



PiezoHapt™ Actuators

For general use

PHU series

PHUA8060-35A-33-000

PHUA3015-30A-21-000

REMINDERS FOR USING THESE PRODUCTS

Before using these products, be sure to request the delivery specifications.

SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using this products

REMINDERS

- In use of this product, it should be minded by notes and please perform a safety design, after checking the individual standard for every unit enough.
- Do not apply DC bias to the product. In addition, the insulation resistance may be reduced and the function may not be performed.
- Use piezoelectric devices so that moisture-containing substances and water droplets do not come into contact with each other.
- There is a risk of performance degradation, adhere to the following matters.
 - Store the product in a packaged condition to avoid sudden temperature changes, condensation, direct sunlight, corrosive gas, dust, and dust.
 - Use within six months.
 - Do not apply strong shocks (fall etc.) or pressure by which a crack goes into a product.
 - Do not supply any voltage higher than applicable to the product.
 - Do not use the piezoelectric buzzer outdoors. It is designed for indoor use.
 - Do not apply the temperature more than 150°C.
- Do not wash the product in such a way that solvent or gas can penetrate the product.
- Handle piezoelectric devices with care so that they do not touch them by hand. It can cause corrosion and the charge being charged may be discharged to the hands.
- Discharge the product before connecting it to the measuring instrument.
- Do not remove the piezoelectric element from the diaphragm.
- When soldering, be careful not to attach flux or other foreign matter to the piezoelectric device.
- When soldering a terminal pin, perform the soldering in clean conditions without contamination or rust in order to avoid poor connections.
- Check the resonant frequency in the mounting condition, and use the product within the range where the resonant frequency is not affected by the resonance with a reference value of 1/2 or less of the resonant frequency.
- When fixing the product by adhesion, etc., investigate the type, amount, adhesion, etc. of the adhesive, conduct a reliability evaluation test, and confirm that there are no abnormalities.
- Do not use the product on a device that allows consumers to touch the product.
- Do not rework the product.
- The characteristics may vary depending on the shape and location of the mounting part. Check the mounted condition.
- Please take appropriate measures such as acquiring protective circuits and devices that meet the uses, applications, and conditions of the instruments and keeping backup circuits.
- Do not use it in the following environments.
 - Corrosive gases (Cl₂, NH₃, H₂S, SO_x, NO_x, etc.)
 - Environments with highly conductive substances (electrolytes, water, saltwater, etc.)
 - Environments with acid, alkali, or organic solvents.
 - Places to be exposed to dust.

○ The products described in these Specifications are for use in general electronic equipment (audiovisual equipment, communications equipment, home appliances, amusement devices, computer equipment, personal equipment, office equipment, measuring devices, and industrial robots) and are intended to be used in general-purpose, standard applications. It is further intended that such general electronic equipment will be used in normal operation and according to normal methods of use. TDK Corporation does not provide any guarantee of the suitability, performance, or quality of the products when used in the applications described below (referred to as “specific applications”), which require high levels of safety and reliability and in which equipment failure, malfunction, or defects may cause harm to life, person, or property or have a substantial impact on society. Please note that TDK Corporation shall not bear any liability for damage and so on resulting from use beyond the scope of application and conditions set forth in these Specifications or from use in specific applications. If you plan to use the products beyond the scope of application and conditions set forth in these Specifications or to use them in specific applications, please consult with TDK Corporation in advance so that we can discuss specifications different from those set forth in these Specifications according to your specific application

- | | |
|--|---|
| (1) Aerospace equipment | (7) Transportation control equipment |
| (2) Transportation equipment (automobiles, electric trains, ships, etc.) | (8) Processing equipment for highly public information |
| (3) Medical equipment | (9) Military equipment |
| (4) Power generating control equipment | (10) Electric heating products, combustion equipment |
| (5) Nuclear power-related equipment | (11) Disaster prevention and crime prevention equipment |
| (6) Seabed equipment | (12) Safety equipment |
| | (13) Other applications recognized as specific applications |

When designing equipment that uses the products, please be sure to provide protection circuits and devices, create backup circuits, and take other measures according to the application and use modes of the equipment.

