MediPlas

Reactor

Series/Type: **V 1.0**
Ordering code: **Z63000Z2910Z1Z84 (Prototype)**

Date: 2023-11-27
Version: 8

	**Note:** This product is a development sample and has prototype status only. *Cautions and warnings* and *Important notes* must be observed.

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Intended use

Electro-ceramic ozone generator with active temperature control

Features

- Compact and highly efficient
- Active temperature control (cooling and heating)
- Easy to integrate
- Continuous operation

Specification

Maximal continuous input DC power	40 W
Input voltage fan	3 … 12 V
Input voltage temperature control	±12 V (max. 3 A)
HV input	1.5 … 5 kV AC (~ 20 kHz)
Gas flow	0 … 10 slm
Dimensions	78 x 63 x 78 (w x h x d) mm without hoses
Weight	0.23 kg
Operating temperature:	0 °C … 50 °C
Agency approvals	RoHS
Cooling	Active with fan

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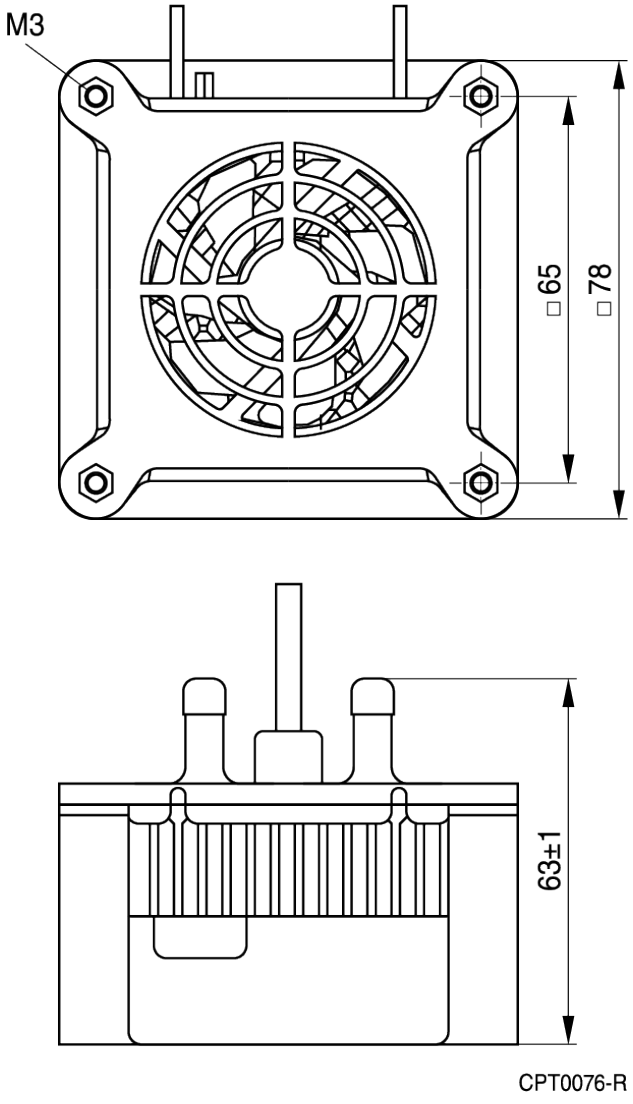
Dimensional drawings



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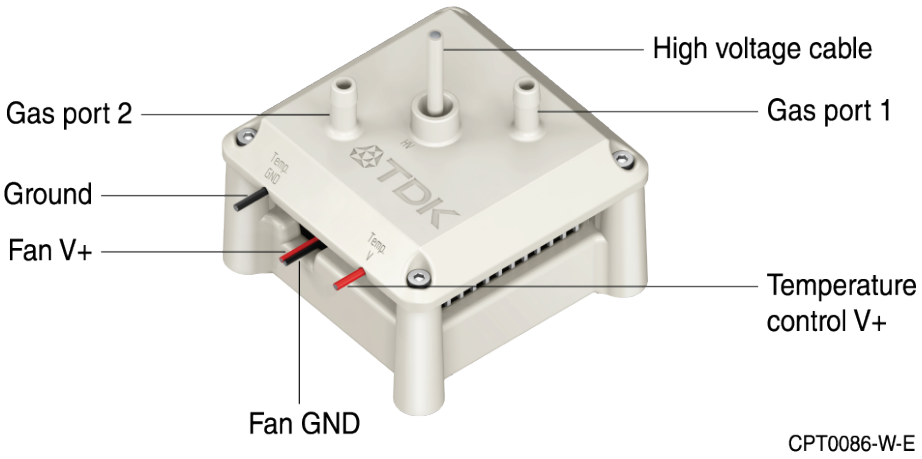
Interfaces: cables and ports



