TruPlasma DC
Series 3000
Series 3000 (G2)

Take a closer look to perfection.

TRUMPF

TRUMPF Hüttinger
generating confidence

TRUMPF Hüttinger – driving innovations to higher levels.

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

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

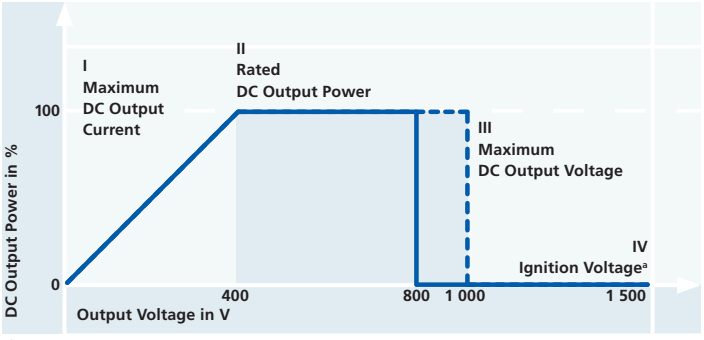
1) Available upon request.

Arc Detection Criteria	
Arc Detection Time	< 100 ns
I_{max} Detection	Adj. I_{max} threshold: 10 % – 130 %
Cross Detection (U x I)	Adj. U_x threshold: 0 V – 600 V Adj. I_x threshold: 10 % – 100 %
Dynamic Voltage Change	Adj. dU threshold: 0 V – 600 V
CompensateLine	Up to 8 kARC/s[2]

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

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

V/P Diagram



a) Adjustable ignition voltage.

air-cooled Version — water-cooled Version

TruPlasma DC Series 3000 (G2) water-cooled version

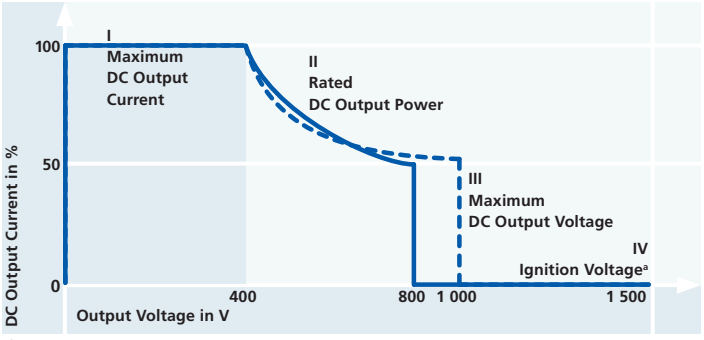
Output Parameters		
Output Power		20 kW to 300 kW
Output Voltage		1 000 V
Output Current		50 A to 750 A
Regulation Modes		Power, voltage, current, SimReg
Operation Duty Cycle		100 %
Regulation Line ± 10 % Load 10 % – 90 %	**Accuracy**	± 0.5 %
	Repeatability	± 0.2 %
Ignition (Capability)		1 500 V / Floating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

Arc Detection Criteria	
Arc Detection Time	< 100 ns
I_{max} Detection	Adj. I_{max} threshold: 10 % – 130 %
Cross Detection (U x I)	Adj. U_x threshold: 0 V – 900 V Adj. I_x threshold: 10 % – 100 %
Dynamic Voltage Change	Adj. dU threshold: 0 V – 900 V
CompensateLine	Up to 8 kARC/s[3]

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

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

V/I Diagram



a) Adjustable ignition voltage.

air-cooled Version — water-cooled Version

Cooling Specifications	
Air-cooled Version	
Cooling System	Forced Air Cooling / Fan Control
Max. Inlet Air Temperature	+35 °C
Water-cooled Version	
Max. Water Pressure	2 bar to 7 bar
Min. Differential Pressure	2 bar
Water Flow	4 l/min to 12 l/min
Max. Cooling Water Temperature	+20 °C to +35 °C
Ambient Temperature	+5 °C to +45 °C operating

Environmental Specifications	
Ambient Temperature	-25 °C to +55 °C storage
Rel. Air Humidity	5 % – 85 % not condensing
Air Pressure[4]	800 hPa – 1 060 hPa operating

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

Interfaces	
Analog / Digital	25-pin Sub-D (air-cooled version) 15-pin Sub-D (water-cooled version)
RS 232 / RS 485	9-pin Sub-D
PROFIBUS[5]	9-pin Sub-D
DeviceNet[5]	5-pin DeviceNet Connector
EtherCAT[5]	2 x RJ45

5) Optionally available.

