iseg
HIGH VOLTAGE. EXACTLY.

EHS STANDARD

VERSATILE HIGH VOLTAGE MODULE IN MULTIPLE FLOATING VERSIONS

MMS SYSTEMS

VLN

CG

CFG

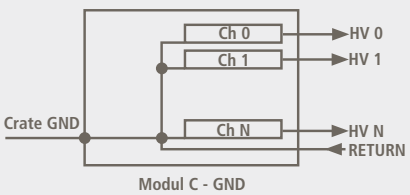
FG

- 4 / 8 / 16 / 32 channel, 100 V - 20 kV versions
- low ripple and noise, very low noise option VLN
- hardware voltage and current limits
- voltage and current control per channel
- programmable parameters (delayed trip etc.)

EHS modules are multichannel high voltage power supplies in MMS system (Eurocard format). With up to 32 channels each single channel has an independent voltage and current control. The module is made of high-precision components such as 24 bit ADC and up to 20 bit DAC and provides comprehensive security features.

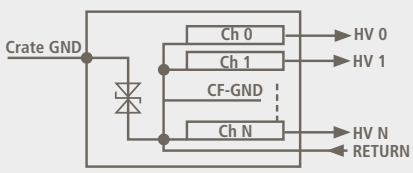
By offering different configurations and options this module perfectly covers various types of applications such as detector supply, experimental setup or lab use. The EHS standard module is available in three floating versions, Common Ground (CG), Common Floating Ground (CFG) and Floating Ground (FG).

FLOATING OPTIONS



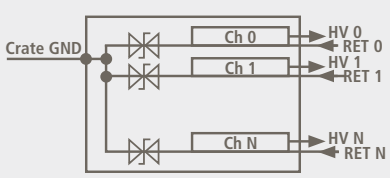
Modul C - GND

Common Ground
All channels and the processing unit are galvanically connected.
Within a crate all CG modules are galvanically connected.



Modul CF - GND

Common Floating Ground
All channels and the processing unit are galvanically connected.
The module GND is isolated from the GND of the crate.
Within a crate all modules with CFG are galvanically isolated.
A protection circuit prevents differences in the potentials between the module CF-GND and the crate GND of more than 60 V.



Modul F - GND

Floating Ground
All channels are galvanically isolated from each other and from the module GND. By default a protection circuit prevents differences in the potentials between the channels and the module GND of more than 25 V.
As an option this isolation can be designed to enable potential differences up to 2,000 V. With this option the user is responsible not to exceed the maximum ground potential differences!

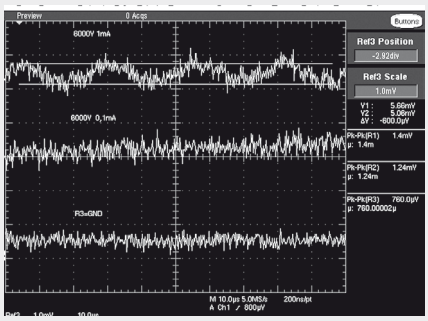
CONFIGURATIONS / KONFIGURATIONEN

MODEL	CHANNELS	OUTPUT VOLTAGE	OUTPUT CURRENT	RIPPLE AND NOISE
EHS COMMON GROUND				
NEW **EHS F101x-VLN**	16	100 V	10 mA	3 mV
NEW **EHS 20101x-VLN**	32	100 V	10 mA	3 mV
EHS F1 05x	16	500 V	8 mA	10 mV
EHS 201 05x	32	500 V	8 mA	10 mV
EHS F1 10x	16	1 kV	4 mA	15 mV
EHS 201 10x	32	1 kV	4 mA	15 mV
EHS F1 20x	16	2 kV	2 mA	20 mV
EHS 201 20x	32	2 kV	2 mA	20 mV
EHS F1 30x	16	3 kV	1.3 mA	20 mV
EHS 201 30x	32	3 kV	1.3 mA	20 mV
EHS F1 40x	16	4 kV	1 mA	20 mV
EHS 201 40x	32	4 kV	1 mA	20 mV
EHS COMMON FLOATING GROUND / FLOATING GROUND				
NEW **EHS 8y 01x**	8	100 V	10 mA	3 mV
NEW **EHS Fy 01x**	16	100 V	10 mA	3 mV
EHS 8y 05x	8	500 V	15 mA	10 mV
EHS Fy 05x	16	500 V	15 mA	10 mV
EHS 8y 10x	8	1 kV	8 mA	10 mV
EHS Fy 10x	16	1 kV	8 mA	10 mV
EHS 8y 20x	8	2 kV	4 mA	10 mV
EHS Fy 20x	16	2 kV	4 mA	10 mV
EHS 8y 30x	8	3 kV	3 mA	10 mV
EHS Fy 30x	16	3 kV	3 mA	10 mV
EHS 8y 40x	8	4 kV	2 mA	10 mV
EHS Fy 40x	16	4 kV	2 mA	10 mV
EHS 8y 60x	8	6 kV	1 mA	10 mV
EHS Fy 60x	16	6 kV	1 mA	10 mV
EHS 4y 80x	4	8 kV	1 mA	10 mV
EHS 4y 100x	4	10 kV	0.7 mA	10 mV
NEW **EHS 4y 150x**	4	15 kV	0.5 mA	10 mV
NEW **EHS 4y 200x**	4	20 kV	0.4 mA	10 mV

