PiezoBrush PZ3-c

PiezoBrush PZ3-c evaluation kit

Series/Type: **CeraPlas F-Type**
Ordering code: **Z63000Z2910Z1Z82 (Prototype)**

Date: 2023-11-27
Version: 1

	**Note:** This product contains development samples which have prototype status only. *Cautions and warnings* and *Important notes* must be observed.

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Applications

The PiezoBrush PZ3-c evaluation kit gives a first impression of TDK's cold plasma solution,

- showing how the communication with the control of the PiezoBrush PZ3-c integration components works.
- providing an example integration using a STM32 controller and display.

Features

The kit provides an easy-to-use platform to explore the capabilities of the PiezoBrush PZ3-c, test its firmware, and prototype designs:

- Sample code to help developers to get started
- Low power
- High efficiency
- No magnetic fields

Scope of delivery

- PiezoBrush PZ3-c driver board
- PiezoBrush PZ3-c adaptor board
- PiezoBrush PZ3-c evaluation board
- PiezoBrush PZ3 standard module
- 15-pin FFC cable
- 9-pin FFC cable
- Power supply
- USB-A to micro-USB-B cable

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Specifications

Electrical data

Supply voltage	24 V DC ±0.5 V
IO Pin voltage	3.3 V DC ±0.1 V
Power consumption	max. 15 W
Model	PiezoBrush PZ3-c evaluation kit (prototype)
Peripheral board components	
Microcontroller board	STM NUCLEO G431KB
Display	2.8”, 240 x 320 pixel, ILI9341
Rotary encoder	15 pulses / rotation
Operating conditions	
Air humidity	< 80% rel. (non-condensing)
Temperature	10 … 40 °C; 50 … 104 °F
Storage conditions	
Air humidity	< 80% rel. (non-condensing)
Temperature	0 … 60 °C; 32 … 140 °F

Please note:

- The change module is a wear part whose service life depends on the operating conditions.
- EMC compliance and product safety must be evaluated in the final integration.

Installation

- Remove the device from the packaging.
- Connect the PiezoBrush PZ3 standard module with the adaptor board.
- Connect the power supply to the PiezoBrush PZ3-c evaluation board.
- For further usage information see our User Guide “Connecting the PiezoBrush PZ3-c to your MCU”.

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Cautions and warnings

	Note: No warranty or liability shall arise for the supplier out of and in connection with these products. The use shall be at the sole risk of the purchaser. The supplied product is a development sample and has prototype status only and may not be used in series products of the purchaser. Our products are subject to a continuous improvement process, which may lead to changes in product specifications. Therefore, we ask you to contact your sales channel or visit our TDK website to find out more about the current specification status of our products for your follow-up orders.
	Take special care of the toxicity of ozone! Use a suitable extraction or ventilation system to remove the ozone. Depending on air flow around the output of the change module the ozone concentration can reach very high values!
	The CeraPlas inside the module may get damaged without proper cooling. For the cooling effect an air flow of 8 to 15 slm through the module is recommended. A maximum temperature of 85 °C must not be exceeded.

General

- Do not use the change module for purposes not identified in our specifications, application notes and data books.
- Ensure the suitability of the components, in particular by testing them for reliability during design-in. Always evaluate the components 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 components in safety-relevant applications.
- Ensure that the surface temperature does not exceed the 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 components in a dry place. This will prevent corrosion of the electrical contacts.
- Only store the components in their original packaging. Do not open the package before storage.
- Do not store the components where they are exposed to heat or direct sunlight. Otherwise, the packaging material may be deformed.
- Avoid contamination of the components during storage, handling, and processing.
- Avoid storing the components in harmful environments where they are exposed to e. g. corrosive gases (SOx, Cl).

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Handling

- Do not drop the components.
- Do not touch the piezo element and the contact board.
- Avoid contamination of the components 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 data sheet and safety requirements of the PiezoBrush PZ3 change modules used carefully before assembling, installing, and starting up the device.

Operation

- Use the components only within the specified operating temperature range.
- Use the components only within specified voltage and power ranges.
- Use the components only with PiezoBrush PZ3 change modules.
- The components have to be operated in a dry atmosphere, which must not contain any additional chemical vapor or substances.
- Environmental conditions must not harm the components. Only use them in normal atmospheric conditions.
- Prevent the components from contacting liquids and solvents. Make sure that no water enters the components.
- Avoid dewing and condensation.
- The components 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 components 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!

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- 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 components!
- Read the installation and safety information of the change modules before assembling, installing, and starting up the device.
- Always follow the safety instructions because non-compliance may result in serious or fatal injury.

This listing does not claim to be complete, but merely reflects the experience of TDK.

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Important notes

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