Technical documentation
Last changed on: 2024-01-10

EHR Series

Versatile High Precision High Voltage Module with multiple Floating Options

- 4 channels
- Electronically switchable polarity for each channel independently
- 2kV / 6 kV versions
- High precision / very low ripple and noise
- Second current measurement range 20 µA for high precision version
- Voltage and current control per channel
- Hardware voltage and current limits
- programmable parameters (delayed trip etc.)

Document history

Version	Date	Major changes
1.1	2024-01-10	New chapter 5.6 Current limitation, Options in the separate chapter, table 4 “VCT” is not available, fixed Lemo and Inhibit figure link
1.0	2023-07-17	Initial document

Disclaimer / Copyrights

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.

Description of the safety instructions

DANGER!

DANGER!

"Danger!" indicates a severe injury hazard. The non-observance of safety instructions marked as "Danger!" will lead to possible injury or death.

WARNING!

WARNING!

"Warning!" indicates an injury hazard. The non-observance of safety instructions marked as "Warning!" could lead to possible injury or death.

CAUTION!

CAUTION!

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

INFORMATION

INFORMATION

Advice marked as "Information" give important information.

Read the manual.

Important information.

Attention high voltage!

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

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!

The high-voltage cable must be professionally connected to the consumer/load and the connection insulated with the appropriate dielectric strength. Do not power the consumer/load outside of its specified range.

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.

CAUTION!

CAUTION!

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

CAUTION!

CAUTION!

The devices must only be used in combination with iseg approved crates.

INFORMATION

INFORMATION

Please check the compatibility with the devices used.

Table of Contents

1 General description

CAUTION!

CAUTION!

The devices must only be used in combination with iseg approved crates.

The iseg EHR modules are multi-channel high voltage power supplies in MMS system (Eurocard format).
The EHR provides 4 channels, each with an independent voltage and current control and electronically reversible polarity. The 6kV channel provides a maximum versatility: with three electronically switchable HV-output modes it can supply 4mA up to voltages of 2kV, 3mA up to 4kV and 2mA up to 6kV. Alternatively the EHR can be equipped with cost efficient 2kV/6mA channels.
Several EHR modules can be daisy-chained by CAN and controlled for example by iseg iCS system. The hardware is made of best components such as 24 bit ADC and 20 bit DAC.
The EHR is equipped with a comprehensive set of security features like over voltage and short circuit protection, hardware limits and much more.

2 Package contents / Accessories

Hardware	included	optional
EHR 40 xx	4 channel Standard module	
EHR 42 xx	4 channel High Precision module	
Notes: replacement characters: x – depending on model, see chapter 11 Order guides		

