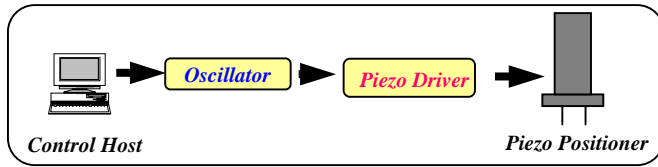


# Piezo Positioner

Metal sealed multilayer piezo actuator

PMF,PRB,PHB,PFT,PTB series

## Sample system configuration



Available in high temperature

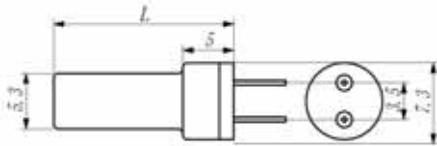
and humidity environment (ex.85 , 90%RH)

Variety goods

(Small size, high temperature, large generated force)

We make special order product (ex.Non-magnetic)

## PMF series

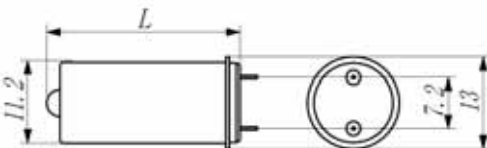


## Specifications

Item	PMF-3010	PMF-3020	PMF-3030
Operating temperature range	-20 ~ 85		
Maximum operating voltage	150V		
Maximum displacement	3 μm	7 μm	10 μm
Hysteresis	15%		
Maximum generated force	100N		
Resonance frequency	60kHz	40kHz	20kHz
Capacitance	70nF ± 20%	140nF ± 20%	230nF ± 20%
Dielectric loss	3.0%		
Insulation resistance	100M		
Dimension : L x (mm)	7.2 x 7.3	12.2 x 7.3	17.2 x 7.3

Small size ( 7.3mm)

## PRB3000series

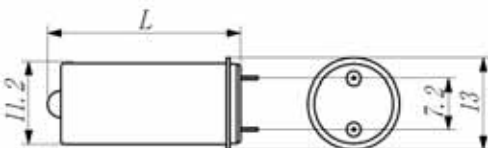


## Specifications

Item	PRB-3020	PRB-3040	PRB3060
Operating temperature range	-20 ~ 85		
Maximum operating voltage	150V		
Maximum displacement	17 μm	34 μm	51 μm
Hysteresis	15%		
Maximum generated force	800N		
Resonance frequency	30kHz	15kHz	10kHz
Capacitance	1.7 μF ± 20%	3.4 μF ± 20%	5.1 μF ± 20%
Dielectric loss	3.0%		
Insulation resistance	100M		
Dimension : L x (mm)	27.4 x 13	47.4 x 13	67.4 x 13

Standard

## PRB4000 series



## Specifications

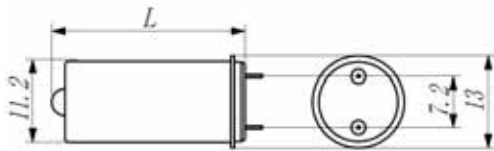
Item	PRB-4020	PRB-4040	PRB-4060
Operating temperature range	-20 ~ 85		
Maximum operating voltage	150V		
Maximum displacement	24 μm	48 μm	72 μm
Hysteresis	15%		
Maximum generated force	1100N		
Resonance frequency	30kHz	15kHz	10kHz
Capacitance	2.8 μF ± 20%	5.6 μF ± 20%	8.4 μF ± 20%
Dielectric loss	3.0%		
Insulation resistance	100M		
Dimension : L x (mm)	27.4 x 13	47.4 x 13	67.4 x 13