PiezoHapt™ Actuators

Product compatible with RoHS directive

For general use

Overview of the PHU series

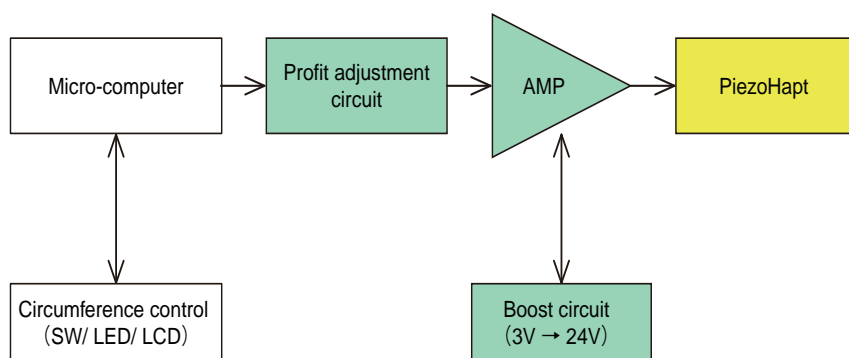
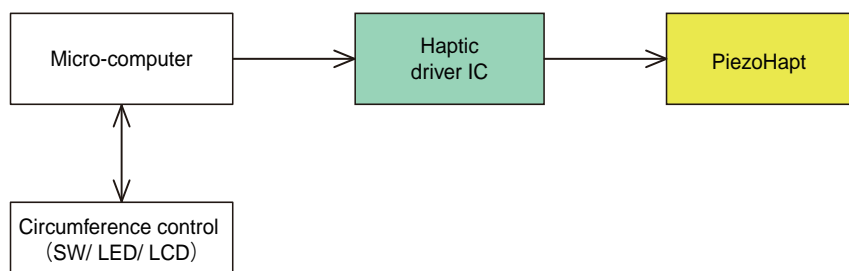
■ FEATURES

- It is thin and can support various application.
- It is possible to obtain a clear response by low-voltage drive.
- It answers in an instant and can respond to a variegated vibration pattern (vibrational frequency).

■ APPLICATIONS

- Touchpad, displays, amusement equipment, game controller, wearable devices etc.

■ DRIVE CIRCUIT BLOCK DIAGRAM EXAMPLE

 Discrete Haptic driver IC

○ RoHS Directive Compliant Product: See the following for more details. <https://product.tdk.com/info/en/environment/rohs/index.html>

⚠ Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

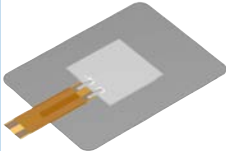
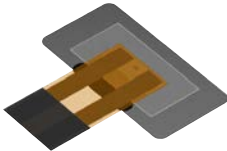
Overview of the PHU series

PART NUMBER CONSTRUCTION


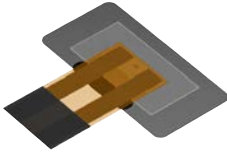
PHU		A		8060		-	35		A		-	33		-	000	
Series name		Application		External vibration plate dimensions (L×W)			Total thickness		Type			External piezoelectric element dimensions (L×W)			Internal code	
A		General use		8060	80x60mm		35	0.35mm	A		42Ni-Fe + FPC	33	30x30mm			
B		For automotive		3015	30x15mm		30	0.30mm				21	20x10mm			

PRODUCT LINEUP

SPECIFICATIONS

Part No.		PHUA8060-35A-33-000		PHUA3015-30A-21-000	
Part No.					
Dimensions	Vibration plate (mm)	80x60x0.25		30x15x0.1	
	Element (mm)	30x30x0.1		20x10x0.2	
Vibration plate specifications		42Ni-Fe		42Ni-Fe	
ELECTRODE SPECIFICATION		FPC		FPC	

CHARACTERISTICS

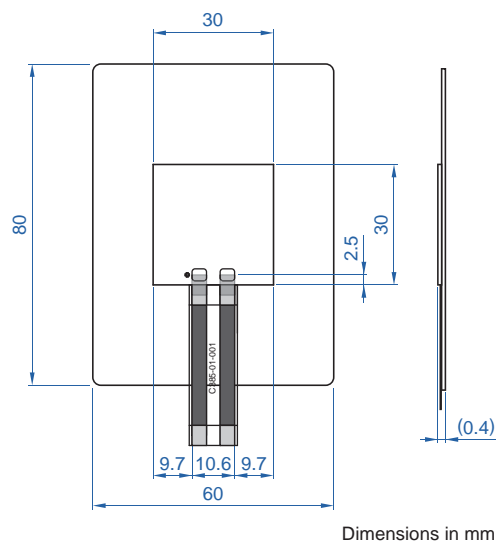
Part No.		PHUA8060-35A-33-000		PHUA3015-30A-21-000	
Part No.					
Application		Touchpad Displays		Wearable devices	
Operation voltage		24VP-P(±12V)max.		12VP-P(±6V)max.	
Operating temperature range		-10 to +60°C		-10 to +60°C	

