

**Power Supplies  
for Deuterium Lamps**

# For Best Performance of Deuterium Lamps



Deuterium lamps are part of high value analytical instruments with high specifications in terms of reliability, accuracy and reproducibility. These specifications apply equally well to the deuterium lamps and their power supplies, as the stability of the UV radiation is an important factor for the reliability of the measurement data.

Modern deuterium lamps meet strict requirements with regard to noise, long term stability and operating life. Power supplies should in no way limit or affect the quality of the lamp parameters. Consequently, Heraeus offers its own power supplies, which have been specially developed through the long experience with deuterium lamps. Such devices are used in large numbers during the testing of new lamps. Their optimum operation in the field is guaranteed because of this regular practical usage.

Heraeus power supplies distinguish themselves by the stability of their electrical parameters and by their ignition properties, which protect the lamps, improve operating life and ensure reliable starting. Instrument manufacturers can save the cost of developing their own power supplies and make use of the experience of the lamp manufacturer, who is dedicated to ensuring the optimum performance of the deuterium lamps.

## PSD 186 Bench Top Power Supply



The PSD 186 R&D Deuterium Lamp Power Supply is the replacement for the high performance power supply PSD 181. A completely new design to incorporate state-of-the-art electronics, the PSD 186 is compatible with virtually all 30W Deuterium Lamps currently on the market.

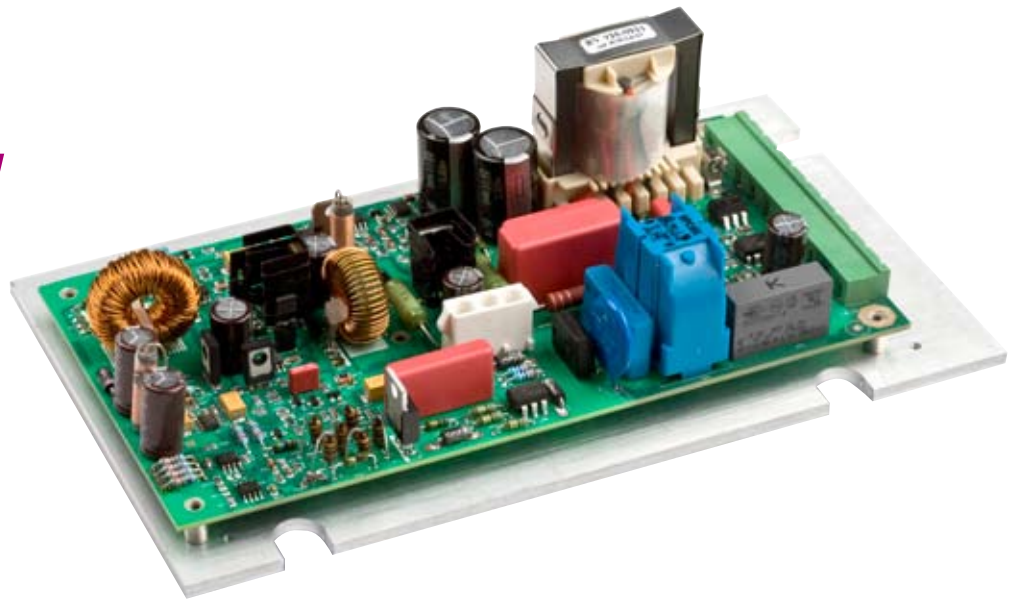
A large number of heater voltages and corresponding operating voltages are stored as data pairs in memory. They can be successively selected and shown on an LCD display on the front panel. The anode current is selectable by push button, either for 300 mA fixed or adjustable between 100–400 mA. Once the user has selected the appropriate heater parameters and lamp current, lamp ignition is started by pressing the “Start” button and operation is then fully automatic. Lamp current, anode voltage, heater rating and elapsed operating time can be displayed on two 4-digit displays on the front panel.

An Ethernet interface and a unique MAC address enable the PSD 186 to be remotely controlled by a PC. Operating parameters such as anode current/voltage and heater voltage/current are stored in the PSD 186 memory and can be downloaded to the controlling computer.

