Standard Module for Handheld Device piezobrush PZ3

Piezoelectric based cold plasma generator

Series/Type:	**F series packaged component**
Ordering code:	**B54321P5100A020**
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Version:	1

Standard module for usage in the handheld device piezobrush® PZ3 by Relyon Plasma, a TDK group company

Applications

- Cleaning of glass and plastics (no metal)
- Surface activation and surface functionalisation for optimized wettability
- Plasma-assisted laminating process
- Plasma-assisted adhesive bonded joints
- Plugging and sealing
- Plasma induced reduction of metal surfaces
- Chemical-free bleaching of textiles
- Handling of food products for quality and shelf life
- Multi-component injection moulding

Features

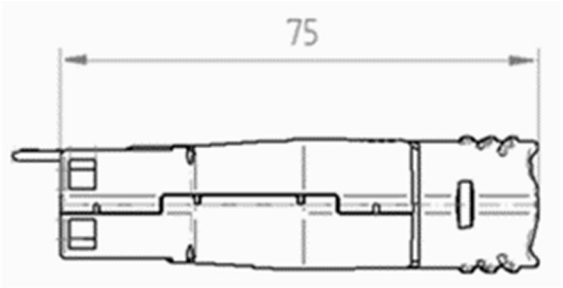
- Direct high voltage discharge unit for generation of plasma
  - No high voltage wiring
  - No high voltage plugs
  - Ready to use with handheld device piezobrush PZ3
- High ionization rate and efficient ozone generation rate
- Multi gas ignition
- Low power
- High efficiency
- No magnetic fields

Construction

- RoHS compatible PZT (lead zirconium titanate) ceramic
- Cu inner electrodes
- Cu/Ag outer electrodes
- Cu/Ag wires
- PBT housing and nozzle
- EEPROM circuit board
- Contains SVHC substance 12626-81-2

piezo element

Dimensional drawing



Dimensions in mm

Specification

Parameter	Symbol	Value	Unit
Electrical data			
Max. voltage for continuous operation	V_{in}	12	V[1)]
Max. continuous operation input power	P_{in}	typ. 8[2)]	W
Typical dimensions			
Length	l	75	mm
Width	b	23.6	mm
Height	h	20.4	mm
Weight	m	24.7	g
Operating conditions			
Operating temperature range	Top	10 … 40	°C
Max. temperature on CeraPlas element	T_{max}	+85	°C
Air humidity rel.[3)]	rH	< 80	%
Typical application parameters			
Plasma temperature	TPlasma	< 50	°C
Treatment distance	d_{Treat}	2 … 10	mm
Width of treatment[4)]	b_{Treat}	5 … 29	mm
Treatment speed	v_{Treat}	0 … 20	mm/s
Storage conditions			
Air humidity rel.[3)]	rH	< 80	%
Temperature	T_{St}	0 … 60	°C

1) Unless otherwise noted voltages and currents are rated in RMS-values
2) Strongly influenced by cooling efficiency of CeraPlas element
3) Non-condensing
4) Depending on process parameters

Please note: The change module is a wear part; which service life depends on the operating conditions.

Cautions and warnings

General

- Do not use the change module for purposes not identified in our specifications, application notes and data books.
- Ensure the suitability of change module in particular by testing it for reliability during design-in. Always evaluate the change module under worst-case conditions.
- Pay special attention to the reliability of the change module intended for use in safety-critical applications (e.g. medical equipment, automotive, spacecraft, nuclear power plant).

Design notes

- Do not use the change module in safety-relevant applications.
- Ensure that surface temperature does not exceed maximum operating temperature.
- Specified values only apply to change modules that have not been subject to prior electrical, mechanical or thermal damage.

Storage

- Store the change modules in a dry place. This will prevent corrosion of the electrical contacts.
- Only store change modules in their original packaging. Do not open the package before storage.
- Do not store change modules where they are exposed to heat or direct sunlight. Otherwise the packaging material may be deformed.
- Avoid contamination of the change module during storage, handling and processing.
- Avoid storing change modules in harmful environments where they are exposed to corrosive gases for example (SOx, Cl).

Handling

- Do not drop change modules and allow them to be chipped.
- Do not touch the piezo element and the contact board.
- Avoid contamination of the change module during handling.
- Do not touch the piezo element during operation (danger of high voltage, damping the acoustic wave inside the ceramic body, damaging the ceramic body).
- Do not reach into the work area during plasma generation.
- Read the operating instructions of piezobrush PZ3 by Relyon Plasma carefully before assembling, installing and starting up the device.
- Always follow the safety instructions in the operating instructions of piezobrush PZ3 by Relyon Plasma, because non-compliance may result in serious or fatal injury.
- Train your staff.

Operation

- Use the change module only within the specified operating temperature range.
- Use the change module only within specified voltage and power ranges.

- The change module has to be operated in a dry atmosphere, which must not contain any additional chemical vapour or substances.
- Environmental conditions must not harm the change module. Only use them in normal atmospheric conditions.
- Prevent a change module from contacting liquids and solvents. Make sure that no water enters a change module.
- Avoid dewing and condensation.
- CeraPlas elements are mainly designed for encased applications. Under all circumstances avoid exposure to:
  - direct sunlight
  - rain or condensation
  - steam, saline spray
  - corrosive gases
  - atmosphere with reduced oxygen content
  - explosive zones
  - areas with severe build-up of dust
  - altitudes more than 2000 m above sea level
  - strong vibrations
- Avoid electrically conducting materials closer than 60 mm to the front third of the piezobrush PZ3, when using the change module “Standard”.
- High voltage hazard! The piezo element can reach voltages of up to 10 kV!
- The exchange modules can become hot during operation. Do not touch them until they have cooled down.
- The work piece to be treated can become heated up by the plasma process depending on the process parameters. If necessary, allow the work piece to cool down before handling it.
- Take special care of the toxicity of ozone! Use a ventilation system to remove the ozone. Depending on air-flow around the output of the transformer the ozone concentration can reach very high values!
- Use air or inert gases only! Do not use flammable working gases!
- TDK is not responsible for any harm during operating and testing of the change module!
- Read the operating instructions of piezobrush PZ3 by Relyon Plasma carefully before assembling, installing and starting up the device.
- Always follow the safety instructions in the operating instructions of piezobrush PZ3 by Relyon Plasma, because non-compliance may result in serious or fatal injury.
- Train your staff.

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Important notes

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