Large displacement

# Piezo Positioner

Metal sealed multilayer piezo actuator

## PHB series

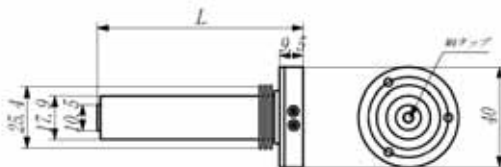


### Specifications

Item	PHB-3020	PHB-3040	PHB-3060
Operating temperature range	-20 ~ 150		
Maximum operating voltage	150V		
Maximum displacement	17 $\mu$ m	34 $\mu$ m	51 $\mu$ m
Hysteresis	15%		
Maximum generated force	800N		
Resonance frequency	30kHz	15kHz	10kHz
Capacitance	1.7 $\mu$ F $\pm$ 20%	3.4 $\mu$ F $\pm$ 20%	5.1 $\mu$ F $\pm$ 20%
Dielectric loss	3.0%		
Insulation resistance	100M		
Dimension : L x (mm)	27.4 x 13	47.4 x 13	67.4 x 13

Available in high temperature(150 )

## PFT series

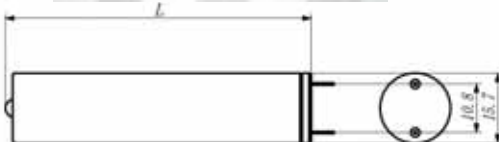


### Specifications

Item	PFT-1040	PFT-1070	PFT-1100
Operating temperature range	-20 ~ 85		
Maximum operating voltage	150V		
Maximum displacement	35 $\mu$ m	60 $\mu$ m	83 $\mu$ m
Hysteresis	15 $\pm$ 3%		
Maximum generated force	800N		
Resonance frequency	9 $\pm$ 3kHz	7 $\pm$ 3kHz	5 $\pm$ 3kHz
Capacitance	4.4 $\mu$ F $\pm$ 20%	7.6 $\mu$ F $\pm$ 20%	10.8 $\mu$ F $\pm$ 20%
Dielectric loss	3.0%		
Insulation resistance	100M		
Dimension : L x (mm)	65.9 x 40	95.9 x 40	125.9 x 40

High stiffness

## PTB series



### Specifications

Item	PTB-3060	PTB-3080	PTB-3110
Operating temperature range	-20 ~ 85		
Maximum operating voltage	150V		
Maximum displacement	60 $\mu$ m	80 $\mu$ m	100 $\mu$ m
Hysteresis	15%		
Maximum generated force	2400N		
Resonance frequency	10kHz	8kHz	6kHz
Capacitance	15 $\mu$ F $\pm$ 20%	20 $\mu$ F $\pm$ 20%	25 $\mu$ F $\pm$ 20%
Dielectric loss	3.0%		
Insulation resistance	100M		
Dimension : L x (mm)	67.4 x 15.6	87.4 x 15.6	107.4 x 15.6

Large generated force

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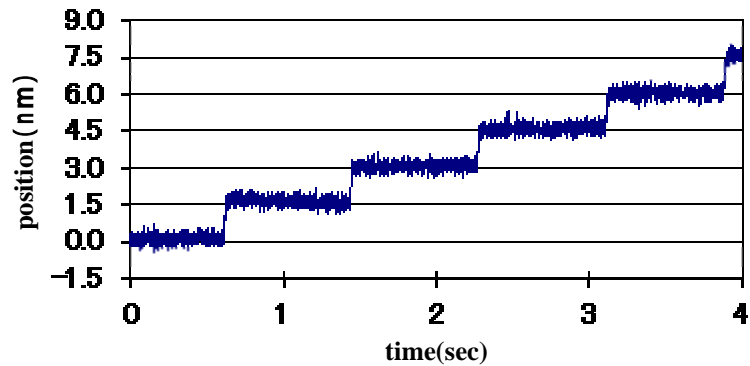
# NAPS (NANO Positioning System)

