technical documentation
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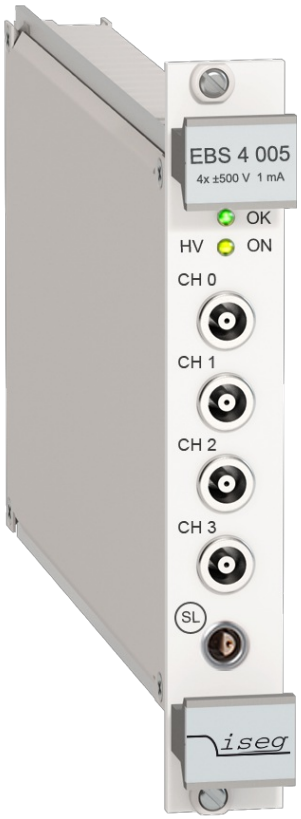
EBS 4005

Bipolar 4 Quadrant High Voltage Module with CFG

- 4 channels / 0.5kV
- full 4-quadrant capabilities, usable as bipolar current sink and source
- perfect for electron optical systems and capacitive loads
- low ripple and noise
- hardware voltage and current limit
- programmable parameters (delayed trip etc.)



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1. General information

The bipolar EBS distribution modules are multichannel high voltage power supplies in MMS- and MMC system (Eurocard format) with full 4-quadrant capabilities. The EBS can be used as bipolar current sink and source, which perfectly covers requirements of electron optical systems or capacitive loads. The EBS is built in common floating ground principle to reduce voltage noise level.

With up to 4 channels each single channel has an independent voltage control up to 500 V channel-voltage-difference. The EBS configuration of output voltage and current can be customized on request. The module is made of high precision components as 24 bit ADC and 20 bit DAC and provides comprehensive security features.

- full 4-quadrant capabilities, usable as bipolar current sink and source
- perfect for electron optical systems and capacitive loads
- low ripple and noise
- hardware voltage and current limit
- programmable parameters (delayed trip etc.)

ATTENTION!

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

ATTENTION!

The devices induce output voltages and -currents which conformable to EN61010-1 are not dangerous to life. But it is possible that they effect healthy damages to sensitive persons.

2. Technical Data

Specifications	
Item code	EB040005105
Output voltage V_{nom}	0.5kV
Output current I_{nom}	1mA
Polarity	bi.
Floating principle	common floating ground
Protection	Safety Loop, over load and short circuit protected
Software Voltage ramp	$1 \cdot 10^{-6} \cdot V_{nom}$ - $1 \cdot V_{nom}$
digital Interface	CAN
Ripple and noise [peak to peak] [f>10Hz]	20mV
Stability [no load/load] and [V_{in}]	$0.005 \cdot$ % V_{nom}
Sample rates [SPS]	5, 10, 25, 50, 60, 100, 500
Digital filter averages	1, 16, 64, 256, 512, 1024
Resolution	
voltage setting	5mV
voltage measurement	5mV
current measurement	50nA
Accuracy	
voltage measurement	$0.01 \cdot$ % V_{out} + $0.02 \cdot$ % V_{nom}
current measurement	0.1% I_{out} + $0.4 \cdot$ % I_{nom}
Measurement accuracy	for one year
Temperature Coefficient	20ppm/K
Power requirements V_{INPUT}	
24V	0.5A
Temperature	
Operation	0°C - 40°C
Storage	-20°C - 60°C
Connector	
HV-connector	Lemo 1pole: FFA.OS.250.CTAK47
HV-socket	Lemo 1pole: ERA.OS.250.CLL
system-connector	96 Pin
safety loop connector	Lemo 2pole: FFA.0S.302.CLAC
safety loop socket	Lemo 2pole: ERA.0S.302.CLL
Case	
Description	19 inch plug-in cassette
Dimension L/W/H	160mm / 4HP / 3U

