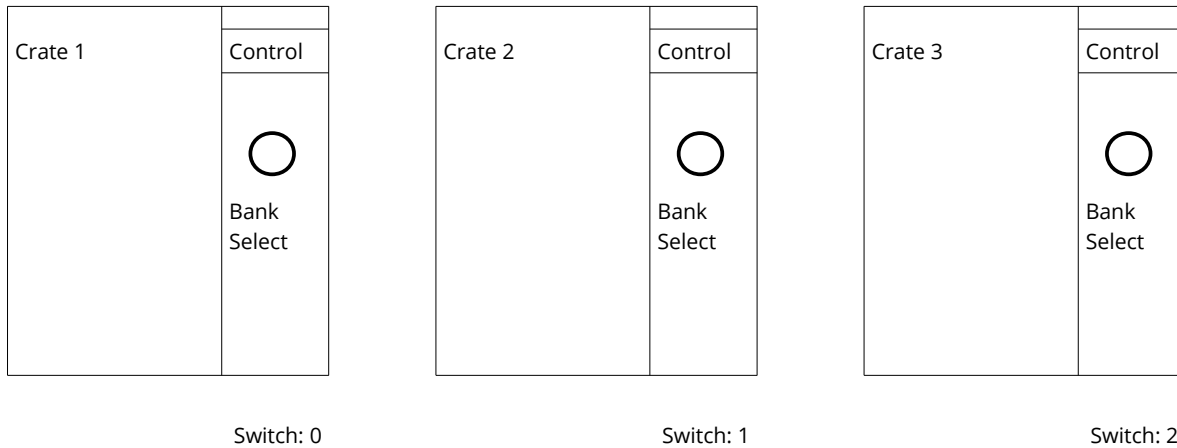


Figure 2: Example structure Crate

## 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.

### INFORMATION



INFORMATION

Further it is recommended to cover unused module slots with blind front panels to provide optimal airflow and cooling performance.