Table 1: Package contents

3 Technical data

SPECIFICATIONS	EHR Standard	EHR High Precision
Polarity	Electronically switchable	
Floating principle	Common Floating Ground	
Potential difference	Max. 39 V channel/GND	
Ripple and noise (f > 10 Hz)	< 10 mV_{p-p}	< 2 – 3 mV_{p-p}
Ripple and noise (f > 1 kHz)	< 3 mV_{p-p}	< 2 mV_{p-p}
Ripple and noise (10 Hz – 0.1Hz)		< 5 – 10 mV_{p-p}
Stablity		
Stability – [ΔV_{out} vs. ΔV_{in}]	$2 \cdot 10^{-4} \cdot V_{mode}$	$1 \cdot 10^{-4} \cdot V_{mode}$
Stability – [ΔV_{out} vs. ΔR_{load}]	$2 \cdot 10^{-4} \cdot V_{mode}$	$1 \cdot 10^{-4} \cdot V_{mode}$
Temperature coefficient	50 ppm/K	30 ppm/K | 10 ppm/K (OPTION TC, see chapter 6.3 TC – Lower temperature coefficient)
Resolution		
Resolution voltage setting	$2 \cdot 10^{-6} \cdot V_{nom}$	
Resolution current setting	$2 \cdot 10^{-6} \cdot I_{nom}$	
Resolution voltage measurement [1]	$2 \cdot 10^{-6} \cdot V_{nom}$	$1 \cdot 10^{-6} \cdot V_{nom}$
Resolution current measurement - full range [1]	$2 \cdot 10^{-6} \cdot I_{nom}$	$1 \cdot 10^{-6} \cdot I_{nom}$
Resolution current measurement [I_{out} < 20 µA] (2nd range) [1] [3]	n/a	50 pA
Measurement accuracy – The measurement accuracy is guaranteed in the range 1% • V_{mode} < V_{out} < V_{mode} and for 1 year		
Accuracy voltage measurement	± (0.01 % • V_{out} +0.02 % • V_{nom})	± (0.01 % • V_{out} +0.01 % • V_{nom})
Accuracy current measurement – full range	± (0.01 % • I_{out} +0.02 % • I_{nom})	± (0.01 % • I_{out} +0.01 % • I_{nom})
Accuracy current measurement (2nd range) [3]	n/a	± (0.01 % • I_{out} + 4 nA)
Sample rates (SPS)	5, 10, 25, 50, 60, 100, **500** [2]	5, 10, 25, **50** [2], 60, 100, 500
Digital filter averages	1, 16, **64** [2], 256, 512, 1024	
Hardware limits	Potentiometer per module [V_{max} / I_{max}]; relative to V_{nom} / I_{nom}	
Voltage ramp	$1 \cdot 10^{-6} \cdot V_{nom}$/s up to 0.2 • V_{nom}/s | opt. up to 0.75 • V_{nom}/s	
Module status	green LED turns on if the channel has the status “Ready” yellow LED turns on if the channel has the status “HV ON”	

SPECIFICATIONS	EHR Standard	EHR High Precision
Digital interface	CAN	
Protection	Safety loop, overload and short circuit protected, optionally INHIBIT per channel (ID / IU, NID / NIU), Lemo 5-pole (**ATTENTION:** there is only one short circuit or arc per second allowed!)	
HV connector	SHV, (Figure 7)	
System connector	96 PIN (MMS HV compatible)	
Safety loop connector	Lemo 2-pole (SL), (Figure 9)	
Case	19” plug-in cassette	
Dimensions – L/W/H	220mm / 8HP / 6U	
Operating temperature	0 ... 40 °C	
Storage temperature	-20 ... 60 °C	
Humidity	20 – 80 %, not condensing	
Notes: 1) – The resolution of measurable values depends on the settings of the sampling rate and the digital filter! 2) – Factory Settings 3) – not available with Option L		

Table 2: technical data: Specification EHR

3.1 Configuration

CONFIGURATIONS NHR										
Type	**Ch**	**Precision**	**V_{nom}**	**I_{nom}**	**Ripple (mV_{p-p})**			**HV output mode (V_{mode} / I_{mode})**	**Item Code**	**Options**
					>1kHz	10Hz-1kHz	0.1Hz-10Hz			
EHR 40 20	4	Standard	2000 V	6 mA	3	10	n/a	2 kV / 6 mA	ER040020R605oooccrk	SLA, SLP, INH
EHR 40 60	4	Standard	6000 V	4 mA	3	10	n/a	6 kV / 2mA 4kV / 3mA 2kV / 4mA	ER040060R405oooccrk	SLA, SLP, INH
EHR 42 20	4	High	2000 V	6 mA	2	2	5	2 kV / 6 mA	ER042020R605oooccrk	SLA, SLP, INH, TC, L
EHR 42 60	4	High	6000 V	4 mA	2	3	10	6 kV / 2mA 4kV / 3mA 2kV / 4mA	ER042060R405oooccrk	SLA, SLP, INH, TC, L
Notes: replacement characters: o – options, c – connector, r – revision, k – customization										

