

# TruPlasma VHF Series

Exploring new possibilities  
with state of the art VHF platforms

## Features

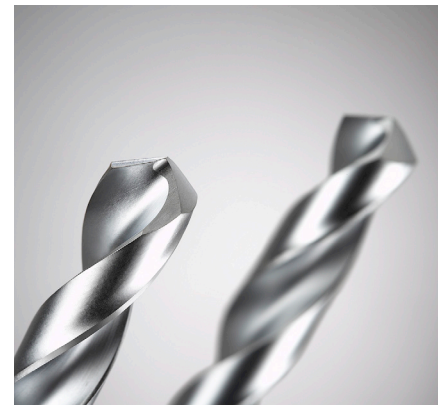
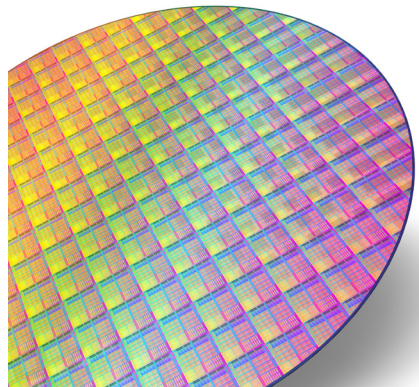
- Up to 400 kHz pulsing
- Modular platform concept
- Smart Auto Frequency Tuning
- Reliable and sophisticated process control
- Accuracy by design – Planar RF design
- Patented CombineLine Technology



## Applications

### Semiconductor Applications

- Chemical Vapor Deposition (CVD)
- Plasma Enhanced CVD
- Etching Applications
- Atomic Layer Deposition
- Atomic Layer Etch
- Reactive Ion Etching



### Industrial Coating Applications

- Tool Coating
- Hard Coating
- Decorative Coating

## Benefits



Flexible adaption to the process



Extremely efficient and cost effective



Stable process power for best productivity and reproducibility



Substantial contribution to process homogeneity and highest uptime



**TRUMPF Hüttinger**  
generating confidence

## Technical data

RF output		TruPlasma VHF 3000-5/27
Output power		5 000 W
Maximum reflected power		1 000 W
Nominal load impedance		50 $\Omega$
Output frequency		27.12 MHz $\pm$ 5%

Networking connection data	
Line voltage	200 – 480 VAC $\pm$ 10%, 3 phase and GND
Line frequency	50/60 Hz $\pm$ 3 Hz
Maximum grid power consumption	9.3 kVA
Power factor (cos $\Phi$ )	> 0.9

Communication interfaces	
Sync interfaces	yes
Analog / digital	yes
RS 232 / RS 485	yes <sup>1</sup>
EtherCAT	yes <sup>1</sup>
DeviceNet	yes <sup>1</sup>

Housing	
Weight	32 kg
IP protection class	30

Cooling requirements	
Maximum water pressure	8 bar
Minimum pressure difference	2 bar
Minimum flow rate	6 l/min - 12 l/min (temperature-dependent)
Coolant temperature	5 °C – 35 °C

General	
Wall-plug efficiency at full nominal power	> 70 %
Certificates / standards	Semi S2, SEMI F47, UL, CE, RoHs

Ambient conditions	
Outside temperature	5 °C – 40 °C
Humidity	5 % – 85 %
Barometric pressure	79.5 kPa – 106 kPa

1) RS-232 / RS-485 or EtherCAT or DeviceNET

## Technical data

RF output	
	<b>TruPlasma VHF 3000-10/27</b>
Output power	10 000 W
Maximum reflected power	2 000 W
Nominal load impedance	50 $\Omega$
Output frequency	27.12 MHz $\pm$ 5%

Networking connection data	
Line voltage	200 – 480 VAC $\pm$ 10%, 3 phase and GND
Line frequency	50/60 Hz $\pm$ 3 Hz
Maximum grid power consumption	18.6 kVA
Power factor (cos $\Phi$ )	> 0.9