Interfaces

Interfaces	Type	Size 1	Size 2
Gas port 1	Hose connector	Ø 6 mm	-
Gas port 2	Hose connector	Ø 6 mm	-
High voltage	HV cable 25 kV	AWG 20	L = 150 ±20 mm
Temperature control V+	Wire red	AWG 20	L = 200 ±20 mm
Ground	Wire black	AWG 20	L = 200 ±20 mm
Fan V+	Wire red	AWG 26	L = 290 ±10 mm
Fan GND	Wire black	AWG 26	L = 290 ±10 mm

Work range

Value	Min.	Typ.	Max.
Gas flow [slm]	0	1	10
Temperature control [A]	- 3	2	3
Fan [V]	3	12	12
High voltage power [W]	5	10	20
O_3 concentration* [ppm]	0	1500	4000

*dry air, 20 °C room temperature, 0.5 slm

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Environmental

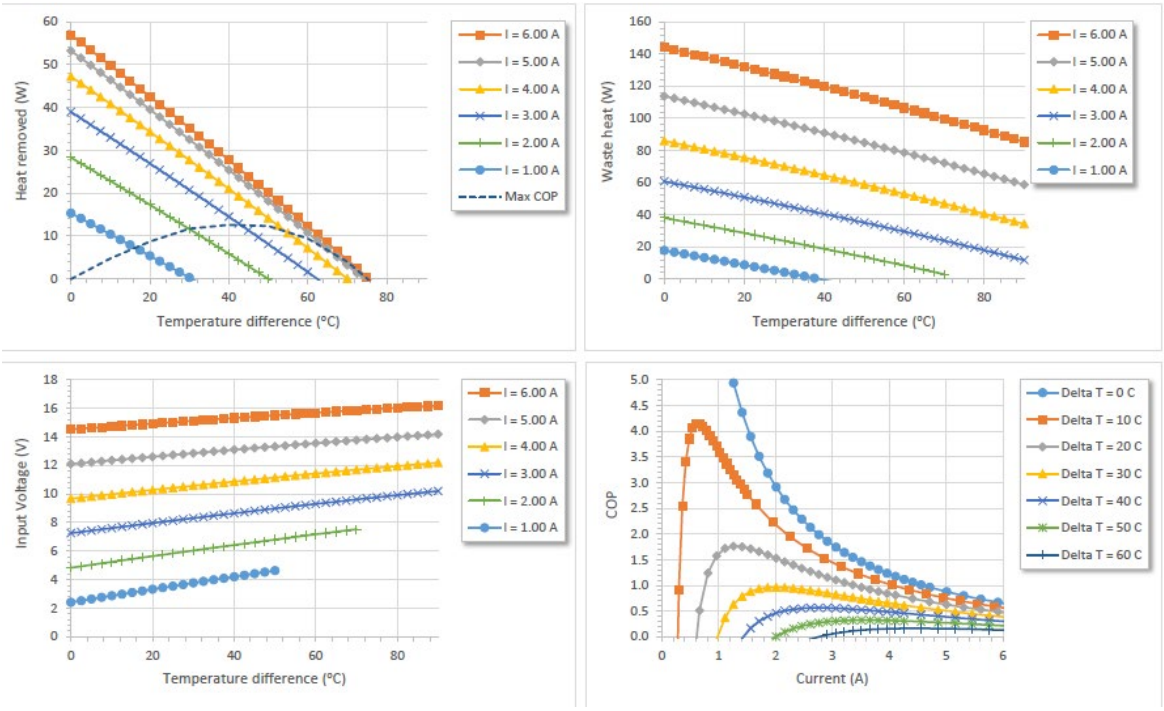
Operating temperature	°C	5 … 40
Operating humidity	% RH	up to 85
Cooling	W	~ 40 W, depending on working point
Altitude	m	3000
Withstand voltage	V AC	6600 V (HV to GND)

Temperature control

To influence the chemistry inside of the reactor, the temperature can be controlled by a thermoelectric cooler module. The ‘hot side’ is coupled to the air-cooler system.