Table 3: Technical data: Configurations

3.2 Options

OPTIONS / ORDER INFO	INFO	EXAMPLE	ITEM CODE HEX CODE
SINGLE CHANNEL INHIBIT	**INH**		**400**
ACTIVE SAFETY LOOP	**SLA**		**001**
INTERNALLY POWERED SAFETY LOOP	**SLP**		**002**
LOWER TEMPERATURE COEFFICIENT [1]	**TC**		**004**
LOWER OUTPUT CURRENT [1]	**L** (I_{nom} = 100 µA)	EHR 4260 **L**	**–**
Notes: [1] - Requires EHR “High Precision” Series			

Table 4: Technical data: Options and order information

4 Overview

FRONT side	BACK side
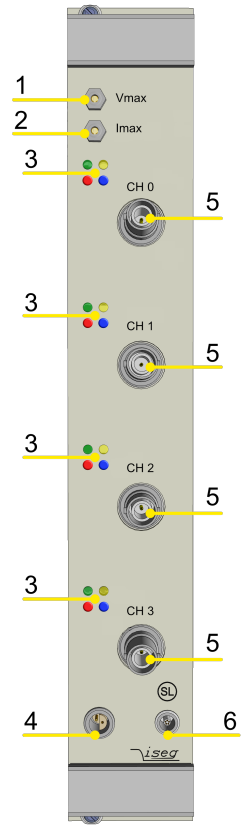	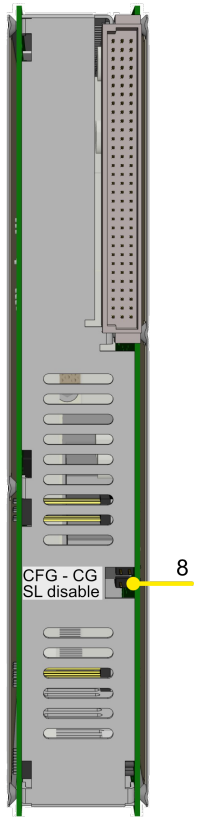
Figure 1	*Figure 2*

Number		Description	Detailed explanation in chapter
[1]	V_{MAX}	Limit Monitor	5.3 Hardware Limit
[2]	I_{MAX}	Limit Monitor	5.3 Hardware Limit
[3]	LED	Module Status	5.2 Channel and LEDs
[4]	SL	Safty loop	5.4 Safety Current Loop
[5]	HV OUT	High voltages connector	9 Connectors assignments
[6]	INHIBIT [1]	Single Channel inhibit	5.5 Single Channel Inhibit
[8]	CFG-CG / SL disable	Jumper	5.1 Connection
Notes: 1) – optionaly			

Table 5: description overview

5 Handling

5.1 Connection

The supply voltages and the CAN interface are connected to the module via a 96-pin connector on the rear side of the module. The physical address of the module, determined by the slot position in the crate, is also accessible via this connector
Modules and crate controllers with different settings of bit rate do not work on the same CAN-Line.

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For proper operation the module must be configured with the correct CAN bitrate, which meets the configuration of the crate controller, the module will be used with. The delivery condition is shown on the modules type plate (side plate of the module).
Typically newer iseg crate controllers (CC24, CC23, CC238) are delivered with 250kBits/s standard. Wiener M-POD Controller and older iseg hardware is set on 125 kBit/s standard bitrate.

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EHR modules with Common Floating Ground (CFG) will be delivered with a jumper, which connects the module-GND with the crate-GND. To operate in CFG configuration the jumper (CG-CFG) on the module back must be removed. (*see: Figure 3: section of back view*)