## 5 Dimensional drawings

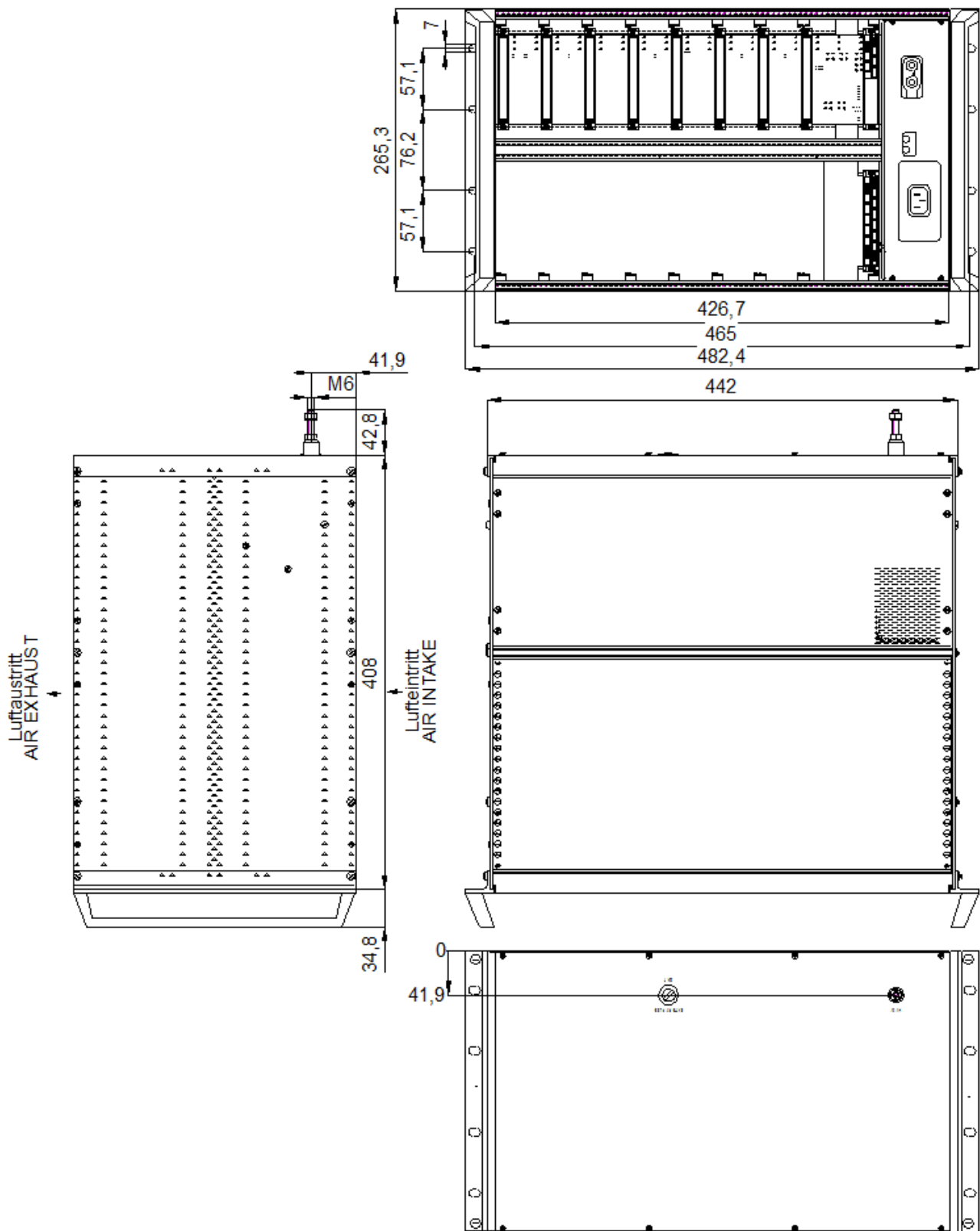


Figure 3: Dimensions ECH 238, without controller

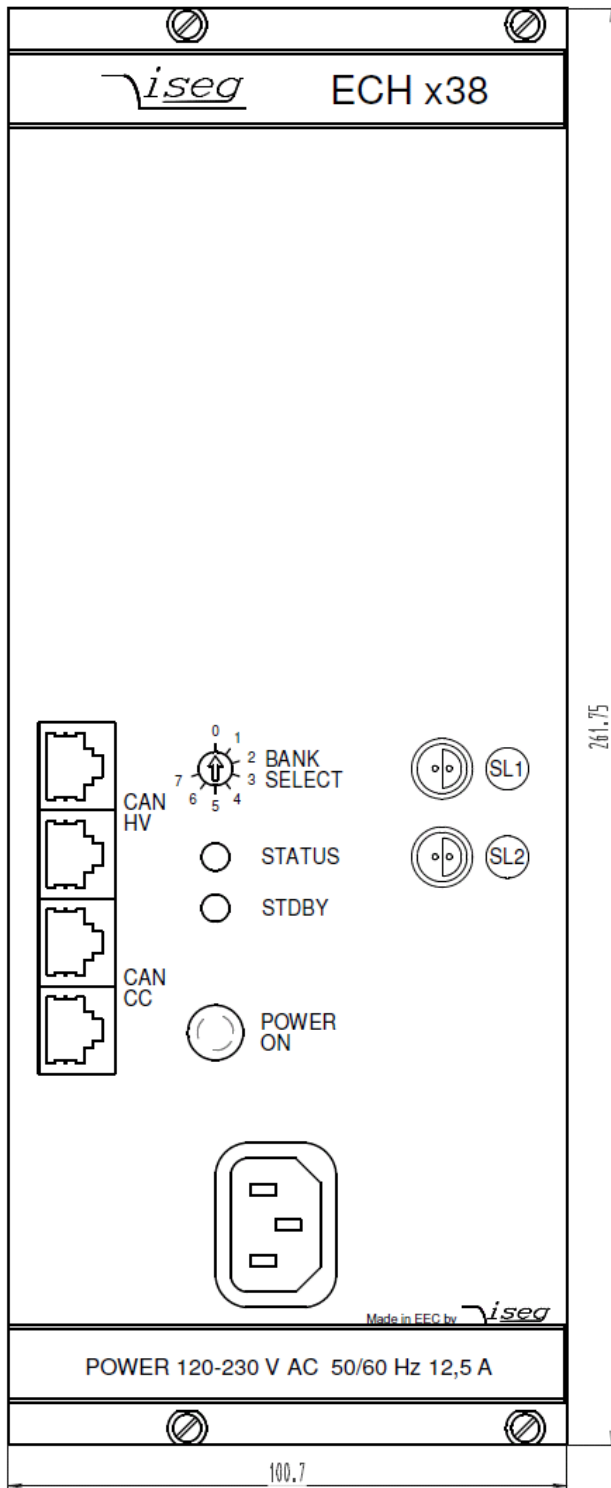


Figure 4: controller C238

## 6 Connectors and PIN assignments

input	output	PIN	signal	description
RJ45	RJ45	1	CAN_H	CAN high
		2	CAN_L	CAN low
		3	CAN_GND	CAN ground

## 7 Accesories

### CAUTION!



CAUTION!

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

## 8 Order guides

CONFIGURATION ORDER GUIDE (item code parts)						
G	2	3	8	122	xxx	00
Type	System height	System modules	Number of available inserts	Output Power	Option	Customized Version
Crate	2 = 6U	3 = for MMS module	one significant digits. 8 = 8 Slot	two significant digits • exponent For Example: 122 = 12 • 10 <sup>2</sup> [W] = 1200W	UPS or FAN	00 = none

## 9 Appendix

For more information please use the following download links:

### This document

[http://download.iseg-hv.com/SYSTEMS/MMS/ECH/iseg\\_manual\\_ECH\\_238\\_en.pdf](http://download.iseg-hv.com/SYSTEMS/MMS/ECH/iseg_manual_ECH_238_en.pdf)



## 10 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](http://www.iseg-hv.com/en/support/rma)

## 11 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.

## 12 Battery

### INFORMATION



**Pb** - Battery  
contains lead

Batteries and rechargeable batteries do not dispose in regular residual waste. You are legally obliged to return used batteries and rechargeable batteries to a municipal collection point or to local retailers. Used batteries may contain harmful substances that can harm the environment or your health if not stored or disposed of properly.

## 13 Manufacturer contact

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