

4.4. PARALLEL PRE-STRESSED ACTUATORS PPA

4.4.1. PPA M SERIES

Some applications with PPA M are:

- Vibration assistance
- Needle vibrator in a space Atomic Force Microscope
- Active deformation of mirror in telescopes
- Ultrasonic injection

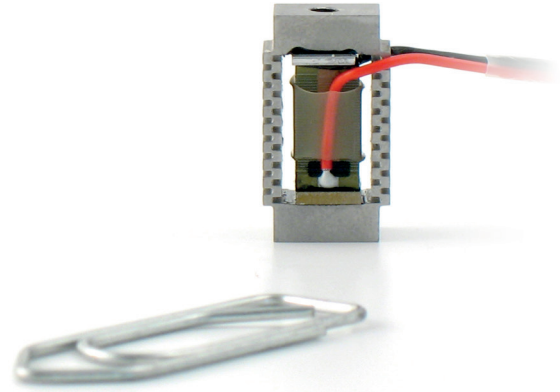


Fig. 4.r: PPA10M

PARAMETER	UNIT	PPA10M	PPA20M	PPA40M
Nominal stroke	μm	8.3	19.5	38
Blocked force	N		1 100	
Stiffness	N/μm	110	58	30
Resolution ^(m.1)	nm	0.47	1.1	2.1
Force limit (0-peak) ^(m.2)	N		500	
Free - Free resonance frequency	Hz	61 900	39 100	23 100
Blocked - free resonance frequency	Hz	32 300	20 200	11 300
Thermomechanical behaviour	μm/K	0.07	0.06	0.04
Voltage range	V		-20 ... 150	
Capacitance	μF	0.70	1.4	2.7
Height	mm	18.0	28.0	48.0
Length	mm		10.0	
Width (incl. Wedges, wires)	mm		9.0	
Mass (excl. Wires)	g	6.0	12.0	25.0
Available options ^(m.3)			SG NM VAC TS	
Specific versions ^(m.4)			HT TC E	
Available interfaces ^(m.5)			TH FI H	

Table 4.m Characteristics of PPA M series

m.1 With amplifier SNR of 85 dB

m.2 External on-axis pulling or pushing force limit. Inertial forces should be assimilated as external forces

m.3 Refer to §4.1.3. Standard options, page 58

m.4 Refer to §4.1.4. Specific versions, page 58

m.5 Refer to §4.1.2. Mechanical interface options, page 58

4.4.2. PPA L SERIES

Some applications with PPA L are:

- Active control of vibration
- Oval piston machining
- Heavy load positioning



Fig. 4.s: PPA80L

PARAMETER	UNIT	PPA40L	PPA60L	PPA80L	PPA120L ^(N.1)
Nominal stroke	µm	44	67	85	130
Blocked force	N	4 700			
Stiffness	N/µm	107	72	54	36
Resolution ^(n.2)	nm	2.5	3.8	4.8	7.3
Force limit (0-peak) ^(n.3)	N	950	1 000	1 100	1 200
Free - Free resonance frequency	Hz	14 500	10 700	8 700	6 300
Blocked - free resonance frequency	Hz	8 300	6 000	4 700	3 300
Thermomechanical behaviour	µm/K	0.13	0.11	0.09	0.05
Voltage range	V	-20 ... 150			
Capacitance	µF	13	20	27	40
Height	mm	57.0	77.0	97.0	137
Length	mm	23.5			
Width (incl. Wedges, wires)	mm	18.0			
Mass (excl. Wires)	g	92.0	117	142	188
Available options ^(n.4)		SG NM VAC TS			
Specific versions ^(n.5)		HT TC E			
Available interfaces ^(n.6)		TH FI H			

Table 4.n Characteristics of PPA L series

n.1 Preliminary data

n.2 With amplifier SNR of 85 dB

n.3 External on-axis pulling or pushing force limit. Inertial forces should be assimilated as external forces

n.4 Refer to §4.1.3. Standard options, page 58

n.5 Refer to §4.1.4. Specific versions, page 58

n.6 Refer to §4.1.2. Mechanical interface options, page 58

4.4.3. PPA XL SERIES

Some applications with PPA XL are:

- Stabilisation of heavy loads in precision machine tool
- Fretting Fatigue testing
- High Frequency Shakers



Fig. 4.t: PPA80XL

PARAMETER	UNIT	PPA40XL	PPA80XL	PPA120XL
Nominal stroke	µm	43	90	130
Blocked force	N		9 300	
Stiffness	N/µm	210	110	71
Resolution ^(o.1)	nm	2.4	5.1	7.3
Force limit (0-peak) ^(o.2)	N	1 900	2 100	2 400
Free - Free resonance frequency	Hz	13 800	8 700	6 200
Blocked - free resonance frequency	Hz	8 000	4 600	3 300
Thermomechanical behaviour	µm/K	0.16	0.12	0.08
Voltage range	V		-20 ... 150	
Capacitance	µF	24	48	72
Height	mm	60.0	100	140
Length	mm		30.0	
Width (incl. Wedges, wires)	mm		30.0	
Mass (excl. Wires)	g	254	319	384
Available options ^(o.3)			SG NM VAC TS	
Specific versions ^(o.4)			HT TC E	
Available interfaces ^{(o.5)z}			TH FI H	

Table 4.o Characteristics of PPA XL series

o.1 With amplifier SNR of 85 dB

o.2 External on-axis pulling or pushing force limit. Inertial forces should be assimilated as external forces

o.3 Refer to §4.1.3. Standard options, page 58

o.4 Refer to §4.1.4. Specific versions, page 58

o.5 Refer to §4.1.2. Mechanical interface options, page 58