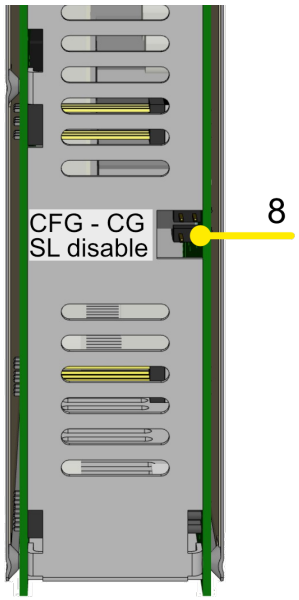

Figure 3: section of back view

5.2 Channel and LEDs

The module status is displayed by two LEDs on the front panel

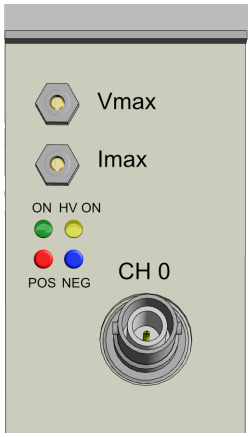

Figure 4: Module status information

The front panel of the EHR device is equipped for each channel two status LEDs (“OK” and “HV ON”) and two polarity LEDs (“POS” and “NEG”) to indicate the selected polarity. The green LED “OK” signals the general condition of the channel and the yellow LED “HV ON” signals measured output voltage at the corresponding channel or is flashing shortly every time the user presses the corresponding “On/Off” switch.

Following behaviors are possible:

LED “OK”	LED “HV ON”	Meaning
not illuminated	not illuminated	An error event occurred, the channel cannot be switched on.
not illuminated	illuminated	An error occurred but there is still a measured voltage at the channel.
illuminated	not illuminated	The channel is switched off and can be turned on.
illuminated	illuminated	The channel is turned on and there is output voltage at the channel.
	flashing	The channel is ramping up or down

Table 6

5.3 Hardware Limit

The maximum output voltage for all channels (hardware voltage limit) is defined through the position of the corresponding potentiometer V_{max}. The maximum output current for all channels (hardware current limit) is defined through the position of the corresponding potentiometer I_{max}. The greatest possible set value for voltage and current is given by V_{max} – 2% and I_{max} – 2%, respectively. The percentage values always refer to the nominal values of the channel, V_{nom} and I_{nom}. E.g. for a 6kV/4mA module the reference values are 6kV and 4mA, independent of the selected output mode. The output voltage and current are limited to the specified value. If the maximum voltage or current of the selected output mode (V_{mode} or I_{mode}) is below this limit, this will further limit the output. If a limit is reached or exceeded in any channel the corresponding green LED on the front panel turns off.

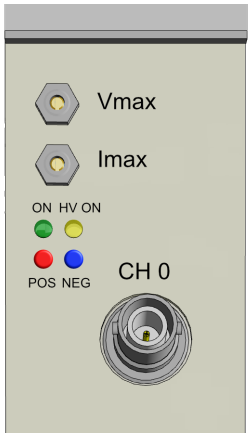

Figure 5: Limit potentiometers

5.4 Safety Current Loop

A safety loop can be implemented via the safety loop socket (SL) on the front panel, see number [4] at Figure 1.
If the safety loop is active, then an output voltage in any channel is only present if the safety loop is closed and an external current in a range of 5 to 20 mA of any polarity is driven through the loop. The loop connectors (Figure 9) are potential free, the internal voltage drop is approx. 3 V. If the safety loop is opened during the operation, the output voltages are shut off without ramp. Furthermore, the corresponding bits in the „ModuleStatus“ and „ModuleEventStatus“ registers are set (described in “CAN EDCP Programmers-Guide”, the Web Link see chapter 12 Appendix). After closing the loop again, the „ModuleEventStatus“ register must be reset to turn the channels on again. By factory setup the safety loop is not active (the corresponding bits are always set). The loop can be activated by removing the internal jumper. The jumper can be accessed via a ventilation slot on the bottom of the module, see Figure 3: section of back view

5.5 Single Channel Inhibit

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INHIBIT is an external signal, that switches off the high voltage for the device or a specific channel.

Optionally it is possible to equip modules with an *INHIBIT* for each channel via a LEMO-connector (Figure 8). The assignment of the channels is described in detail in the appendix, see chapter 9 Connectors assignments and 10 PIN assignments.