Fine positioning system MT4200シリーズ

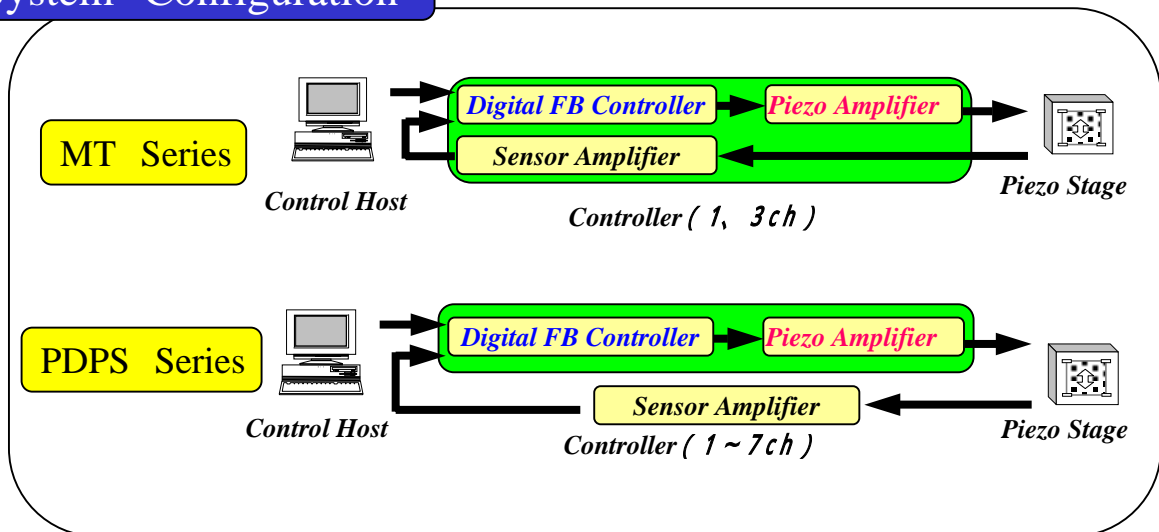
High resolution (Less than 1nm)



Driving sample (resolution : 1.5nm)



## System Configuration



## Applications

Fine positioning for MR head / HD media inspections

Fine adjustment for LCD steppers

Fine positioning for semiconductor-related inspections

# NAPS (NA<sub>N</sub>o Positioning System)

## Fine positioning system

Fine Positioning Piezo Controller :MT4200

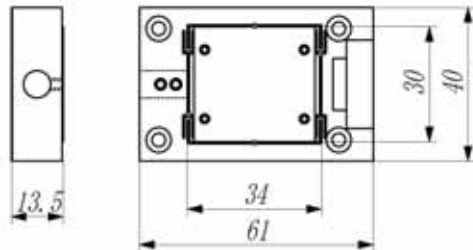
Specifications

No. of control axes	1 ~ 3 axes
Dimensions	120(W) X 100(H) X 270(D)mm
Positioning control input(analog)	0 ~ 10V
Positioning control input(digital)	RS-232C
Control linearity	Less than $\pm 0.1\%$
Control resolution	Less than 3mV
Positioning complete status output	2 levels(open collector output)can be set at time of shipment

Fine Positioning Piezo Stage :PSS1015

Specifications

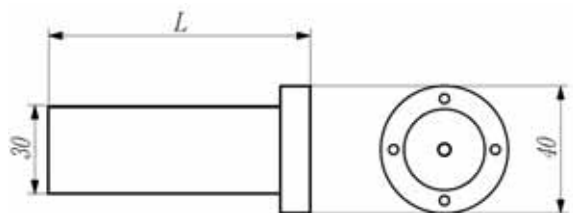
Dimensions	61.0(L) X 40.0(W) X 13.5(H)mm
Stroke	15 $\mu$ m
Resolution	Less than 1nm
Resonance frequency	3kHz or higher
Pitching	Less than 1sec
Yawing	Less than 1sec