### Features

- Fully flexible R&D operation – matches virtually all 30 W Deuterium Lamps
- User-selectable heater voltages of 2, 2.5, 3, 6, 9, 10, and 12 V
- Very low noise and drift characteristics
- Ethernet interface and MAC address for remote control via PC
- LCD displays for user-selectable operating parameters
- Input voltage 85–264 VAC

# PSD 184 OEM Power Supply



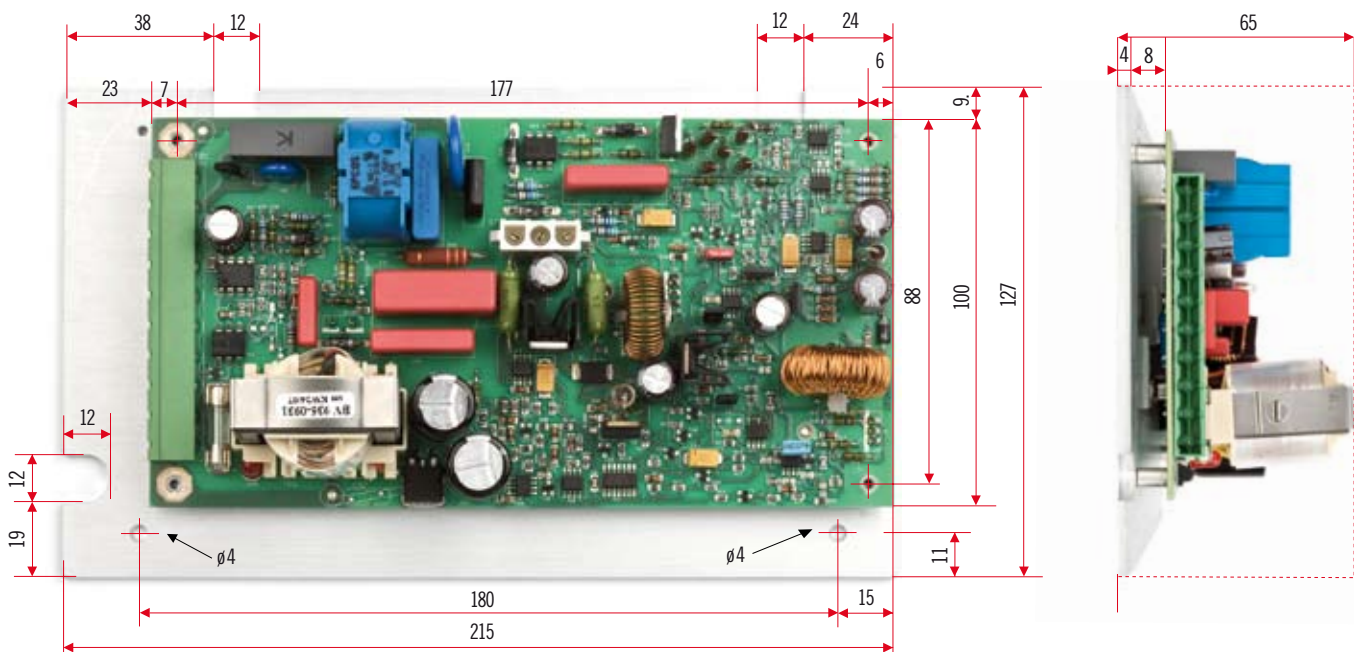
The PSD 184 Deuterium + TH Lamp Power Supply is a high performance, compact and highly reliable switching power supply. It is designed to operate on an 85–264 VAC input voltage. The supply has very low noise and drift characteristics and uses a novel ignition circuit (US patent No.5.530.319; EP No. 94 118 802.1) to ensure a soft and reliable arc ignition, even when the lamp is hot.

All Heraeus Deuterium Lamps with a 2.5 V heater can be operated in the optimum manner, to achieve maximum output stability and lifetime. In addition, a 24 VDC supply is provided to operate a Tungsten Halogen lamp from the Heraeus range. The PSD 184 is also suitable for most lamps made by other manufacturers.

The power supply is fully automatic, from lamp ignition to steady-state operation. The small size facilitates OEM integration of the power supply and lamp in a compact system, for flexibility and reduced cost.

## Features

- Compact OEM dual lamp design
- Soft and reliable ignition including hot-lamp restrike
- Provides optimum output and lifetime for Heraeus 2.5 V Deuterium Lamps
- Additional 24 VDC output for Heraeus Tungsten Halogen lamps
- Fully automatic from lamp start-up to steady-state operation
- Remote function control and status monitoring via external terminals
- Heating voltage 2.5 V
- Anode current 300 mA
- Input voltage 85–264 VAC



