

Datasheet

High Voltage Power Supply of the device class HPS, 10 kW, 19“



Attention

To avoid the possibility of lethal shock to the operator, the unit must not be operated with the cover removed.

There are no user maintainable parts inside the power supply!

Unit may only be operated with protective ground conductor connected.

The mains connector is equipped with basic insulation and a protective earth conductor. The unit may only be operated with protective earth conductor connected.

We decline all responsibility for damages and injuries caused by an improper use of the device. It is strongly recommended to read the manual before operation!

All information in this document is subject to change without notice. We take no responsibility for any error in this document. We reserve the right to make changes in the product design without any notification to the users.

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Technical data

Device class

Table 1: Technical data, device class

Device class HPS, 10 kW, 19“										
Output power P_{nom} [kW]	10									
Output voltage V_{nom} [kV]	1	2	3	4	5	6	8	10	20	100
Output current I_{nom} [A]	10	5	3.4	2.5	2	1.7	1.25	1	0.5	0.1
HV-connector	GES 11 HBT ¹⁾	LEMO PSA.3S.CTA.C62 ¹⁾						GES 21 HBT ¹⁾	GES 1100 B	
Polarity	n → negative or p → positive									
Efficiency	> 93% ($V_{in} = 400$ V, P_{nom})									
Ripple and noise (HPS)	Voltage control: $\Delta v < 0.9\% * V_{nom}$ ¹⁾ Current control: $\Delta i < 2\% * I_{nom}$ ¹⁾									
Stability	$\Delta v < 0.1\% * V_{nom}$ (for 8 h with constant conditions, after ½ h warmup)									
Voltage regulation	$\Delta v < 0.05\% * V_{nom}$ (ΔV_{in} , $0.1 * I_{nom} \leq I_{out} \leq I_{nom}$, $V_{out} > 0.1 * V_{nom}$)									
Current regulation	$\Delta i < 0.1\% * I_{nom}$ (ΔV_{in} , $0 \leq V_{out} \leq V_{nom}$)									
Accuracy	Voltage: < 1% * V_{nom} ¹⁾ for one year current: < 1% * I_{nom} ¹⁾ for one year									
Temperature coefficient	< 2 * 10 ⁻⁴ /K ¹⁾									
Control (local, FP)	Optional front panel operation via rotary encoders and displays (LCD)									
Remote control (all interfaces are electrically isolated)	AIO	Analogue signals				Level 0 V – 5 V				
		Digital signals				Low level 0 V - 4 V High level 8 V - 15 V or open				
	USB	Via USB Interface								
	SPS	Optional, separation of analogue (AIO) und digital (DIO) output signals ²⁾								
	RS232	Optional, via RS232 Interface ²⁾								
	CAN	Optional, via CAN Interface ²⁾								
	IEEE	Optional, via IEEE Interface ²⁾								
	Ethernet	Optional, via Ethernet Interface ²⁾								
Supply	$V_{in} = 3 \times 400$ V – AC ± 10% $I_{in} < 22$ A ($V_{in} = 360$ V, P_{nom}) Line frequency 47 Hz < f_l < 63 Hz Internally fused with circuit breaker 3 x 25 A with medium characteristic Inrush current approx. 20 A									
Cooling	Forced cooling with integrated fans (≤ 360 m ³ /h)									
Monitoring	ARC, three phase mains voltage, auxiliary voltage, over voltage, temperature, Interlock									
ARC-Management with adjustable parameters	ARC-Wait, ARC-Number, ARC-Time, ARC-Ramp-Time									
ARC-current limitation (ACL)	Optional, limitation of the output current during an ARC to less than 5 A, available only at an output voltage of 10 kV ¹⁾³⁾									

Table 2: Continuation: technical data, device class

Device class HPS, 10 kW, 19"		
Working conditions		
Temperature: 0°C to 50 °C Humidity: 20% to 90%, no condensation		
Storage conditions		
Temperature: -25°C to 80 °C Humidity: 20% to 90%, no condensation		
Electromagnetic compatibility	Emission	EN 55011 (curve A)
	Immunity	EN 61000 4-2, EN 61000 4-3, EN 61000 4-4, EN 61000 4-8
Safety standard		EN 61010-1 (VDE 0411)
Dimensions, Weight		1 kV ≤ V _{nom} ≤ 10 kV: 4U –19" depth: 500 mm, ca. 29 kg V _{nom} = 20 kV: 4U –19" depth: 500 mm, ca. 35 kg V _{nom} = 100 kV: 6U –19" depth: 500 mm, ca. 40 kg
Series LPS		Very low output voltage overshoot
HV outputs		Standard 1 HV output Optional 2 HV outputs ¹⁾
Current measurement of two HV outputs (2HC)		Optional, 2 HV outputs with additional current measurement of both HV outputs Available up to 10 kV output voltage ^{1), 3)}
Electrically isolated return of the high voltage		Potential difference between return conductor and protective ground up to ± 60 V ¹⁾

¹⁾ other values on request

²⁾ not all interfaces can be combined

³⁾ a combination out of the options ACL and 2HC increases the height of the device to 6 HE