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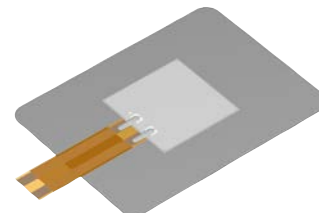
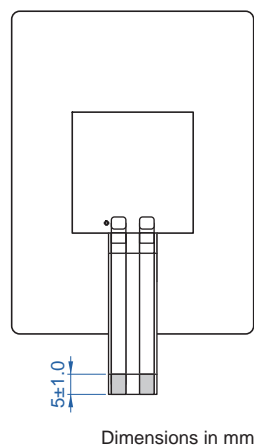
Application

- Suitable for touch panel and display

SHAPE & DIMENSIONS



RECOMMENDED WIRING




* Product shape are subject to change without notice.

SPECIFICATIONS

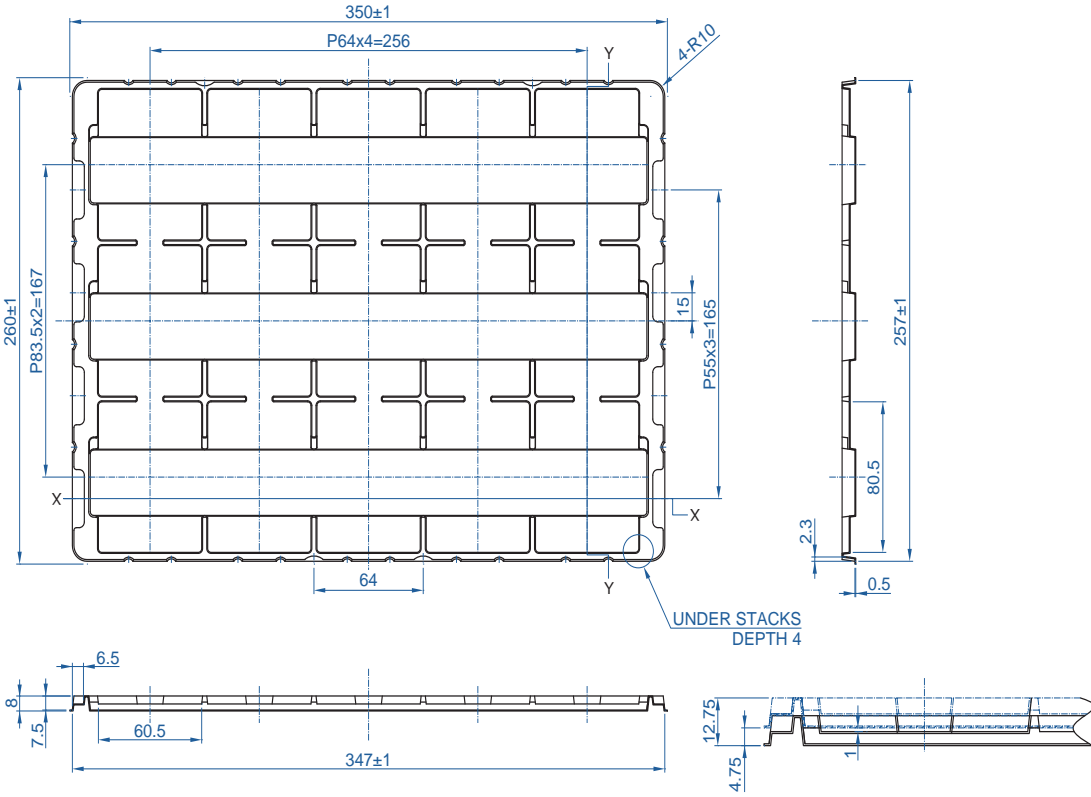
Vibration plate specifications	42Ni-Fe	
ELECTRODE SPECIFICATION	FPC	
	Width	12mm
	Number of cores	2
	Insulation length	30mm
	Lead pitch	7.0mm
	Stripping length	5.0mm
	Reinforcement	8.0mm
Operation voltage	24VP-P(±12V)max.	
Operating temperature range	-10 to +60°C	

PHUA8060-35A-33-000

PACKAGING STYLE/PACKING NUMBER/MINIMUM ORDERING UNIT

	PHUA8060-35A-33-000
	
Packaging style	Bulk (Tray)
Package quantity	200 pieces / corrugated cardboard (20 trays containing 10 pieces)
Minimum ordering unit	200 pieces (1 boxes of corrugated cardboard containing 200 piece)

