



TruPlasma DC  
Series 3000  
Series 3000 (G2)

Take a closer look  
to perfection.



**TRUMPF Hüttinger**  
generating confidence

## State-of-the-art solutions for DC sputtering. TruPlasma DC Series 3000.

TruPlasma DC Series 3000 power supplies are designed to serve a broad range of DC sputtering applications. With a new generation of very compact, water-cooled units, TRUMPF Hüttinger now offers continuous DC power supplies that can replace pulsed generators in many sputtering applications.

The generators prove themselves under heavy use in industrial plasma processes. And they deliver their maximum power from 2 kilowatts (kW) to 160 kW across a wide load impedance range. Thus, TruPlasma DC Series 3000 is ideally suited for coating processes where reliability and performance are critical: solar cell production and architectural glass coating. In applications of hard, decorative and optical coatings the generators are key components for providing uncompromising results.

TruPlasma DC Series 3000 boasts TRUMPF Hüttinger's highly sophisticated arc management system CompensateLine. It allows for a dramatic reduction of the residual arc energy and ensures optimum results with regards to layer quality and deposition rate. Consequently, CompensateLine enables exceptionally high quality and homogeneous films also in highly arcing processes, like TCO processes.

TRUMPF's new generation of water-cooled DC power supplies features an enhanced arc energy reduction which is market-leading. The wide range of mains voltage, a high output voltage and the full encapsulation of the housing make the units state-of-the-art solutions for DC sputtering. Its compact size and a comprehensive set of communication interfaces support easy tool integration.

### Features

- CompensateLine allows for better results also in highly arcing processes
- Extremely low stored arc energy and fast recovery time
- State-of-the-art solution for DC sputtering applications
- High power density at very compact size
- Proven large-volume generator design and full water cooling

### Benefits

- Competitive replacement of expensive pulsed generators
- Considerably increased production yield
- High film quality and stable, repeatable processes
- Easy integration, even for output power of more than 40 kW
- High system uptime and reduced need for maintenance

## TruPlasma DC Series 3000 air-cooled version



## TruPlasma DC Series 3000 (G2) water-cooled version



### Output Parameters

<b>Output Power</b>	2 kW to 120 kW	
<b>Output Voltage</b>	800 V	
<b>Output Current</b>	5 A to 300 A	
<b>Regulation Modes</b>	Power, voltage, current, SimReg	
<b>Operation Duty Cycle</b>	100 %	
<b>Regulation Line ± 10 % Load 10 % – 90 %</b>	<b>Accuracy</b>	± 0.5 %
	<b>Repeatability</b>	± 0.2 %
<b>Ignition (Capability)</b>	1 500 V	
<b>Output Polarity</b>	Negative, positive <sup>1</sup> , floating <sup>1</sup>	
<b>Load Impedance</b>	5.3 Ω – 21.2 Ω (1:4) full power	

1) Available upon request.

### Output Parameters

<b>Output Power</b>	20 kW to 300 kW	
<b>Output Voltage</b>	1 000 V	
<b>Output Current</b>	50 A to 750 A	
<b>Regulation Modes</b>	Power, voltage, current, SimReg	
<b>Operation Duty Cycle</b>	100 %	
<b>Regulation Line ± 10 % Load 10 % – 90 %</b>	<b>Accuracy</b>	± 0.5 %
	<b>Repeatability</b>	± 0.2 %
<b>Ignition (Capability)</b>	1 500 V / Floating Anode <sup>1</sup>	
<b>Output Polarity</b>	Floating	
<b>Load Impedance</b>	5.3 Ω – 21.2 Ω (1:4) full power	

### Arc Detection Criteria

<b>Arc Detection Time</b>	< 100 ns
<b>I<sub>max</sub> Detection</b>	Adj. I <sub>max</sub> threshold: 10 % – 130 %
<b>Cross Detection (U x I)</b>	Adj. U <sub>x</sub> threshold: 0 V – 600 V Adj. I <sub>x</sub> threshold: 10 % – 100 %
<b>Dynamic Voltage Change</b>	Adj. dU threshold: 0 V – 600 V
<b>CompensateLine</b>	Up to 8 kARC/s <sup>2</sup>

2) Available upon request for selected models. Standard: 2 kARC/s

### Arc Detection Criteria

<b>Arc Detection Time</b>	< 100 ns
<b>I<sub>max</sub> Detection</b>	Adj. I <sub>max</sub> threshold: 10 % – 130 %
<b>Cross Detection (U x I)</b>	Adj. U <sub>x</sub> threshold: 0 V – 900 V Adj. I <sub>x</sub> threshold: 10 % – 100 %
<b>Dynamic Voltage Change</b>	Adj. dU threshold: 0 V – 900 V
<b>CompensateLine</b>	Up to 8 kARC/s <sup>3</sup>