The “reactor temperature” can be calculated by measuring the plasma power (“heat removed”) and the temperature difference of the module according to the specification of the cooler module:

Data sheet – at hot side temperature °C



To cool the inside of the reactor, a positive voltage must be applied to the red cable opposite the black earth cable. To heat the inside, a negative voltage can also be applied to the red cable.

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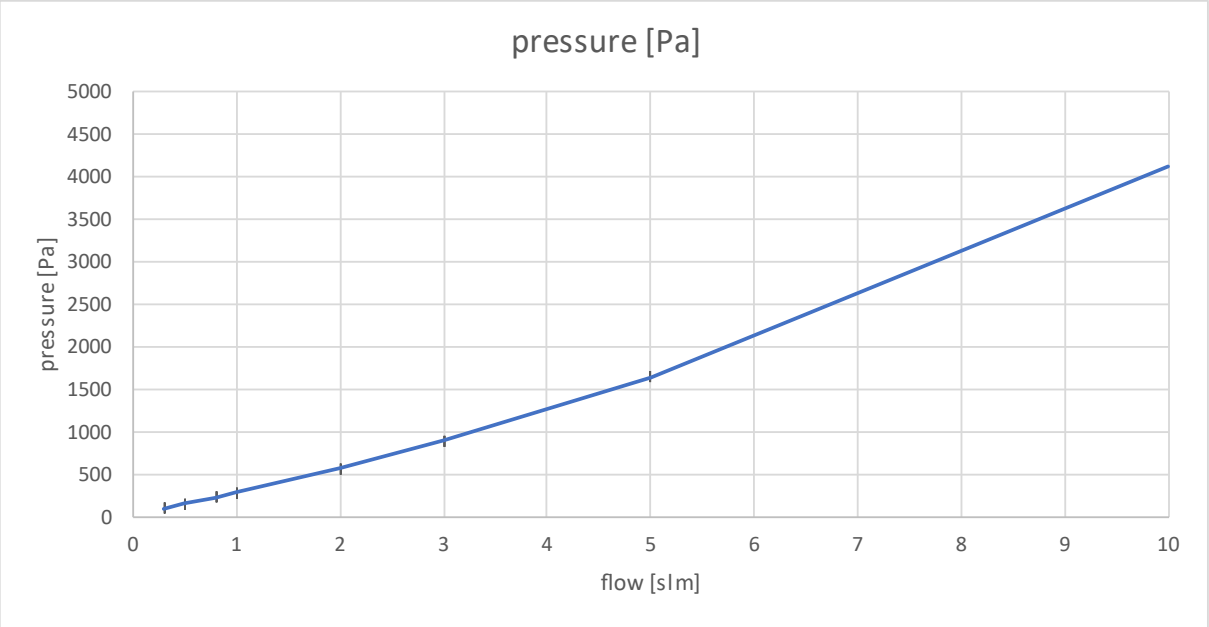
Pressure drop

The MediPlas Reactor is designed for a wide range of applications and operating conditions. The gas flow can be up to 10 slm. The pressure drop across the reactor per flow is almost linear over the entire application range and can be seen in the following graph:



Ozone production

The ozone production rate strongly depends on the electrical parameters and the composition of the feed gas.

The drier the feed gas and the higher the oxygen content of the feed gas, the higher the expected ozone output of the reactor.

Depending on the set electrical parameters, the quantity and the type of feed gas used, ozone generation rates of up to 1 g/h with dry air, or up to 30 g/h with pure oxygen can be achieved on a stationary basis.

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Cautions and warnings

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	**Danger!** High voltage! Always ensure that the high voltage parts are connected correctly. Do not open the device. If the device is damaged, disconnect the voltage supply and contact the manufacturer.
	**Danger!** Hot surface! The cooler surface can be hot. Do not touch during operation.
	**Caution!** Nitrogen oxides and ozone (O_3)! The reactor produces nitrogen oxides, ozone, and other hazardous substances, depending on feed gas supply and power settings. – Make sure the working area is well ventilated. – Install a sufficient gas extraction. – Note that national health and safety measures must be observed when operating the device. – Only use the device in well vented areas or in conjunction with a suitable extraction device. – Do not leave the device running unattended.
	**Danger!** Do not use the reactor in potentially explosive atmospheres (EX)
	**Caution!** Operation of the reactor is not permitted – in case of insufficient ventilation/insufficient heat exchange. – in case of condensing intake air and heavy dust deposits. – at altitudes above 3000 m above sea level.

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Important notes

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Release 2023-08