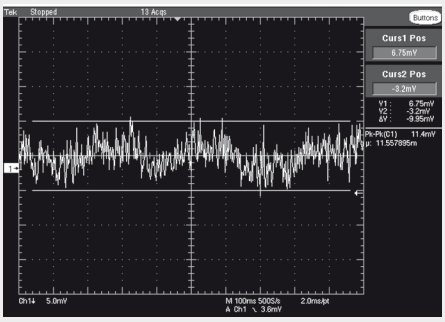
EHS STANDARD

VERSATILE HIGH VOLTAGE MODULE IN MULTIPLE FLOATING VERSIONS

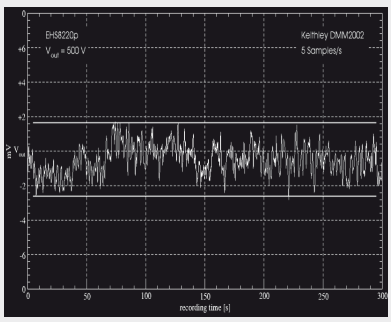
RIPPLE AND NOISE CLASSES



10 µs / DIV
R1 EHS 8060: 6000 V/1 mA | V_{P-P} = 1.4 mV
R2 EHS 8060: 6000 V/0.1 mA | V_{P-P} = 0.4 mV
R3 Ground noise of the oscilloscope 0.8 mV



100 ms / DIV
EHS 8060: 6000 V/1 mA | V_{P-P} = 11 mV



50 s / DIV
EHS 8220p | V_{out} = 500 V | V_{P-P} = 4 mV

LOW NOISE	V_{P-P} < 5 mV [f > 1 kHz] | V_{P-P} typ. < 20 mV / V_{P-P} max. 30 mV	[1 kHz > f > 10 Hz]
VERY LOW NOISE	V_{P-P} < 1 mV [f > 1 kHz] | V_{P-P} typ. < 3 mV / V_{P-P} max. 5 mV	[1 kHz > f > 10 Hz]
ULTRA LOW NOISE	V_{P-P} < 1 mV [f > 1 kHz] | V_{P-P} typ. < 3 mV / V_{P-P} max. 5 mV	**[1 kHz > f > 0.1 Hz]**

SPECIFICATIONS / SPEZIFIKATION

	EHS CG	EHS CFG	EHS FG
Polarity		factory fixed, positive or negative	
Potiential difference	-	56 V channel/GND	20 V channel/channel/GND, opt. up to 2 kV
Ripple and noise [f > 10 Hz]	< 20 mV		< 10 mV
	< 3-5 mV **		
Temperature coefficient		50 ppm / K	
Resolution voltage setting		$2 \bullet 10^{-6} \bullet V_{nom}$	
Resolution current setting		$2 \bullet 10^{-6} \bullet I_{nom}$	
Resolution voltage measurement		$2 \bullet 10^{-6} \bullet V_{nom}$	
Resulotion current measurement		$2 \bullet 10^{-6} \bullet I_{nom}$	
Accuracy* voltage measurement		$\pm$ (0.01 % • V_{out} +0.02 % • V_{nom})	
Accuracy* current measurement	$\pm$ (0.02 % • I_{out} +0.02 % • I_{nom})		$\pm$ (0.01 % • I_{out} +0.02 % • I_{nom})
Rate of voltage change	up to 0.2 V_{nom}/s		up to 0.2 •V_{nom} / s | opt. up to 0.75 •V_{nom} / s
HV connector	R51		R51 | SHV
Case		6U cassette, width 8 HP	
Protection		Safety loop, opt. INHIBIT per channel (ID / IU)	