3) Optionally available for all models. Standard: 2 kARC/s

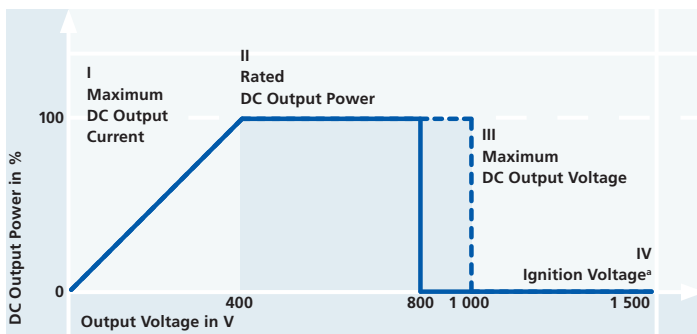
### Input parameters

<b>Line Voltage</b>	3 x 400 V ± 10 %
<b>Line Frequency</b>	50 Hz / 60 Hz ± 5 %
<b>Efficiency</b>	87 % – 92 %
<b>Power Factor</b>	0.92 – 0.94

### Input parameters

<b>Line Voltage</b>	3 x 400 V to 480 V ± 10 %
<b>Line Frequency</b>	50 Hz / 60 Hz ± 5 %
<b>Efficiency</b>	92 %
<b>Power Factor</b>	> 0.96

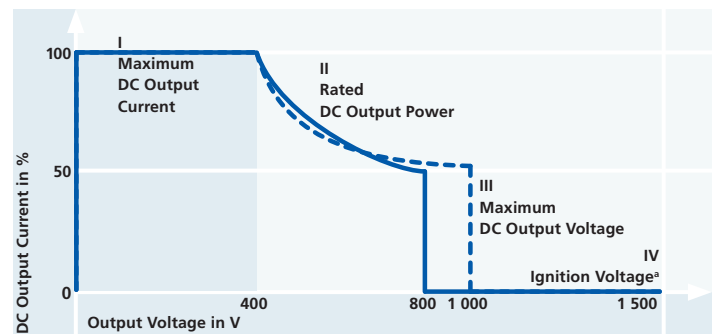
### V/P Diagram



a) Adjustable ignition voltage.

— air-cooled Version      - - - water-cooled Version

### V/I Diagram



a) Adjustable ignition voltage.

— air-cooled Version      - - - water-cooled Version



**Cooling Specifications**

**Air-cooled Version**

<b>Cooling System</b>	Forced Air Cooling / Fan Control
<b>Max. Inlet Air Temperature</b>	+35 °C

**Water-cooled Version**

<b>Max. Water Pressure</b>	2 bar to 7 bar
<b>Min. Differential Pressure</b>	2 bar
<b>Water Flow</b>	4 l/min to 12 l/min
<b>Max. Cooling Water Temperature</b>	+20 °C to +35 °C
<b>Ambient Temperature</b>	+5 °C to +45 °C operating

**Environmental Specifications**

<b>Ambient Temperature</b>	-25 °C to +55 °C storage
<b>Rel. Air Humidity</b>	5 % – 85 % not condensing
<b>Air Pressure<sup>4</sup></b>	800 hPa – 1 060 hPa operating

4) Max. 2 000 m above sea level. Special high altitude versions available upon request.

**Interfaces**

<b>Analog / Digital</b>	25-pin Sub-D (air-cooled version) 15-pin Sub-D (water-cooled version)
<b>RS 232 / RS 485</b>	9-pin Sub-D
<b>PROFIBUS<sup>5</sup></b>	9-pin Sub-D
<b>DeviceNet<sup>5</sup></b>	5-pin DeviceNet Connector
<b>EtherCAT<sup>5</sup></b>	2 x RJ45

5) Optionally available.