The INHIBIT signals are TTL-level, the signal logic and default states can be configured. The following settings are possible:

Option – IU

INHIBIT signal logic:	LOW-active	(LOW ➞ HV-generation stopped)
default state:	HIGH	(internal pull-up resistor applied)
open INHIBIT signal input:	HV enabled	

Option – ID

INHIBIT signal logic:	LOW-active	(LOW ➞ HV-generation stopped)
default state:	LOW	(internal pull-down resistor applied)
open INHIBIT signal input:	HV disabled	

Option – NIU

INHIBIT signal logic:	HIGH-active	(HIGH ➞ HV-generation stopped)
default state:	HIGH	(internal pull-up resistor applied)
open INHIBIT signal input:	HV disabled	

Option – NID

INHIBIT signal logic:	HIGH-active	(HIGH ➞ HV-generation stopped)
default state:	LOW	(internal pull-down resistor applied)
open INHIBIT signal input:	HV enabled	

The INHIBIT signal must be applied for at least 100 ms to guarantee a detection. If an Inhibit signal is detected, the channel status bit 'Is External Inhibit' and the channel event status bit 'Event External Inhibit' are set. One of the following reactions to this signal can be programmed, see chapter "External channel inhibit", described in "CAN_EDCP_Programmers-Guide.pdf" (for Web Link see 12 Appendix):

- No Action (default)
- Turn off the channel with ramp
- Shut down the channel without ramp
- Shut down all channels without ramp

When the INHIBIT is no longer active, the Inhibit flag must be reset before the voltage can be switched on again.

5.6 Current limitation

5.6.1 Constant Current Mode

The Constant Current Mode (CC) is the default response on an increased output current. If the output current would exceed the set current (I_{set}) at the specified set voltage (V_{set}) the channel operates as a constant current source at I_{set}. For modules with one current measurement range the module can operate in CC Mode for I_{set} values in the range $I_{nom} \geq I_{set} \geq 5E\text{-}04 \cdot I_{nom}$. Although the modules accepts smaller values I_{set}, the CC Mode can only operate down to the given limitation. Smaller set value will only affect the functions KillEnable and Delayed Trip, described below.
Modules with two current measurement ranges can operate in CC Mode with I_{set} values down to 200 nA. The following limitations must be considered when operating a channel with I_{set} values in the lower current measurement range (i.e. typically <20µA):

- If I_{set} < 20µA the maximum voltage ramp speed is limited to 1 % of V_{nom}. If the load has a significant capacitance it might be necessary to further reduce the voltage ramp speed to avoid ramp instabilities.
- While a channel is operating in CC Mode it is not possible to switch between the two current measurement ranges, i.e. the set current cannot be changed from a value > 20 µA to a value < 20 µA or vice versa. To change the set current across the measurement range boundary the channel must stop operation in CC mode (i.e. by switching off the channel or reducing the voltage such, that it operates in Constant Voltage Mode (CV)).

5.6.2 KillEnable

The function "KillEnable" forces the shut down of a channel at the fastest hardware response time (smaller than 1 ms) if a specified trip current is exceeded. If "KillEnable" is active the value of the set current (I_{set}) defines the trip current. An approach or exceed of this current (detected by a hardware signal) will immediately shut off the channel without ramp. However, the actual discharge time strongly depends on the connected load.
The following limitations must be considered if the function "KillEnable" is activated:

- Maximum voltage ramp speed is limited to 1 % of V_{nom}. To avoid unintended current trips during ramps it might be necessary to further reduce the ramp speed for very small trip currents or capacitive loads. Alternatively "KillEnable" can be activated only after the completion of the ramp.
- The minimum trip currents for a hardware detection is $5E\text{-}04 \cdot I_{nom}$ for modules with one current measurement range and 200 nA for modules with two current measurement ranges. It is possible to specify smaller trip values, however there is no hardware current limitation below the hardware detection limits. Also, the response time on a trip that does not trigger the hardware detection can be up to 1s.
- Modules with two current measurement ranges do not change the current measurement range if "KillEnable" is active. The channel remains in the high measurement range if I_{set} > 20µA and in the low measurement range for $I_{set} \leq$ 20µA. It is not possible to switch the current measurement while a channel is switched on and "KillEnable" is active, i.e. the set current cannot be changed from a value > 20 µA to a value < 20 µA or vice versa. If it is intended to switch the current measurement range, the channel must be switched off or "KillEnable" must be deactivated for altering the current set value.