*) **All specifications guaranteed from 1% · V_{nom} < V_{out} < V_{nom}**

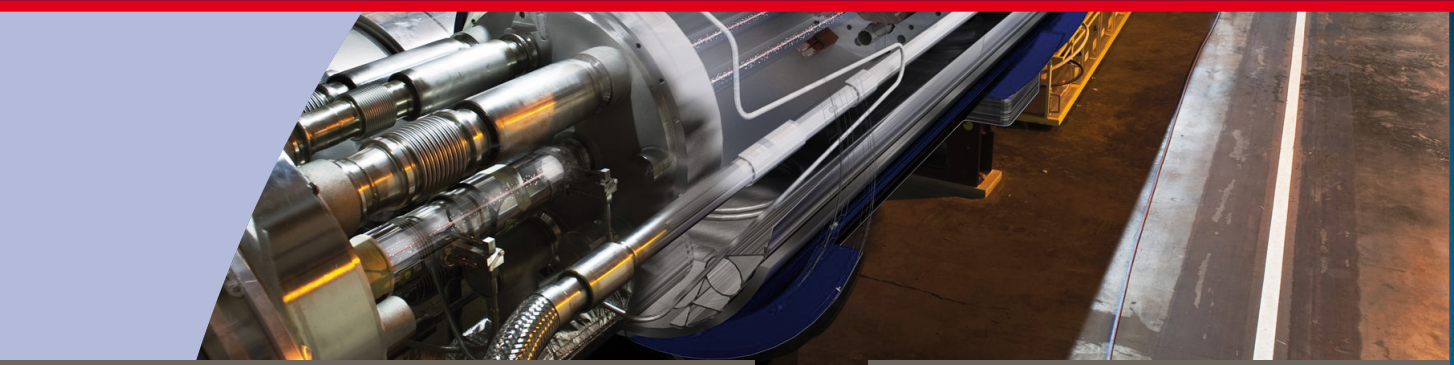
) **With option VLN

ORDER & OPTIONS / BESTELLINFORMATIONEN

OPTION	ORDER INFO	EXAMPLE
POLARITY	positive: **x = p**, negative: **x = n**	EHS 80 05**p**
FLOATING	common floating ground CFG: **y = 0**, floating ground: **y = 6**	EHS 8**6** 05p F
SINGLE CHANNEL INHIBIT - down	**ID**	
SINGLE CHANNEL INHIBIT - up	**IU**	
VERY LOW NOISE (EHS standard)	**VLN**	

MMS-SYSTEM OVERVIEW

VERSATILE LOW / HIGH VOLTAGE POWER SUPPLY SYSTEM



MODULES

EDS SERIES MMS HV compatible

EHS SERIES MMS HV compatible

EBS SERIES MMS HV compatible

ESS SERIES MMS HV compatible

MPV SERIES MMS LV compatible

CRATES

ECH 44A MMS HV compatible

ECH 242 / 244 / 224 / 238 MMS HV compatible

MPOD / MPOD-MIX MMS HV compatible, MMS LV compatible

MPOD MINI / MICRO / MICRO-2 MMS HV compatible, MMS LV compatible

ALSO AVAILABLE: **EHS HIGH PRECISION**

CFG FG ULN VCT L MMS

- **4 / 8 / 16 channel, 100 V - 20 kV versions**
- **ultra low ripple and noise**
- **hardware voltage and current limits**
- **second current measurement range 20 µA for high resolution**
- **voltage and current control per channel**
- **programmable parameters (delayed trip etc.)**
- **options low temp. coeff. (TC), INHIBIT down/up (ID / IU), voltage correction by temp. (VCT), lower output current (L)**

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iseg is a manufacturer of very precise and stable High Voltage Power Supplies with focus on physics and industrial applications. The product portfolio includes AC/ DC, DC/DC and modular High Voltage systems. The company was founded in 1995. Continuous growth and innovation strengthened the company´s market position. **iseg** is well known for the delevop-ment of outstanding custom specific solutions for various special applications.