Tray



Dimensions in mm

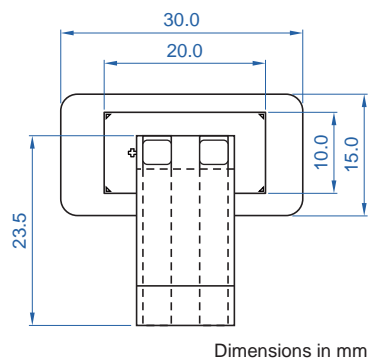
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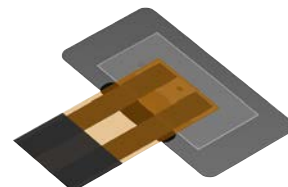
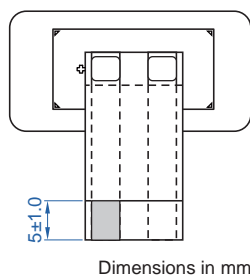
Application

- Suitable for small equipment such as wearable devices

SHAPE & DIMENSIONS



RECOMMENDED WIRING



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SPECIFICATIONS

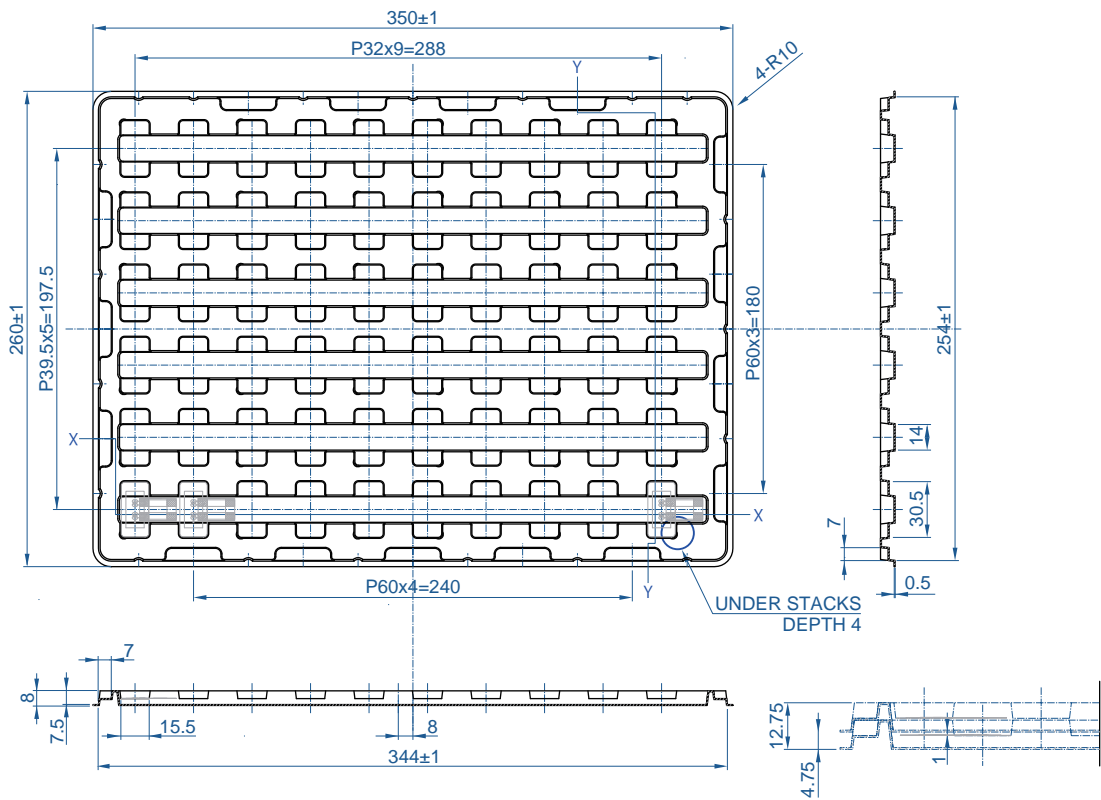
Vibration plate specifications		42Ni-Fe
ELECTRODE SPECIFICATION	FPC	
	Width	12mm
	Number of cores	2
	Insulation length	14.5mm
	Lead pitch	7.0mm
	Stripping length	5.0mm
	Reinforcement	8.0mm
Operation voltage		12VP-P(±6V)max.
Operating temperature range		-10 to +60°C

PHUA3015-30A-21-000

PACKAGING STYLE/PACKING NUMBER/MINIMUM ORDERING UNIT

Packaging style	Bulk (Tray)
Package quantity	1200 pieces / corrugated cardboard (20 trays containing 60 pieces)
Minimum ordering unit	1200 pieces (1 boxes of corrugated cardboard containing 1200 piece)

Tray



Dimensions in mm