Fine Positioning Piezo Positioner :SRB,SRT series

Specifications

	SRB(T)3020	SRB(T)3040	SRB(T)3060	SRB(T)3080
Dimensions( xL)	40x80mm	40x100mm	40x120mm	40x140mm
Stroke	15 $\mu$ m	30 $\mu$ m	45 $\mu$ m	60 $\mu$ m
Resolution	Less than 2nm	Less than 4nm	Less than 6nm	Less than 8nm



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# Piezo Actuator

Multilayer Piezo Actuator PACシリーズ、PABシリーズ

**Small size, low operating voltage**

## PAC series



### Features

- Minimum out-gas in vacuum environment
- Available in high-temperature environment : over100
- High-speed response : Driving in several ten kHz
- Fine positioning : Controllable in nm
- Low operating voltage : under 100V
- Low electromagnetic interference
- Low energy consumption

### Applications

Printer / vibration / mirror,prism positioning / pump / linear motor etc.

### Custom Actuators

We make special order product

## PAB series



### Features

- Large displacement in low operating voltage
- High reliability : No bonding by cofired
- Low electromagnetic interference
- Low energy consumption

### Applications

Switch / vibration / pump etc.

### Custom Actuators

We make special order product

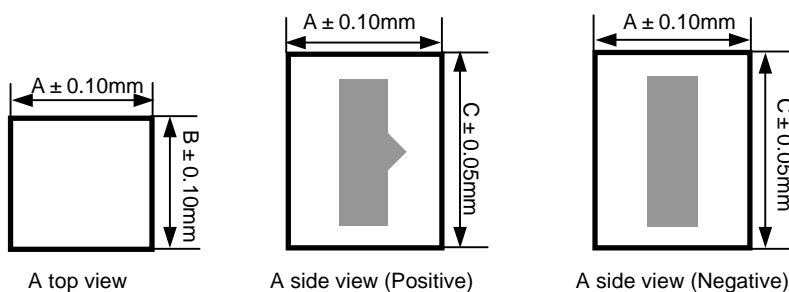
# Piezo Actuator

## Multilayer Piezo Actuator

### Specifications

	PAC-122C	PAC-122E	PAC-133C
Operating temperature range	- 20 ~ 150	- 20 ~ 150	- 20 ~ 150
Max. operating voltage	100V		
Max. displacement	1.0 $\mu$ m	2.0 $\mu$ m	1.5 $\mu$ m
Displacement hysteresis	15%		
Resonance frequency	300kHz	200kHz	300kHz
Max. generated force	10N		30N
Capacitance	12nF $\pm$ 20%	25nF $\pm$ 20%	50nF $\pm$ 20%
Dielectric loss (tan $\delta$ )	2.0%		
Insulation resistance	100M		
Dimension (AxBxC)	2x2x3mm	2x2x5mm	3x3x3mm

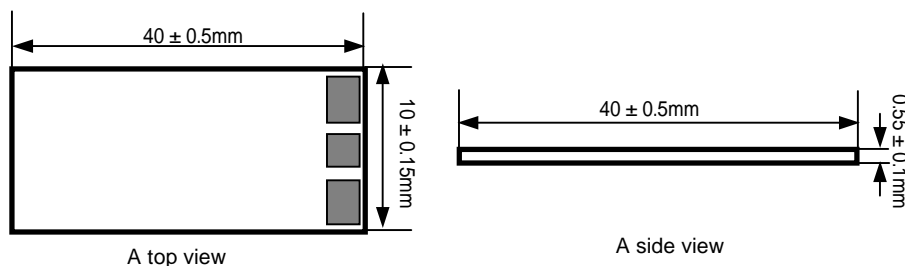
### DIMENSION



### Specifications

	PAB-4010
Operating temperature range	- 20 ~ 100
Max. operating voltage (recommended)	150V(100V)
Max. displacement (recommended)	$\pm$ 0.7mm ( $\pm$ 0.5mm)
Max. generated force (recommended)	560mN(400mN)
Capacitance	400nF $\pm$ 20%
Dielectric loss (tan $\delta$ )	3.0%
Insulation resistance	100M

### DIMENSION



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