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Power4Test GmbH, Grünwalder Weg 13a, 82008 Unterhaching, Germany
phone: +49-89-95890293, e-mail: info@power4test.com, web: www.power4test.com

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HIGH VOLTAGE. EXACTLY.

EHS HIGH PRECISION

VERSATILE HIGH PRECISION HV MODULE IN MULTIPLE FLOATING VERSIONS

MMS SYSTEMS

ULN

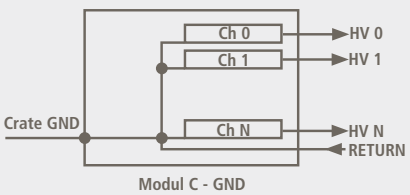
CFG

FG

- 4 / 8 / 16 channel, 100 V - 20 kV versions
- extreme high stability, low temperature coefficient
- very low ripple and noise
- second current measurement range 20 µA for high resolution
- hardware voltage and current limits
- voltage and current control per channel
- programmable parameters (delayed trip etc.)

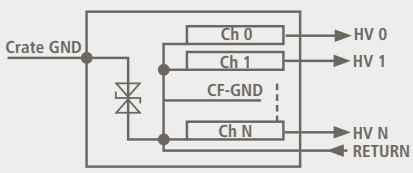
The EHS High Precision modules are multichannel high voltage power supplies in MMS system (Eurocard format) with best stability, temperature coefficients and very low ripple and noise characteristics. With up to 16 channels each single channel has an independent voltage and current control. Compared to a standard module the High Precision EHS is equipped with a second current measurement range to precisely meter low currents. Switching of measurement ranges is done automatically. By offering different configurations and options this module perfectly covers various types of applications such as detector supply, experimental setup or lab use. The EHS High Precision module is available in two floating versions, Common Floating Ground (CFG) and Floating Ground (FG).

FLOATING OPTIONS



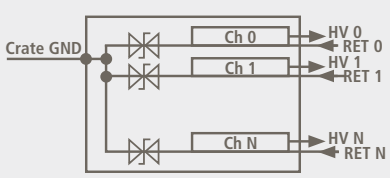
Modul C - GND

Common Ground
All channels and the processing unit are galvanically connected.
Within a crate all CG modules are galvanically connected.



Modul CF - GND

Common Floating Ground
All channels and the processing unit are galvanically connected.
The module GND is isolated from the GND of the crate.
Within a crate all modules with CFG are galvanically isolated.
A protection circuit prevents differences in the potentials between the module CF-GND and the crate GND of more than 60 V.



Modul F - GND

Floating Ground
All channels are galvanically isolated from each other and from the module GND. By default a protection circuit prevents differences in the potentials between the channels and the module GND of more than 25 V.
As an option this isolation can be designed to enable potential differences up to 2,000 V. With this option the user is responsible not to exceed the maximum ground potential differences!

CONFIGURATIONS / KONFIGURATIONEN

MODEL	CHANNELS	OUTPUT VOLTAGE	OUTPUT CURRENT	OUTPUT C. OPTION L	RIPPLE AND NOISE
NEW **EHS 8y 01x**	8	100 V	10 mA	100 µA	3 mV
NEW **EHS Fy 01x**	16	100 V	10 mA	100 µA	3 mV
EHS 8y 05x	8	500 V	10 mA	100 µA	3 mV / CFG: 5mV
EHS Fy 05x	16	500 V	10 mA	100 µA	3 mV / CFG: 5mV
EHS 8y 10x	8	1 kV	8 mA	100 µA	3 mV / CFG: 5mV
EHS Fy 10x	16	1 kV	8 mA	100 µA	3 mV / CFG: 5mV
EHS 8y 20x	8	2 kV	4 mA	100 µA	5 mV
EHS Fy 20x	16	2 kV	4 mA	100 µA	5 mV
EHS 8y 30x	8	3 kV	3 mA	100 µA	5 mV
EHS Fy 30x	16	3 kV	3 mA	100 µA	5 mV
EHS 8y 40x	8	4 kV	2 mA	100 µA	5 mV
EHS Fy 40x	16	4 kV	2 mA	100 µA	5 mV
EHS 8y 60x	8	6 kV	1 mA	100 µA	5 mV
EHS Fy 60x	16	6 kV	1 mA	100 µA	5 mV
EHS 4y 80x	4	8 kV	1 mA	100 µA	5 mV
EHS 4y 100x	4	10 kV	0.7 mA	100 µA	5 mV
NEW **EHS 4y 150x**	4	15 kV	0.5 mA	100 µA	5 mV
NEW **EHS 4y 200x**	4	20 kV	0.4 mA	100 µA	10 mV