Electrical wiring of the high voltage output

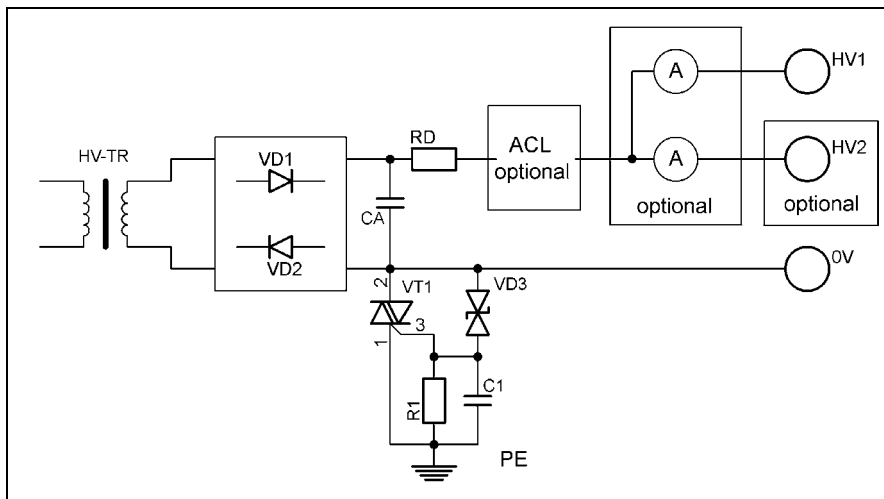


Figure 1: Electrical wiring of the high voltage output

Dimensions

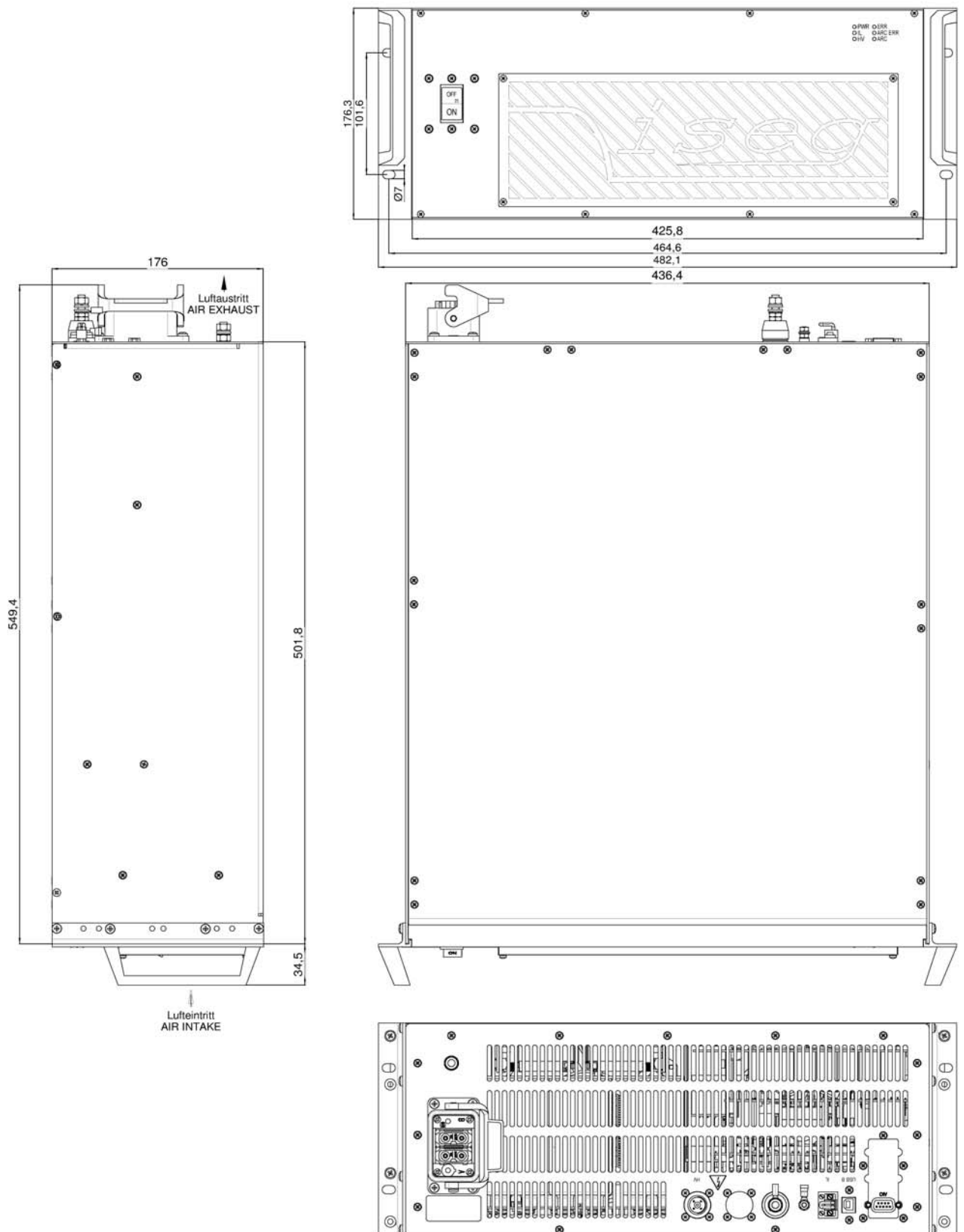


Figure 2: Dimensioned drawing (in mm), standard version of the rear panel, height 4U