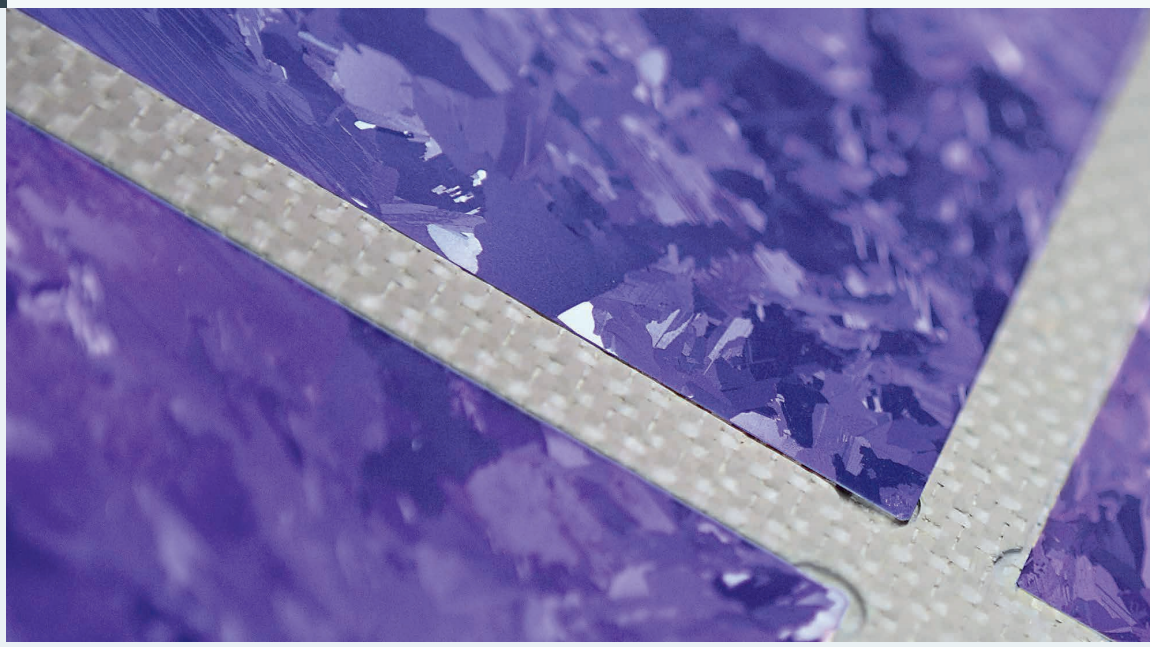
Protection Class	
Air-cooled Version	IP 20
Water-cooled Version	IP 40

Designation	
	CE Declaration of conformity available upon request

TruPlasma DC Series 3000

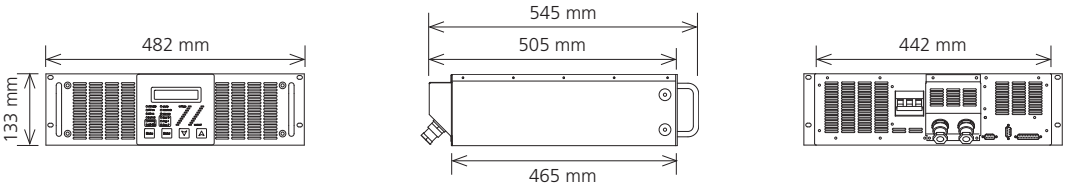
Name	Output Power (kW)	Output Current (A)	Dimensions (W x H x D, mm)	Weight (kg)
TruPlasma DC 3002 air-cooled	2	5	482 (19") x 133 (3U) x 465	27
TruPlasma DC 3005 air-cooled	5	12.5	482 (19") x 133 (3U) x 465	27
TruPlasma DC 3010 air-cooled	10	25	482 (19") x 133 (3U) x 677	40
TruPlasma DC 3020 air-cooled	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[6]	2 x 120
TruPlasma DC 3100 air-cooled	100 (2 x 50)	250	482 (19") x 411 (9U) x 710[6]	2 x 120
TruPlasma DC 3120 air-cooled	120 (2 x 60)	300	482 (19") x 411 (9U) x 710[6]	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)[6]	200	482 (19") x 178 (4U) x 610[7]	2 x 85
TruPlasma DC 3120 (G2) water-cooled	120 (2 x 60)[6]	300	482 (19") x 265 (6U) x 611[7]	2 x 135
TruPlasma DC 3180 (G2) water-cooled	180 (3 x 60)[6]	450	482 (19") x 265 (6U) x 611[7]	3 x 135
TruPlasma DC 3240 (G2) water-cooled	240 (4 x 60)[6]	600	482 (19") x 265 (6U) x 611[7]	4 x 135
TruPlasma DC 3300 (G2) water-cooled	300 (5 x 60)[6]	750	482 (19") x 265 (6U) x 611[7]	5 x 135