# PSD 185 OEM Power Supply



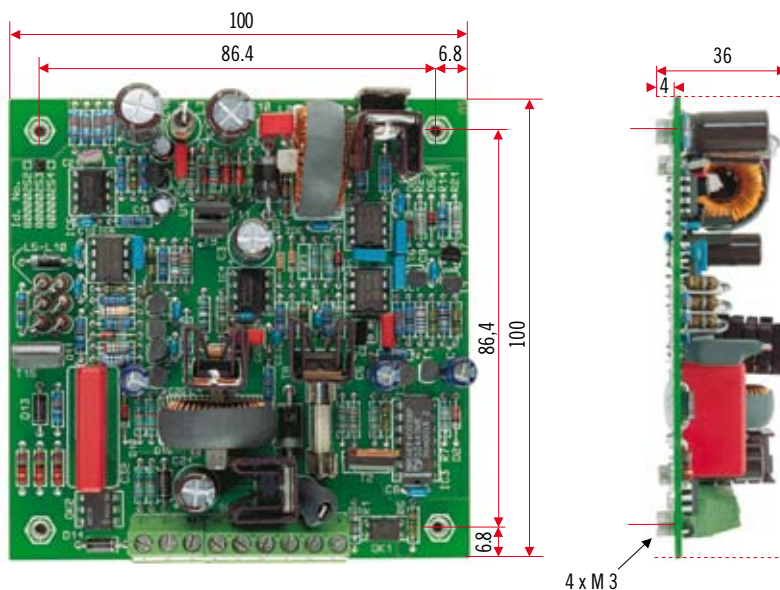
The PSD 185 Deuterium Lamp Power Supply is a high performance, low cost, compact and highly reliable switching power supply. It is designed to operate on a 24 VDC input voltage. The supply has very low noise and drift characteristics and uses a novel ignition circuit (US patent No.5.530.319; EP No. 94 118 802.1) to ensure a soft and reliable arc ignition, even when the lamp is hot. All Heraeus 30 W Deuterium Lamps with 2 V, 2.5 V, 10 V and 12 V stabilized direct current heaters can be operated in the optimum manner, to achieve maximum output stability and lifetime. The PSD 185 is also suitable for most lamps made by other manufacturers. The power supply is fully automatic, from lamp ignition to steady-state operation. The small size facilitates OEM integration of the power supply and lamp in a compact system, for flexibility and reduced cost.

## Automatic Lamp Operating Sequence

Automatic lamp ignition is started by connecting the external 24 VDC input voltage to the PSD 185 power supply. The lamp heater is then pre-heated (warm-up cycle) for a period of 10 seconds. After this, the strike voltage is applied and when the lamp strikes, the heater voltage is automatically adjusted to a preset level between 0 to 6 V depending on the lamp type used. Should the lamp not strike immediately, then further attempts are made automatically. The supply is preset to run the lamp at an anode current of 300 mA. An optional disable control is available by applying an external 5 VDC to the "disable" input.

## Features

- Low cost, compact OEM design
- Soft and reliable ignition including hot-lamp restrike
- Provides optimum output and lifetime for Heraeus direct current heater Deuterium Lamps
- Fully automatic from lamp start-up to steady-state operation
- Heating voltage 2, 2.5, 10 and 12 V
- Anode current 300 mA
- Input voltage 24 VDC