table 1 - Technical Data

3. Dimensional Drawing

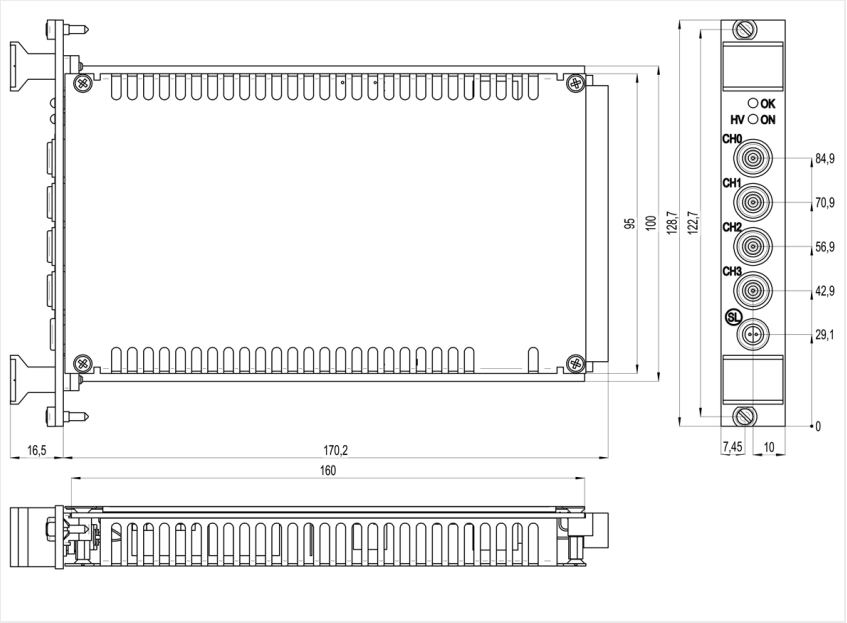

fig. 1 - Dimensional Drawing EBS 3U

4. Front Panel

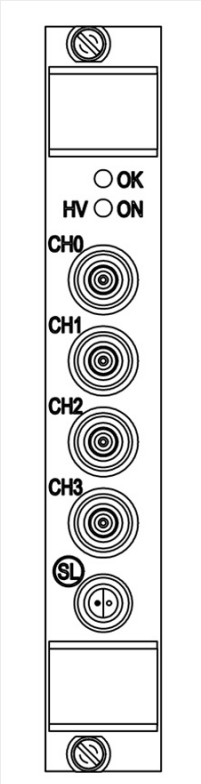

fig. 2 - Front Panel EBS 3U

Green Led Modul OK	After power on the LED will be switched on, if no errors occurs the Modul. If there is an Error such as safety loop is not closed, power supplies are out of tolerance or the threshold of V_{max}, I_{max}, I_{set} or Itrip (see description below) has been exceeded the LED will be switched off until the error has been corrected and the corresponding status bit has been erased via interface.
Yellow Led HV-ON	The Yellow Led shows that at least one channel is switched on and voltage can be emitted or that on one or more channels have an output voltage of more than 60V.
SL	Safety Loop

5. Limits and Jumper

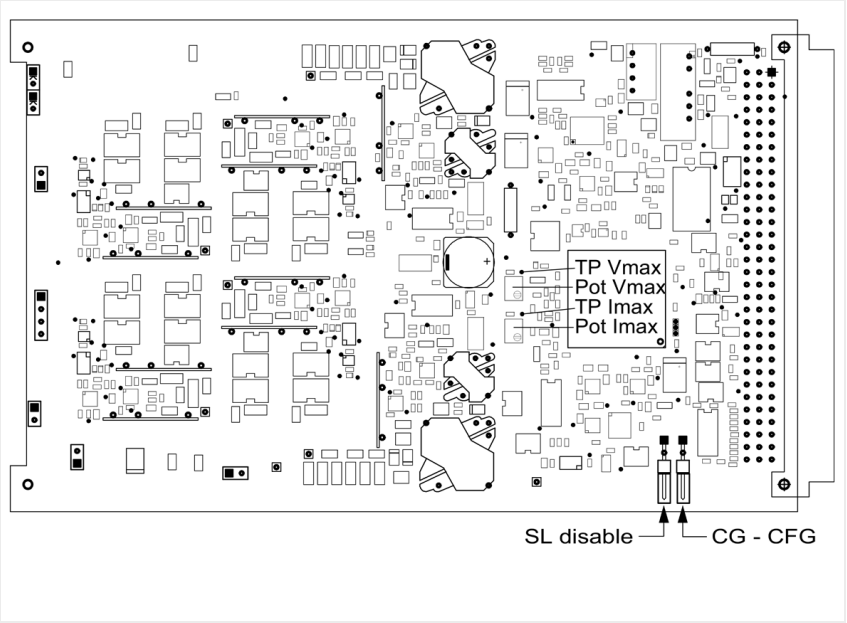

fig. 3 - Limits and Jumper EBS 3U

6. Handling

6.1. 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. Devices with different settings of bit rate do not work on the same CAN-Line.

6.2. 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. It is possible to measure the hardware voltage and current limits at the sockets below the potentiometer. The socket voltages are proportional to the relative limits, where 2.5 V corresponds to 102 ± 2% V_{nom} and 102 ± 2% I_{nom}.

The output voltage and current are limited to the specified value. If a limit is reached or exceeded in any channel the green LED on the front panel turns off.

6.3. Safety Loop

A safety loop can be implemented via the safety loop socket (SL) on the front panel. 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. If the safety loop is opened during the operation the output voltages are shut off without ramp and the corresponding bits in the ‘ModuleStatus’ (see manual ”CAN-Interface Operator’s Manual” and ModuleEventStatus are cancelled.

After closing the loop again the ModuleEventStatus has to be reset and the channels have to be switched ON. The loop connectors are potential free, the internal voltage drop is approx. 3 V. In the factory setup the safety loop is not active (the corresponding bits are always set). The loop can be activated by removing the internal jumper.

6.4. over load and short circuit protected

over load and short circuit protected

7. PIN Assignment

7.1. HV-connector socket

Lemo 1pole: ERA.OS.250.CLL

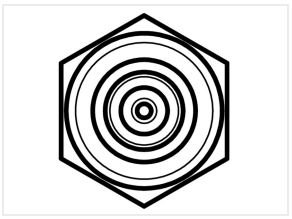

fig. 4 - HV-Connector socket LEMO

7.3. Safety loop socket

Lemo 2pole: ERA.0S.302.CLL

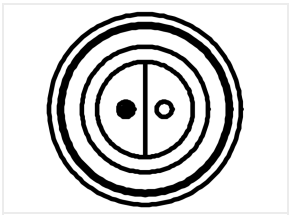

fig. 6 - Safety loop socket

8. Accessories

Order No.	Description
L01_C01-3.0	HV cable 3m onesided Lemo connector
L01_C01-3.0_L01	HV cable 3m both-sided Lemo connector

9. Service

ATTENTION!

Repair and maintenance may only be performed by trained and authorized personnel.

The device should be cleaned yearly from dust deposit with compressed air. If the device is used in a enviroment with a higher part of dust you should reduce the interval.

For compliance of the specified accuracy of set and monitor signals, the unit has to be recalibrated once a year.

For repair please follow the instructions regarding RMA of our website. Please use the following link: www.iseg-hv.com/support/.

10. Contact

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