

stack type actuators

series N

- PZT multilayer stack without housing
- without pre-load
- motion up to 123µm
- high stiffness up to 250N/µm
- flexible mounting
- unlimited resolution
- flexible epoxy insulation to guarantee long life

applications:

- positioning application demanding high accuracy under high load environment conditions, long lifetime permanent movement in industrial applications

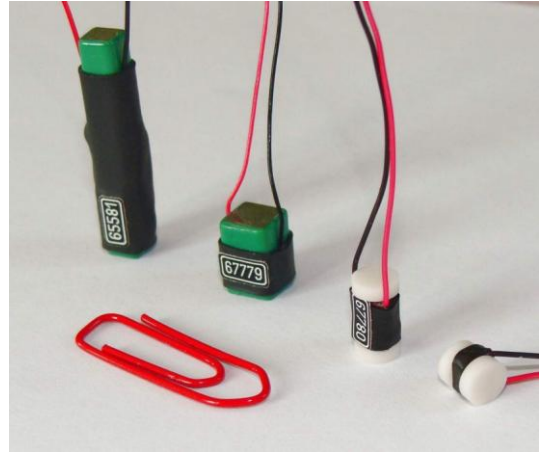


fig.: N Stack

Concept

PZT multilayer stack type actuators are made for industrial applications. They are specially shielded by a flexible insulation material which guarantees the highest possible dynamic performance under the toughest requirements. Based on their design, they are well suited for easy integration into specific customer systems. The flexible polymer coating material gives the PZT actuators proven protection against various and harsh environments. The advantage of a flexible insulation versus brittle ceramic insulation is a longer lifetime.

These PZT multilayer stack type actuators have been successfully working for more than 15 Years in a vast number of applications in the fields of nano-metrology, semiconductor, material sciences and scanning applications.

Please ask us for further details for your application.

High quantity volume buyers – please request an additional discount.

Specials

PZT multilayer stack can be used in cryogenic applications down to a few Kelvin. They can also be used in vacuum atmosphere conditions as well. The Curie temperature for baking is 150°C. Please see chapters 3.9 and 3.10 in our “piezoline”.

The flexible insulation guarantees the highest performance for long term applications. Additional thermal shrink tube insulation protects the cable connection point on the ceramic. Ball tip end plates and flat tungsten carbide and plates are available in different sizes

Mounting/Installation

It is rather important, not to subject the actuator tip to non-axial forces during the manufacturing process and use.

The standard cable length is 100mm. As an option, flat tungsten carbide or ball tip end plates are available.

Please note, when using under cryogenic conditions (4K), only 10% of the standard motion is available.

The PZT multilayer stacks are not pre-loaded. An external pre-load applied is needed when used in dynamic applications or in application with high accelerations forces.

Please note that the acceleration due to ceramic expansion can damage the ceramic if used without a pre-load. It is very important not to subject the actuator tip to no-axis forces during mounting and use.

technical data:

series N/5		unit	N 2/5	N 4/5	N 6/5					
part. no.			P-211-00	P-212-00	P-213-00					
motion ($\pm 10\%$)*		μm	2	4	6					
capacitance ($\pm 20\%$)**		μF	0.1	0.2	0.3					
resolution***open loop		nm	0.004	0.008	0.012					
stiffness		N/ μm	250	125	83					
blocking force		N	500	500	500					
operating voltage		V	-20...+120							
dimensions	length L	mm	5	7	9					
	diameter D	mm	5	5	5					
series N/S3.5		unit	N 8/S3.5	N 16/S3.5	N 25/S3.5	N 35/S3.5				
part. no.			P-214-40	P-216-40	P-217-40	P-218-40				
motion ($\pm 10\%$)*		μm	9	20	30	41				
capacitance ($\pm 20\%$)**		μF	0.4	0.8	1.2	1.6				
resolution***open loop		nm	0.018	0.04	0.06	0.08				
stiffness		N/ μm	46	21	14	10				
blocking force		N	420	420	420	420				
operating voltage		V	-20...+130							
dimensions	length L	mm	9	18	27	36				
	width W	mm	5.5	5.5	5.5	5.5				
	height H	mm	7.5	7.5	7.5	7.5				
series N/S5		unit	N 8/S5	N 16/S5	N 25/S5	N 35/S5	N 50/S5	N 80/S5	N 100/S5	
part. no.			P-201-40	P-202-40	P-203-40	P-204-40	P-205-40	P-206-40	P-207-40	
motion ($\pm 10\%$)*		μm	9	20	30	41	61	82	103	
capacitance ($\pm 20\%$)**		μF	0.8	1.8	2.4	3.6	5.4	7.2	9.0	
resolution***open loop		nm	0.018	0.04	0.06	0.08	0.12	0.16	0.2	
stiffness		N/ μm	94	42	28	20	14	10	8	
blocking force		N	850	850	850	850	850	850	850	
operating voltage		V	-20...+130							
dimensions	length L	mm	9	18	27	36	54	72	108	
	width W	mm	7	7	7	7	7	7	7	
	height H	mm	9	9	9	9	9	9	9	
series N/S10		unit	N 20/S10	N 40/S10	N 60/S10	N 80/S10	N 100/S10	N 120/S10		
part. no.			P-232-40	P-233-40	P-234-40	P-235-40	P-236-40	P-237-40		
motion ($\pm 10\%$)*		μm	20	41	61	82	103	123		
capacitance ($\pm 20\%$)**		μF	7.2	14.4	18.2	25.4	31.0	36.4		
resolution***open loop		nm	0.04	0.08	0.12	0.16	0.21	0.25		
stiffness		N/ μm	175	85	57	42	34	28		
blocking force		N	3500	3500	3500	3500	3500	3500		
operating voltage		V	-20...+130							
dimensions	length L	mm	18	36	54	72	90	108		
	width W	mm	12	12	12	12	12	12		
	height H	mm	14	14	14	14	14	14		