## Specifications

Type		PSD 184 OEM version	PSD 185 OEM version	PSD 186 Bench top version
Input	Input Voltage	85-264 Vac	24 ± 2.4 Vdc	85-264 Vac
	Input Current	1A max	2 A max	1 A max
	Input Power	80 VA	< 45 W	100 VA
	Fuse	on board 1A	on board, 2 Amp slow	1.6 A slow
Output	Anode Voltage (with Lamp)	55 – 115 Vdc	55 – 110 Vdc	55 – 115 Vdc
	Anode Voltage (w/o Lamp)	140 ± 5 Vdc	140 ± 5 Vdc	140 ± 5 Vdc
	Anode Current	300 mAdc ± 1 %	300 mAdc ± 1 %	300 mAdc ± 1 % fixed 100 – 400 mA adjustable
	Anode Current Stability (0.1–10Hz)	≤ 5 x 10 <sup>-6</sup> p-p @ 300 mA	≤ 5 x 10 <sup>-6</sup> p-p @ 300 mA	≤ 5 x 10 <sup>-6</sup> p-p @ 300 mA
	Anode Current Drift over temperature (after 30 min warm-up), 0–40 °C	≤ ± 0.5 % / °C	≤ ± 0.5 % / °C	≤ ± 0.5 % / °C
	Anode Current Drift over time (after 30 min warm-up, fixed temp.)	± 0.01 % / h max	± 0.01 % / h max	± 0.01 % / h max
	Heater Voltage, Heater Current	see below	see below	see below
	Warm-up Time	10 s	10 s	10 s
	Strike Voltage	600 – 50 V	600 – 50 V	600 – 50 V
	24 V Supply (20 W), 1 Adc max	+24Vdc (+1.5V/-0.5V)	n/a	n/a
	Rippel @ 1A	0.5Vss/100Hz, 0.1Vss/30kHz	n/a	n/a
	<b>Environmental Characteristics</b>			
Operation	Temperature Range	5 to 35 °C	5 to 35 °C	5 to 35 °C
	Humidity	< 95%, non condensing	< 95%, non condensing	< 95%, non condensing
	Altitude	0 to 2000m	0 to 2.000 m	0 to 2000m
Storage	Temperature Range	-40 to 60 °C	-40 to 60 °C	-40 to 60 °C
	Humidity	< 95%, non condensing	< 95%, non condensing	< 95%, non condensing
	Altitude	< 12.000 m	< 12.000 m	< 12.000 m
<b>Cooling Requirement</b>	No forced cooling required	30m <sup>3</sup> /h of forced air across the Components side of the board	n/a	
<b>Low Voltage Directive</b>	2006 / 95/EG	2006 / 95/EG	2006 / 95/EG	
<b>EMC-Directive</b>	EN 55011 Class B	EN 55011 Class B	EN 55011 Class B	
<b>Electrical Safety</b>	EN 61010 / 08/2002	EN 61010 / 08/2002	EN 61010 / 08/2002	
<b>Dimensions (L x W x H) in mm</b>	190 x 100 x50 (board only) 215x127x60 (w heat sink)	100 x 100 x 36	235 x 260 x 155	
<b>Dimensions (L x W x H) in inches</b>	8.46 x 5 x 2.36	4 x 4 x 1.4	9.25 x 10.24 x 6.1	
<b>Protection</b>	IP 00	IP 00	IP 20	
<b>Weight</b>	0.6 kg	160 g	3.3 kg	

## Heater Voltage and Current

Type	Part Number	Warm-up		Operation	
		Voltage (Vdc)	Current (Adc typ)	Voltage (Vdc)	Current (Adc typ)
PSD 184	80000267	2.5	6.0	0 / 1*	0 / 2.5
		2.0*	6.0	0 / 1*	0 / 3
PSD 185 (2 V)	80000252 80006380	2.0	6.0	0	0
		2.0	6.0	1	1.8
PSD 185 (2.5 V)	80000253 80033358	2.5	6.0	0	0
		2.5	6.0	1	1.8
PSD 185 (10 V)	80038340	10	1.1	6	0.6
PSD 185 (12 V)	80000254 80040607	12	0.9	3	0.3
		12	0.9	0	0
PSD 186	80026960	2; 2.5; 3; 6; 9; 10; 12	8.0 max	adjustable between 0–7	5.0 max

\* selectable by jumper

msscscientific Chromatographie-Handel GmbH  
Alexander-Meissner-Strasse 60 - 12526 Berlin - Germany  
Fon: +49 30 6270 6087 - Fax: +49 30 6270 6089  
email: [info@msscscientific.de](mailto:info@msscscientific.de) - web: [www.msscscientific.de](http://www.msscscientific.de)

Germany

**Heraeus Noblelight GmbH**

Heraeusstraße 12-14

63450 Hanau

Phone +49 (6181) 35 5085

Telefax +49 (6181) 35 7970

[hng-analyticallamps@heraeus.com](mailto:hng-analyticallamps@heraeus.com)

Great Britain

**Heraeus Noblelight Analytics Ltd.**

2-4 Nuffield Close

Cambridge CB4 1SS

Phone +44 (1223) 424100

Telefax +44 (1223) 426338

[hna-analytics@heraeus.com](mailto:hna-analytics@heraeus.com)

USA

**Heraeus Noblelight LLC**

2150 Northmont Parkway, Suite L

DULUTH, GA 30096

Phone +1 (770) 418-0707

Telefax +1 (770) 418-0688

[analytics-usa@heraeus.com](mailto:analytics-usa@heraeus.com)

China

**Heraeus Noblelight (Shenyang). Ltd.**

4F, 11<sup>th</sup> Building,

No. 99 Tianzhou Rd.,

Shanghai, 200233

Phone +86 (21) 5445 2255

Fax +86 (21) 5445 2410

[info.hns@heraeus.com](mailto:info.hns@heraeus.com)

[www.heraeus-noblelight.com](http://www.heraeus-noblelight.com)