ORDER & OPTIONS / BESTELLINFORMATIONEN

OPTION	ORDER INFO	EXAMPLE
POLARITY	positive: **x = p**, negative: **x = n**	EHS 82 05**p**
FLOATING	common floating ground CFG: **y = 2**	EHS 8**2** 05p
	floating ground FG: **y = 4**	EHS 8**4** 05p F
LOWER TEMPERATURE COEFFICIENT	**TC**	
SINGLE CHANNEL INHIBIT - down	**ID**	
SINGLE CHANNEL INHIBIT - up	**IU**	
VOLTAGE CORRECTION by TEMPERATURE	**VCT**	
LOWER OUTPUT CURRENT	**L** (lower nominal output current)	

SI-PMT / APD SOLUTIONS, CATALOG P. 74

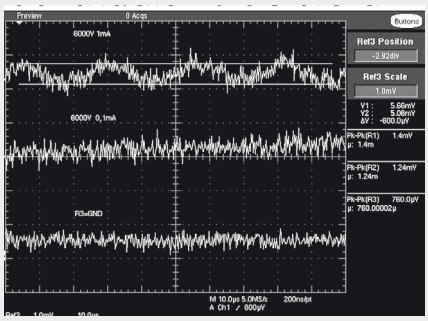
VCT L

- voltage correction by temperature (VCT)
- low output current versions (L)

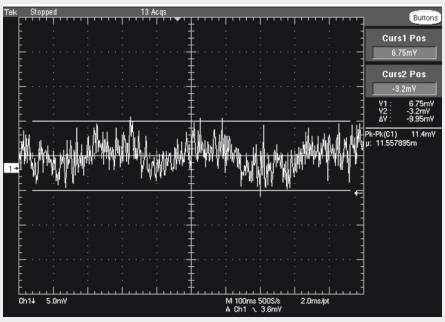
EHS HIGH PRECISION

VERSATILE HIGH PRECISION HV MODULE IN MULTIPLE FLOATING VERSIONS

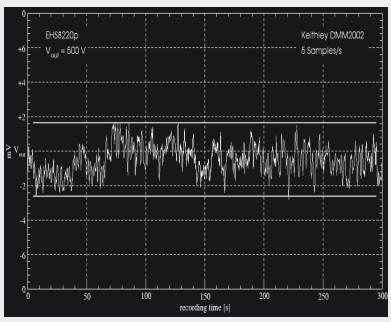
RIPPLE AND NOISE CLASSES



10 µs / DIV
R1 EHS 8060: 6000 V/1 mA | V_{P-P} = 1.4 mV
R2 EHS 8060: 6000 V/0.1 mA | V_{P-P} = 0.4 mV
R3 Ground noise of the oscilloscope 0.8 mV



100 ms / DIV
EHS 8060: 6000 V/1 mA | V_{P-P} = 11 mV



50 s / DIV
EHS 8220p | V_{out} = 500 V | V_{P-P} = 4 mV

LOW NOISE	V_{P-P} < 5 mV [f > 1 kHz] | V_{P-P} typ. < 20 mV / V_{P-P} max. 30 mV	[1 kHz > f > 10 Hz]
VERY LOW NOISE	V_{P-P} < 1 mV [f > 1 kHz] | V_{P-P} typ. < 3 mV / V_{P-P} max. 5 mV	[1 kHz > f > 10 Hz]
ULTRA LOW NOISE	V_{P-P} < 1 mV [f > 1 kHz] | V_{P-P} typ. < 3 mV / V_{P-P} max. 5 mV	**[1 kHz > f > 0.1 Hz]**