5.6.3 Delayed Trip

The function "*Delayed Trip*" provides a user-configurable, time-delayed response to an increased output current (I_{out}) higher than the set current (I_{set}). The response to this kind of event can be, for example, to ramp down the channel with the programmed ramp. A detailed description for the configuration can be found in the “CAN EDCP Programmers-Guide”. The link for the document is available in the chapter 12 Appendix.

By a programmable timeout with one millisecond resolution, the trip can be delayed up to four seconds. During this time, the output current is limited to the value of I_{set} (constant current mode).

The hardware regulation signals, constant voltage (CV) or constant current (CC), are sampled every millisecond by the microprocessor. Once the constant current mode is active, the programmed timeout counter is decremented. If the HV channel returns to constant voltage mode before timeout (i.e. $I_{out} < I_{set}$), the counter will be reset. So this process can be restarted if the current rises again.

To guarantee a sufficient resolution for the current set values, a nominal current adequate to the application should be selected. iseg offers HV modules with nominal currents reduced to 100 µA in all voltage classes. These are designated e.g. for semiconductor detectors, which only require a few microampere operating current.

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An activated KillEnable feature disables the Delayed Trip function.

6 Options

6.1 SLA – Active safety loop

Actively opens the Safety loop in case of a trip or a delayed trip. This option allows to shut down other modules and devices by interrupting the SL when a trip is detected.

6.2 SLP – Internally powered safety loop

Internal current source for the Safety Loop (no galvanic isolation of the SL and the crate GND).

6.3 TC – Lower temperature coefficient

Improved temperature coefficient of 10ppm/K (T10). This is only for 8 channels common floating ground modules available.

6.4 L – Lower output current (HP only)

The output current is limited to a lower value, e.g. 100 µA. With this option only one current measurement range available.

7 Front panel versions

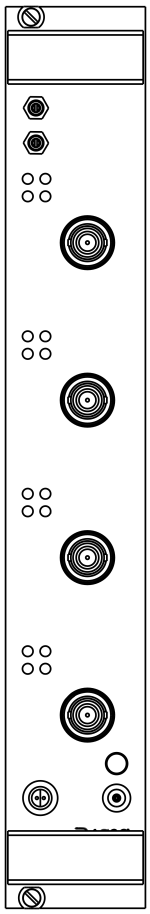
FRONT PANELS				
Channels	4			
Floating	FG / CFG			
HV Connector	SHV			
Options	INHIBIT			
Figure				
Notes: CFG: Common Floating Ground FG: Floating Ground				