* typical value measured with NV 40/3

** typical value for small electrical field strength

*** please see piezoline

series N – round shape size stack type actuator

- top and bottom plate: round ceramics (Al_2O_3 , diameter 5mm)
- isolation by thermal shrinking tube, resulting overall diameter less than 6mm

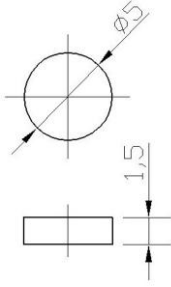
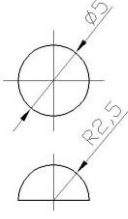
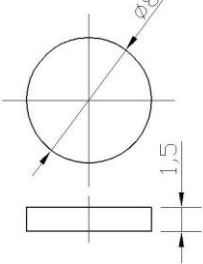
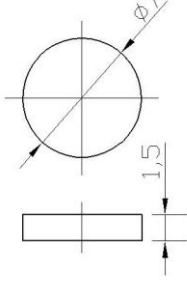
series N – rectangular shape size stack type actuator:

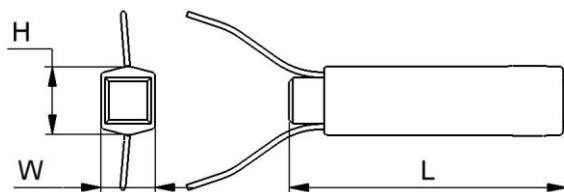
- epoxy isolation of the stack itself
- additional isolation by thermal shrinking tube (also for fastening the cables)
- outlet of the cable about 5mm below the end of the stack
- standard version without top and plates

further options:

- different top/end plates available (please see table below)
- vacuum version
- cryogenic temperature version

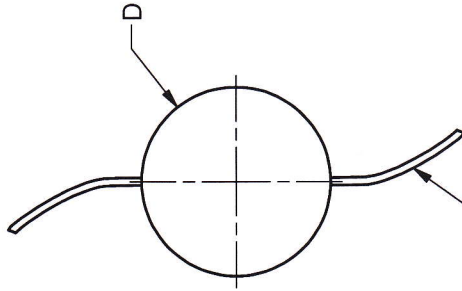
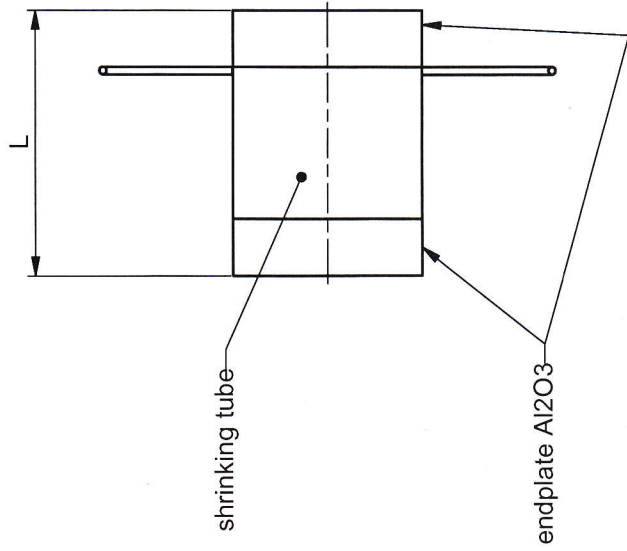
top/end plates

part no.	Z-299-25	Z-299-45	Z-299-65	Z-299-28	Z-299-47
material	Al_2O_3	tungsten carbide	tungsten carbide	Al_2O_3	tungsten carbide
drawing					

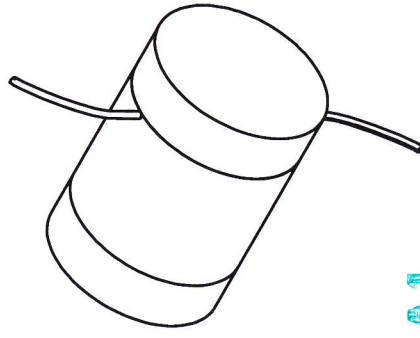


Series N:

Please pay attention to our “notes for mounting”, which are available as download on our homepage.