Communication interfaces	
Sync interfaces	yes
Analog / digital	yes
RS-232 / RS-485	yes <sup>1</sup>
EtherCAT	yes <sup>1</sup>
DeviceNet	yes <sup>1</sup>

Housing	
Weight	53 kg
IP protection class	30

Cooling requirements	
Maximum water pressure	8 bar
Minimum pressure difference	2 bar
Minimum flow rate	6 l/min - 12 l/min (temperature-dependent)
Coolant temperature	5 °C – 35 °C

General	
Wall-plug efficiency at full nominal power	> 70 %
Certificates / standards	Semi S2, SEMI F47, UL, CE, RoHs

Ambient conditions	
Outside temperature	5 °C – 40 °C
Humidity	5 % – 85 %
Barometric pressure	79.5 kPa – 106 kPa

1) RS-232 / RS-485 or EtherCAT or DeviceNET

## Technical data

<b>RF output</b>		<b>TruPlasma VHF 3000-20/27</b>
Output power		20 000 W
Maximum reflected power		4 000 W
Nominal load impedance		50 $\Omega$
Output frequency		27.12 MHz
<b>Networking connection data</b>		
Line voltage		400 – 480 VAC $\pm$ 10%, 3 phase and GND
Line frequency		50/60 Hz $\pm$ 3 Hz
Maximum grid power consumption		31.6 kVA
Power factor (cos $\Phi$ )		> 0.9
<b>Communication interfaces</b>		
Sync interfaces		yes
Analog / digital		yes
RS-232 / RS-485		yes <sup>1</sup>
EtherCAT		yes <sup>1</sup>
DeviceNet		yes <sup>1</sup>
<b>Housing</b>		
Weight		105 kg
IP protection class		30
<b>Cooling requirements</b>		
Maximum water pressure		8 bar
Minimum pressure difference		2 bar
Minimum flow rate		2x 10 l/min - 15 l/min (temperature-dependent)
Coolant temperature		5 °C – 35 °C
<b>General</b>		
Wall-plug efficiency at full nominal power		> 70 %
Certificates / standards		CE, RoHs
<b>Ambient conditions</b>		
Outside temperature		5 °C – 40 °C
Humidity		5 % – 85 %
Barometric pressure		79.5 kPa – 106 kPa

1) RS-232 / RS-485 or EtherCAT or DeviceNET

## Technical data

RF output		TruPlasma VHF 3000-5/40
Output power		5 000 W
Maximum reflected power		1 000 W
Nominal load impedance		50 $\Omega$
Output frequency		40.68 MHz $\pm$ 5%
Networking connection data		
Line voltage		200 – 480 VAC $\pm$ 10%, 3 phase and GND
Line frequency		50/60 Hz $\pm$ 3 Hz
Maximum grid power consumption		9.3 kVA
Power factor (cos $\Phi$ )		> 0.9
Communication interfaces		
Sync interfaces		yes
Analog / digital		yes
RS-232 / RS-485		yes <sup>1</sup>
EtherCAT		yes <sup>1</sup>
DeviceNet		yes <sup>1</sup>
Housing		
Weight		32 kg
IP protection class		30
Cooling requirements		
Maximum water pressure		8 bar
Minimum pressure difference		2 bar
Minimum flow rate		6 l/min - 12 l/min (temperature-dependent)
Coolant temperature		5 °C – 35 °C
General		
Wall-plug efficiency at full nominal power		> 70 %
Certificates / standards		Semi S2, SEMI F47, UL, CE, RoHs
Ambient conditions		
Outside temperature		5 °C – 40 °C
Humidity		5 % – 85 %
Barometric pressure		79.5 kPa – 106 kPa