Table 7: front view

8 Dimensional Drawings

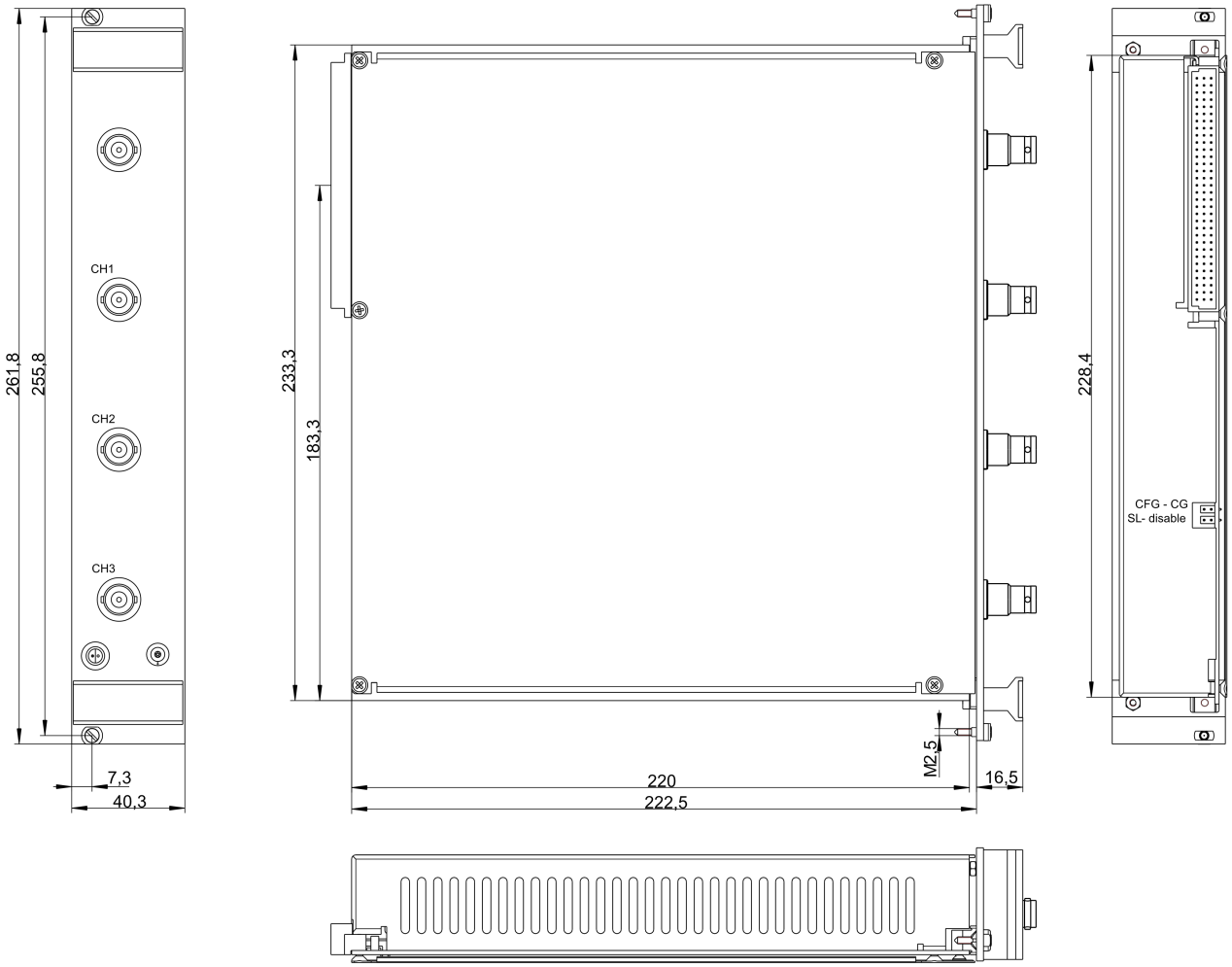


Figure 6:

9 Connectors assignments

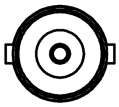
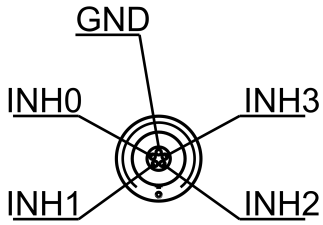
CONNECTORS – POWER SIDE		PART NUMBERS (manufacturer code / iseg accessory parts item code)
SHV		**CABLE SIDE**
 *Figure 7*	part number manufacturer iseg part number	R317.005.000 Radiall Z592474
INHIBIT	socket 5pol	**CABLE SIDE**
 *Figure 8*	part number manufacturer iseg part number	FGG.00.305.CLAD35 LEMO Elektronik GmbH Z592723
SAFETY LOOP		**CABLE SIDE**
1 2 PIN  *Figure 9*	part number manufacturer iseg part number	FFA.0S.302.CLAC LEMO Elektronik GmbH Z592312

Table 8

CAUTION!


CAUTION!