6) Master / Slave configuration.
7) Dimensions are given for each of the stacked units.



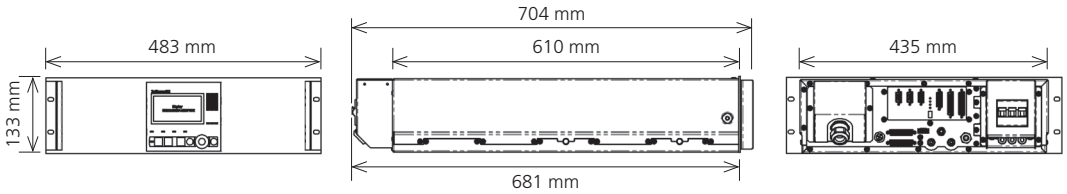
Air-cooled version

TruPlasma DC 3005

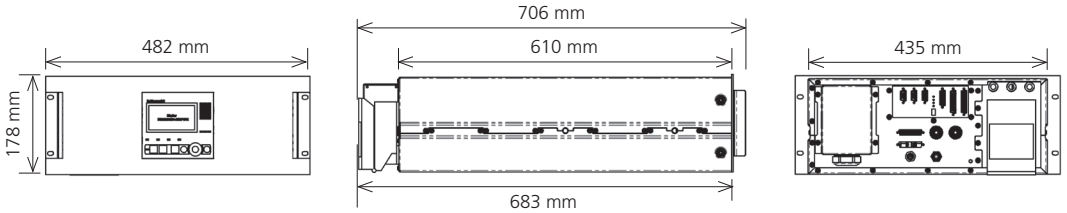


Water-cooled version

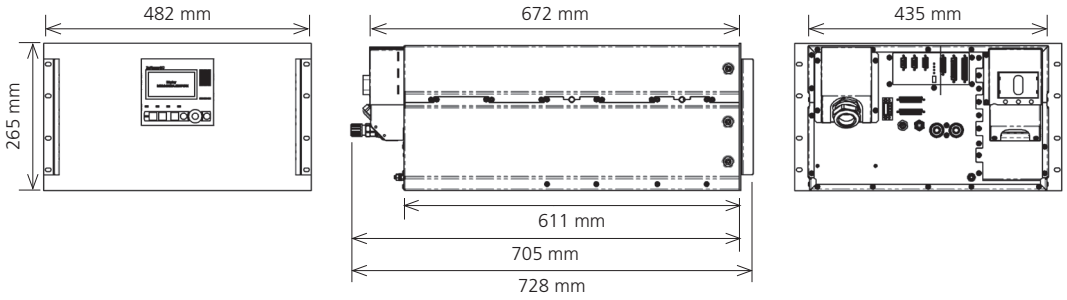
TruPlasma DC 3020 (G2)



TruPlasma DC 3040 (G2)



TruPlasma DC 3060 (G2)



TRUMPF Hüttinger GmbH + Co. KG
Bötzinger Straße 80 · 79111 Freiburg · Phone +49 761 8971-0
Fax +49 761 8971-1150 · E-Mail Info.Electronic@de.trumpf.com
Homepage www.trumpf-huettinger.com

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