SPECIFICATIONS / SPEZIFIKATION

	EHS HP CFG	EHS HP FG
Polarity	factory fixed, positive or negative	
Potiential difference	56 V channel/GND	20 V channel/channel/GND, opt. up to 2 kV
Ripple and noise [f > 10 Hz]	< 3 - 10 mV	
Temperature coefficient	30 ppm/K | 10 ppm/K (option TC)	
Resolution voltage setting	$2 \bullet 10^{-6} \bullet V_{nom}$	
Resolution current setting [I_{out} > 20 µA]	$2 \bullet 10^{-6} \bullet I_{nom}$	
Resolution voltage measurement	$1 \bullet 10^{-6} \bullet V_{nom}$	
Resolution current measurement [I_{out} > 20 µA]	$1 \bullet 10^{-6} \bullet I_{nom}$	
Resolution current measurement [I_{out} < 20 µA]	50 pA	
Accuracy* **voltage measurement**	± (0.01 % • V_{out} +0.01 % • V_{nom})	
Accuracy* **current measurement** [I_{out} > 20 µA]	± (0.01 % • I_{out} +0.02 % • I_{nom})	
Accuracy* **current measurement** [I_{out} < 20 µA]	± (0.01 % • I_{out} + 4 nA)	
Rate of voltage change	up to 0.2 • V_{nom} / s | opt. up to 0.75 • V_{nom} / s	
HV connector	R51 | SHV	
Case	6U cassette, width 8 HP	
Protection	Safety loop, opt. INHIBIT per channel (ID / IU)	

*) **All specifications guaranteed from 1% · V_{nom} < V_{out} < V_{nom}**

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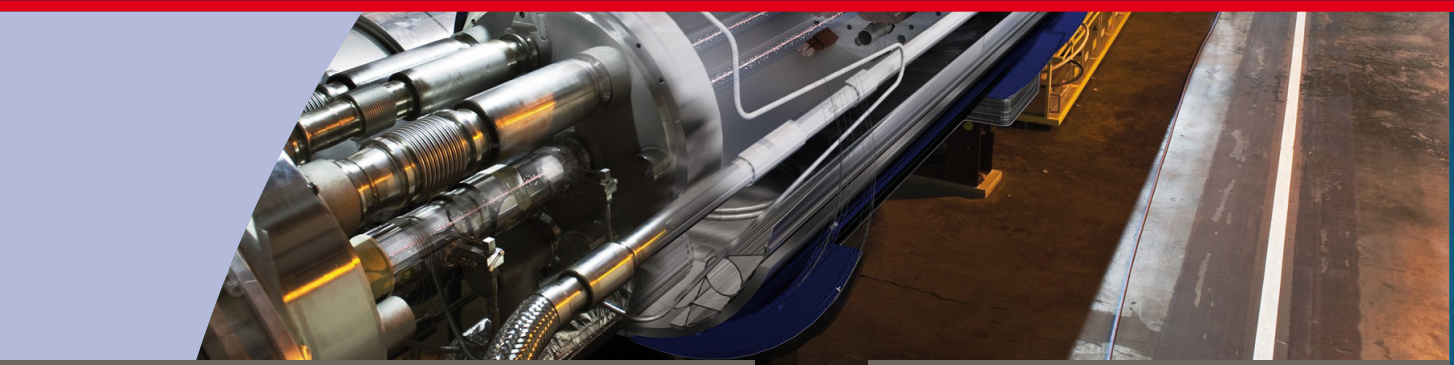
MMS-SYSTEM OVERVIEW

VERSATILE LOW / HIGH VOLTAGE POWER SUPPLY SYSTEM



MODULES

EDS SERIES MMS HV compatible

EHS SERIES MMS HV compatible

EBS SERIES MMS HV compatible

ESS SERIES MMS HV compatible

MPV SERIES MMS LV compatible

CRATES

ECH 44A MMS HV compatible

ECH 242 / 244 / 224 / 238 MMS HV compatible

MPOD / MPOD-MIX MMS HV compatible, MMS LV compatible

MPOD MINI / MICRO / MICRO-2 MMS HV compatible, MMS LV compatible

CG FG CFG VLN MMS

ALSO AVAILABLE: **EHS STANDARD**

- **4 / 8 / 16 / 32 channel, 100 V - 20 kV versions**
- **low ripple and noise, very low noise option VLN**
- **hardware voltage and current limits**
- **voltage and current control per channel**
- **programmable parameters (delayed trip etc.)**
- **options very low noise (VLN), INHIBIT down/up (ID / IU)**

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iseg is a manufacturer of very precise and stable High Voltage Power Supplies with focus on physics and industrial applications. The product portfolio includes AC/ DC, DC/DC and modular High Voltage systems. The company was founded in 1995. Continuous growth and innovation strengthened the company´s market position. **iseg** is well known for the delevop-ment of outstanding custom specific solutions for various special applications.

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(Central & Eastern European Countries)

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