1) RS-232 / RS-485 or EtherCAT or DeviceNET

## Technical data

RF output	TruPlasma VHF 3000-10/40
Output power	10 000 W
Maximum reflected power	2 000 W
Nominal load impedance	50 $\Omega$
Output frequency	40.68 MHz $\pm$ 5%

Networking connection data	
Line voltage	200 – 480 VAC $\pm$ 10%, 3 phase and GND
Line frequency	50/60 Hz $\pm$ 3 Hz
Maximum grid power consumption	18.6 kVA
Power factor (cos $\Phi$ )	> 0.9

Communication interfaces	
Sync interfaces	yes
Analog / digital	yes
RS-232 / RS-485	yes <sup>1</sup>
EtherCAT	yes <sup>1</sup>
DeviceNet	yes <sup>1</sup>

Housing	
Weight	53 kg
IP protection class	30

Cooling requirements	
Maximum water pressure	8 bar
Minimum pressure difference	2 bar
Minimum flow rate	6 l/min - 12 l/min (temperature-dependent)
Coolant temperature	5 °C – 35 °C

General	
Wall-plug efficiency at full nominal power	> 70 %
Certificates / standards	Semi S2, SEMI F47, UL, CE, RoHs

Ambient conditions	
Outside temperature	5 °C – 40 °C
Humidity	5 % – 85 %
Barometric pressure	79.5 kPa – 106 kPa

1) RS-232 / RS-485 or EtherCAT or DeviceNET

## Technical data

RF output		TruPlasma VHF 1000-2.5/60
Output power		2 500 W
Maximum reflected power		500 W
Nominal load impedance		50 Ω
Output frequency		60 MHz ± 5%
Networking connection data		
Line voltage		200 – 480 VAC ± 10%, 3 phase and GND
Line frequency		50/60 Hz ± 3 Hz
Maximum grid power consumption		4 kVA
Power factor (cos Φ)		> 0.9
Communication interfaces		
Sync interfaces		yes
Analog / digital		yes
RS-232 / RS-485		yes <sup>1</sup>
EtherCAT		yes <sup>1</sup>
DeviceNet		yes <sup>1</sup>
Housing		
Weight		< 23 kg
IP protection class		30
Cooling requirements		
Maximum water pressure		8 bar
Minimum pressure difference		2 bar
Minimum flow rate		6 l/min - 12 l/min (temperature-dependent)
Coolant temperature		5 °C – 35 °C
General		
Wall-plug efficiency at full nominal power		> 70 %
Certificates / standards		Semi S2, SEMI F47, UL, CE, RoHs
Ambient conditions		
Outside temperature		5 °C – 40 °C
Humidity		5 % – 85 %
Barometric pressure		79.5 kPa – 106 kPa

1) RS-232 / RS-485 or EtherCAT or DeviceNET

# Technical data

RF output		TruPlasma VHF 3000-10/60
Output power		10 000 W
Maximum reflected power		2 000 W
Nominal load impedance		50 Ω
Output frequency		60 MHz ± 5%
Networking connection data		
Line voltage		200 – 480 VAC ± 10%, 3 phase and GND
Line frequency		50/60 Hz ± 3 Hz
Maximum grid power consumption		18.6 kVA
Power factor (cos Φ)		> 0.9
Communication interfaces		
Sync interfaces		yes
Analog / digital		yes
RS-232 / RS-485		yes <sup>1</sup>
EtherCAT		yes <sup>1</sup>
DeviceNet		yes <sup>1</sup>
Housing		
Weight		53 kg
IP protection class		30
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Maximum water pressure		8 bar
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Coolant temperature		5 °C – 35 °C
General		
Wall-plug efficiency at full nominal power		> 70 %
Certificates / standards		Semi S2, SEMI F47, UL, CE, RoHs
Ambient conditions		
Outside temperature		5 °C – 40 °C
Humidity		5 % – 85 %
Barometric pressure		79.5 kPa – 106 kPa

1) RS-232 / RS-485 or EtherCAT or DeviceNET