**Protection Class**

<b>Air-cooled Version</b>	IP 20
<b>Water-cooled Version</b>	IP 40

**Designation**

CE  
Declaration of conformity  
available upon request



## TruPlasma DC Series 3000

Name	Output Power (kW)	Output Current (A)	Dimensions (W x H x D, mm)	Weight (kg)
TruPlasma DC 3002 air-cooled	2	5	482 (19") x 133 (3U) x 465	27
TruPlasma DC 3005 air-cooled	5	12.5	482 (19") x 133 (3U) x 465	27
TruPlasma DC 3010 air-cooled	10	25	482 (19") x 133 (3U) x 677	40
TruPlasma DC 3020 air-cooled	20	50	482 (19") x 275 (6,2 U) x 732	77
TruPlasma DC 3025 air-cooled	25	62.5	482 (19") x 275 (6,2 U) x 732	77
TruPlasma DC 3030 air-cooled	30	75	482 (19") x 275 (6,2 U) x 732	77
TruPlasma DC 3040 air-cooled	40	100	482 (19") x 411 (9U) x 710	120
TruPlasma DC 3050 air-cooled	50	125	482 (19") x 411 (9U) x 710	120
TruPlasma DC 3060 air-cooled	60	150	482 (19") x 411 (9U) x 710	120
TruPlasma DC 3080 air-cooled	80 (2 x 40)	200	482 (19") x 411 (9U) x 710 <sup>6</sup>	2 x 120
TruPlasma DC 3100 air-cooled	100 (2 x 50)	250	482 (19") x 411 (9U) x 710 <sup>6</sup>	2 x 120
TruPlasma DC 3120 air-cooled	120 (2 x 60)	300	482 (19") x 411 (9U) x 710 <sup>6</sup>	2 x 120
TruPlasma DC 3020 (G2) water-cooled	20	50	482 (19") x 133 (3U) x 610	51
TruPlasma DC 3040 (G2) water-cooled	40	100	482 (19") x 178 (4U) x 610	85
TruPlasma DC 3060 (G2) water-cooled	60	150	482 (19") x 265 (6U) x 611	135
TruPlasma DC 3080 (G2) water-cooled	80 (2 x 40) <sup>6</sup>	200	482 (19") x 178 (4U) x 610 <sup>7</sup>	2 x 85
TruPlasma DC 3120 (G2) water-cooled	120 (2 x 60) <sup>6</sup>	300	482 (19") x 265 (6U) x 611 <sup>7</sup>	2 x 135
TruPlasma DC 3180 (G2) water-cooled	180 (3 x 60) <sup>6</sup>	450	482 (19") x 265 (6U) x 611 <sup>7</sup>	3 x 135
TruPlasma DC 3240 (G2) water-cooled	240 (4 x 60) <sup>6</sup>	600	482 (19") x 265 (6U) x 611 <sup>7</sup>	4 x 135
TruPlasma DC 3300 (G2) water-cooled	300 (5 x 60) <sup>6</sup>	750	482 (19") x 265 (6U) x 611 <sup>7</sup>	5 x 135

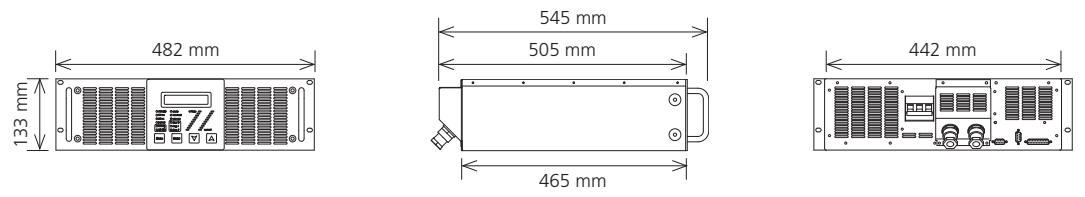
6) Master / Slave configuration.

7) Dimensions are given for each of the stacked units.



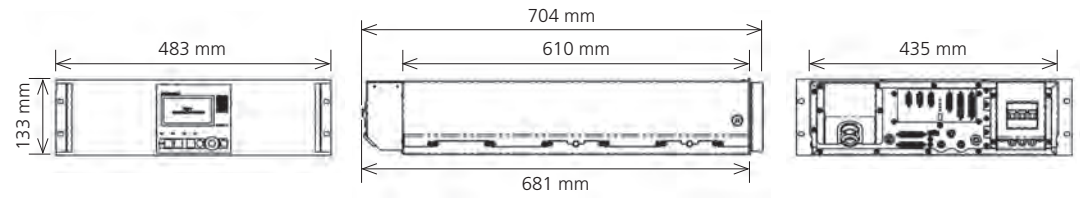
**Air-cooled version**

**TruPlasma DC 3005**

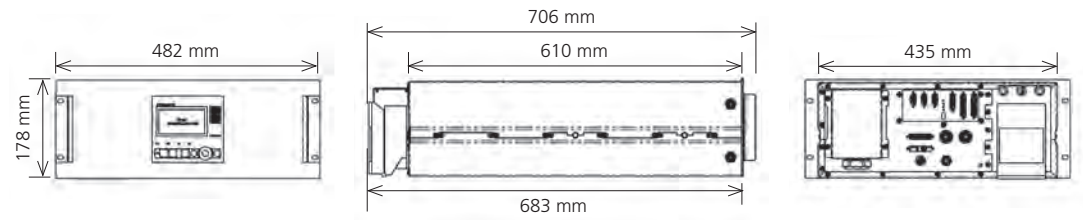


**Water-cooled version**

**TruPlasma DC 3020 (G2)**



**TruPlasma DC 3040 (G2)**



**TruPlasma DC 3060 (G2)**