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

10 PIN assignments

10.1 Safety Loop socket

PIN	NAME	DESCRIPTION
1	Safety loop	Safety loop
2	Safety loop	Safety loop

Table 9

10.2 Single channel Inhibit

PIN	NAME	DESCRIPTION
1	GND	Ground
2	Inhibit 0	Inhibit channel 0
2	Inhibit 1	Inhibit channel 1
3	Inhibit 2	Inhibit channel 2
4	Inhibit 3	Inhibit channel 3

Table 10

11 Order guides

CONFIGURATION ORDER GUIDE (item code parts)									
ER	**04**	**0**	**060**	**R**	**405**	**000**	**02**	**0**	**0**
High Voltage, Distinct Source	No. of channels	Class	V_{nom}	Polarity	I_{nom} (nA)	Option (hex)	HV Connector	Revision	Customized Version
		0 = Standard (CFG) 2 = High Precision (CFG)	three significante digits • 100V For Example: 060 = 6000V	r = reversible	two significante digits + number of zeros. For Example: 405 = 4mA	Sum of the hex codes See chapter 3.2 Options	02 = SHV 03 = S08	one digit 0 = no revision	one digit 0 = no customization

Table 11: Item code parts for different configurations

CABLE ORDER GUIDE					
POWER SUPPLY SIDE CONNECTOR	**V_{max}**	**CABLE CODE**	**CABLE DESCRIPTION**	**LOAD SIDE CONNECTOR**	**ORDER CODE** ***LLL = length in m*** [1]
SHV	≤ 5kV	04	HV cable shielded 30kV (HTV-30S-22-2)	open	SHV_C04-*LLL*
S08	≤ 8kV	04	HV cable shielded 30kV (HTV-30S-22-2)	open	S08_C04-*LLL*
Notes: [1] Length building examples: 10cm ➜ 0.1, 2.5m ➜ 2.5, 12m ➜ 012, 999m ➜ 999					

Table 12: Guideline for cable ordering

12 Appendix

For more information please use the following download links:

This document http://download.iseg-hv.com/SYSTEMS/MMS/EHR/iseg_manual_EHR_en.pdf
EHR series https://iseg-hv.com/en/products/detail/EHR
Archives http://download.iseg-hv.com/SYSTEMS/MMS/EHR/archive
CAN EDCP Programmers-Guide http://download.iseg-hv.com/SYSTEMS/MMS/CAN_EDCP_Programmers-Guide.pdf
iseg Hardware Abstraction Layer http://download.iseg-hv.com/SYSTEMS/MMS/isegHardwareAbstractionLayer.pdf
Cables and connectors https://iseg-hv.com/download/ACCESSORIES/Adapters%20and%20Cables/iseg_Cables%20and%20Connectors_en.pdf

Manufacturers website (connectors)	
LEMO ELEKTRONIK GMBH	https://www.lemo.com/
Radiall GmbH	https://www.radiall.com/

13 Glossary

SHORTCUT	MEANING
0V	Supply ground
V_{nom}	nominal output voltage
V_{out}	output voltage
V_{set}	set value of output voltage
V_{mon}	monitor voltage of output voltage
V_{meas}	digital measured value of output 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
V_{limit}	voltage limit
ΔV_{out} – $[\Delta V_{in}]$	deviation of V_{out} depending on variation of supply voltage
ΔV_{out} – $[\Delta R_{load}]$	deviation of V_{out} depending 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	HV OFF
CH	channel(s)
HV	high voltage
LV	low voltage
GND	signal ground

SHORTCUT	MEANING	
INH	Inhibit	
POL	Polarity	
KILL	KillEnable	
CFG	Common Floating-GND	https://iseg-hv.com/en/knowledge/floating
FG	Floating-GND	https://iseg-hv.com/en/knowledge/floating
CG	Common-GND	https://iseg-hv.com/en/knowledge/floating

Table 13

14 Warranty & service

This device is made with high care and quality assurance methods. The factory warranty is Standard 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

15 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.

16 Manufacturer contact

iseg Spezialelektronik GmbH
Bautzner Landstr. 23
01454 Radeberg / OT Rossendorf
GERMANY
FON: +49 351 26996-0 | FAX: +49 351 26996-21
www.iseg-hv.com | info@iseg-hv.de | sales@iseg-hv.de