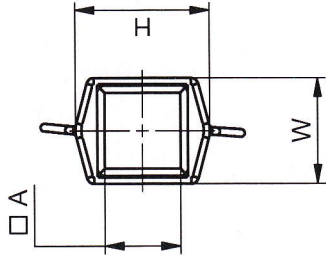
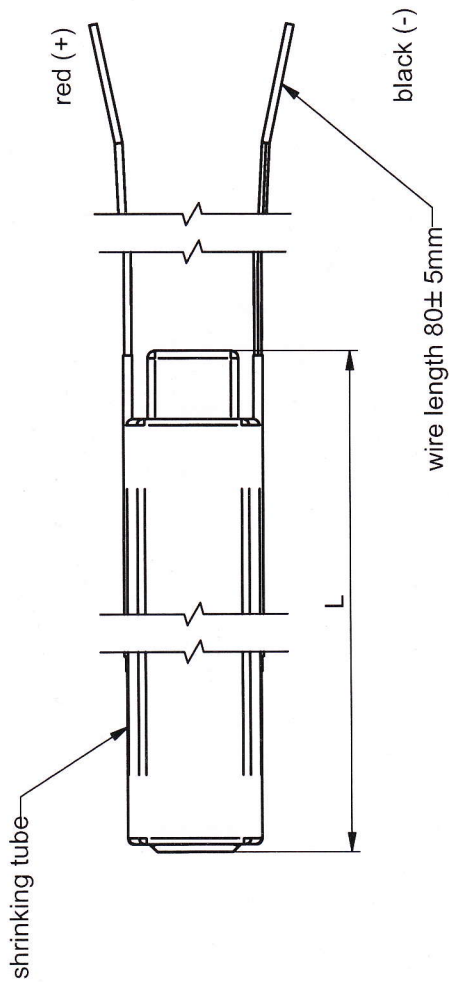
open wire length 80 ± 5 mm,
polarisation will be defined
in case of delivery



ORIGINAL

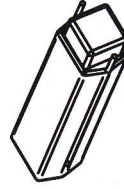
type	part no.	motion ($\pm 10\%$) [μm]	length L [mm]	diameter D [mm]
N 2/5	P-211-00	2	5	5
N 4/5	P-212-00	4	7	5
N 6/5	P-213-00	6	9	5

part.-no.	P-2xx00	part.-name	stack type actuator
file name	PP2xx00	OK: date/sign.	19. FEB. 2010
		scale	customers drawing
		M 5:1	piezosystem jena



type	part no.	motion ($\pm 10\%$) [μm]	length L [mm]	width W [mm]	height H [mm]	active area A [mm*mm]
N 8/S3.5	P-214-40	9	9	5,5	7,5	3,5*3,5
N 16/S3.5	P-216-40	20	18	5,5	7,5	3,5*3,5
N 25/S3.5	P-217-40	30	27	5,5	7,5	3,5*3,5
N 35/S3.5	P-218-40	41	36	5,5	7,5	3,5*3,5
N 8/S5	P-201-40	9	9	7	9	5*5
N 16/S5	P-202-40	20	18	7	9	5*5
N 25/S5	P-203-40	30	27	7	9	5*5
N 35/S5	P-204-40	41	36	7	9	5*5
N 50/S5	P-205-40	61	54	7	9	5*5
N 80/S5	P-206-40	82	72	7	9	5*5
N 100/S5	P-207-40	103	108	7	9	5*5
N 20/S10	P-232-40	20	18	12	14	10*10
N 40/S10	P-233-40	41	36	12	14	10*10
N 60/S10	P-234-40	61	54	12	14	10*10
N 80/S10	P-235-40	82	72	12	14	10*10
N 100/S10	P-236-40	103	90	12	14	10*10
N 120/S10	P-237-40	123	108	12	14	10*10

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part-no.	P-2xx-40	part-name	stack type actuator - series N
file name	PP2xx40	OK: date/sign.	21.04.2018
		rev. 1	
		scale	M 2:1
			customers drawing piezosystem jena