PowerHap Starter Kit

Demonstration and reference design

Series/Type: **B54102* PowerHap series**
Ordering code: **Z63000Z2910Z1Z89**

Date: 2024-02-09
Version: 1.0

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

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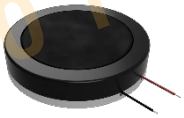
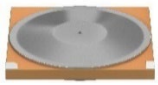
Intended use

- Demonstrations of piezo haptics
- Reference on mechanical designs

Features

- Haptics and sensing experience with PowerHap actuators out-of-the-box
- Configurable and adaptable haptic experience
- Fully adjustable sensing and waveform parameters
- Seamless overlay buttons and a round button for different experiences
- Exchangeable PowerHaps

Contents

Item	Quantity	Size (mm)	Features	Image
Seamless button	1	66 x 36 x 12	Piezo haptic feedback powered by PowerHap 1204H018V060 and PowerHap 1313H018V120	
Round button	1	Ø 57 x 11	Piezo haptic feedback powered by PowerHap 1204H018V060	
Boréas Technologies EVK BOS1921	1	64 x 50 x 12	Control board with outpout voltage range ±95 V	
Driver Haptic Board BOS1921-BRD-L02	2	40 x 22 x 12	Driver board for haptic piezo actuators	
PowerHap 1204H018V060	3	12 x 4	FPC included	
PowerHap 1313H018V120	1	13 x 13	Wire cable included	
USB cable	1	320	Connects Boreas EVK PCB to a computer or to a 5 V power supply	
Support documentation	2	N/A	- Design Guide - Application Notes	

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Packaging

- Cardboard box 172 x 132 x 45 mm
- Weight: 298 g

Description

The PowerHap Starter Kit is a plug-and-play haptic demo kit which enables users to design haptic solutions easily. Equipped with the latest generation of PowerHap actuators, the Starter Kit provides customized haptic experiences, as it is fully modular and configurable.

The included Design Guide and Application Notes (follow the QR code on page 2) provide detailed reference designs for basic applications and specific solutions for an easy and simple integration process.

In cooperation with Boréas Technologies, the kit includes a driver board (BOS1921) and software (available at www.boreas.ca) to customize and tailor the haptic experience, such as sensing detection parameters, haptic feedback waveform, trigger waveforms, and much more to reach the desired effect.

The PowerHap disruptive technology from TDK corporation features high acceleration and large forces in a very compact design, coupled with a short response time of less than one millisecond. In addition to the actuator properties, PowerHap also offers good sensing functionality by using the inverse piezo effect. PowerHap actuators can be technologically superior to conventional electromagnetic solutions such as ERM motors (eccentric rotary mass) and LRA actuators (linear resonant actuators).

Typical applications for the PowerHap actuators may be: automotive displays, smartphones and tablets, household appliances, game consoles, VR/AR equipment, digitizers, and handheld medical devices, among others.

This Starter Kit provided by TDK is intended to be used for functional testing only.

The design is not qualified regarding manufacturing and operation over the whole operating temperature range or lifetime. Compliance with applicable standards must be verified on the application level.

Due to their purpose, evaluation kits are not handled by procedures regarding returned material analysis (RMA) and process change notification (PCN) as regular products. Design changes will be implemented without further notice.

All our latest documents regarding the PowerHap Starter Kit can be found on the TDK Electronics webpage: https://www.tdk-electronics.tdk.com/en/powerhap

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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 products are development samples and have 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.
	**Danger!** High voltage! Electric shocks are possible when connecting the board to live wire. The board should be handled with care by a professional. For safety, the use of isolated test equipment with overvoltage and/or overcurrent protection is highly recommended.
	This product uses semiconductors that can be damaged by electrostatic discharge (ESD). When handling, care must be taken so that the devices are not damaged. Damage due to inappropriate handling is not covered by the warranty.

- Do not extract the driver board until you have read the following and are at an approved anti-static workstation:
  - Use a conductive wrist strap attached to good earth ground.
  - If working on a prototyping board, use a soldering iron or station that is marked as ESD-safe.
  - Always disconnect the microcontroller from the prototyping board when it is being worked on.
  - Always discharge yourself by touching a grounded bare metal surface or approved anti-static mat before picking up an ESD-sensitive electronic component.
  - Use an approved anti-static mat to cover your work surface.
- The piezo component must be operated in a dry, non-reducing, open environment and atmosphere which must not contain any chemical vapours or substances.
- To prevent damages to the piezo component, tensile stresses must be avoided under all driving conditions.
- We expressly point out that in case of non-observance of the aforesaid notes due to reasons attributable to chemical vapours, a malfunction of the piezo sample or failure before the end of their usual service life cannot be completely ruled out, even if they are operated as specified.
- Depending on the individual application, piezo samples are electrically connected to voltages and currents, which are potentially dangerous for the life and health of the operator. Installation and operation of the piezo sample must be done only by authorized personnel. Ensure proper and safe connections, couplers, and drivers.

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Cautions and warnings (cont.)

- Piezo components are highly efficient charge storing capacitors. Even when they are disconnected from a supply, the electrical energy content of a loaded actuator can be high and is held for a long time. Always ensure a complete discharging of an actuator (e.g., via a 10 kΩ resistor) before handling. (Do not discharge by simple short-circuiting, because of the risk of damaging the ceramic.)
- Electrical charges can be generated on disconnected actuators by varying load or temperature. Discharge an actuator before connecting it to a measuring device/electronics, when this device is not sufficiently voltage proofed.

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

Remarks

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- Contains SVHC Substance 12626-81-2

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Important notes

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Please contact us if you have any questions about the contents of the datasheet.

This may not be the latest version of the datasheet. Please check with us if a later version is available.

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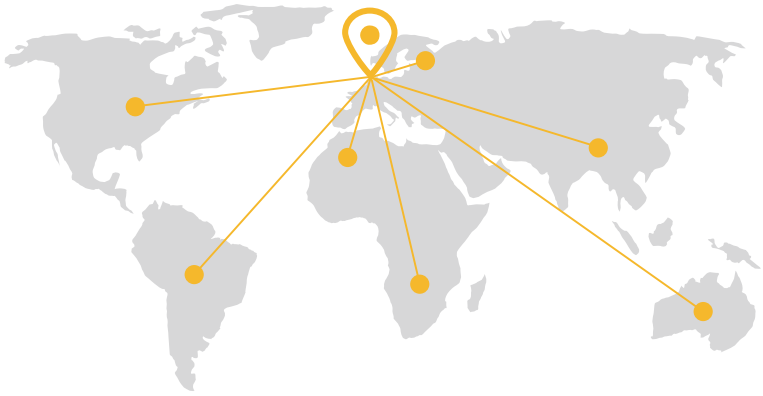

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