

➤ TABLE OF STANDARD PROPERTIES OF USE AND MEASUREMENT

The properties defined in the table below, are set up according to the technical conditions of use and measurement. These properties are warranted within their variation range and in compliance with the standard technical conditions of use.

Properties APA400M	Standard technical conditions	Unit	Nominal values	Min. values	Max. values
Notes		-	-	-	-
Max. no load displacement	Quasistatic excitation, blocked-free	μm	400	360	520
Blocked force	Quasistatic excitation, blocked-free	N	38	30	46
Stiffness	Quasistatic excitation, blocked-free	N/μm	0.10	0.08	0.10
Resonance frequency (free-free)	Harmonic excitation, blocked-free, on the admittance curve	Hz	1800	1530	1980
Response time (free-free)		ms	0.28	0.25	0.32
Resonance frequency (blocked-free)	Harmonic excitation, free-free, on the admittance curve	Hz	495	421	545
Response time (blocked-free)		ms	1.01	0.91	1.16
Capacitance	Quasistatic excitation, free-free, on the admittance curve	μF	3.15	2.84	4.10
Max. no load displacement at resonance	Max. harmonic excitation, free-free	μm p-p	180	144	216
Max. voltage at resonance	Max. harmonic excitation, free-free	V _{rms}	9.00	7.20	10.80
Force limit (0-pk)	Max. harmonic excitation, free-free	N	9.50	7.60	10.45
Resolution	Quasistatic excitation	nm	4.00	-	-
Height (in actuation direction)		mm	13.00	12.80	13.20
Length		mm	48.40	48.30	48.50
Width (excl. wedge & wires)		mm	10.00	9.95	10.05
Width (incl. wedge & wires)		mm	11.50	10.50	13.00
Mass		g	19.0	-	-
Standard mechanical interface	2 flat surfaces 5*10 mm ² with M2.5 threaded hole	-	-	-	-
Standard electrical interface	2 PTFE insulated AWG30 wires 100 mm long with Ø 1 banana plug	-	-	-	-

➤ PROPERTIES STANDARD TECHNICAL CONDITIONS OF USE AND MEASUREMENT

Free-free	: The actuator is not fixed
Blocked-free	: The actuator is fixed to a mechanical support assumed infinitely stiff
Quasistatic excitation	: AC voltage between -20 and 150 V at 1 Hz
Harmonic excitation	: Voltage of 0.5 V _{rms} , sinusoidal mode from 0 to 100 kHz
Max. harmonic excitation	: Voltage defined by the measurement of max. displacement, sinus at resonance frequency
Displacement measurement	: Laser interferometer, capacitive displacement sensor
Admittance measurement	: HP 4194 A or Cypher C60 electrical impedance analyser
Environment	: Ambient temperature (15-25°C) and dry air (Humidity < 50 % rH)

Any technical conditions of use, different from those defined above, can lead to temporary or definitive alterations of properties. Thank you to contact CEDRAT TECHNOLOGIES before using actuators under non standard technical conditions.

➤ FACTORY TESTS CARRIED OUT

- Test 1 : Electrical admittance vs. Frequency, free-free
- Test 2 : Displacement vs. input voltage

➤ EXTRA FACTORY TESTS

- Test 3 : Gain and linearity of the sensor
- Test 4 : Step response in closed loop
- Test 5 : Stability in closed loop

➤ MECHANICAL INTERFACE

- | | | |
|-----------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> [FI] Flat Interface | <input checked="" type="checkbox"/> [H] Flat Interface with hole | <input checked="" type="checkbox"/> [TH] Flat Interface with threaded hole |
| <input type="checkbox"/> [SV] Specific version | <input checked="" type="checkbox"/> [FF] Free-free Interface | <input checked="" type="checkbox"/> [SI] Specific interface |

➤ AVAILABLE OPTIONS

- [SG] Strain gauges
- [ECS] Eddy current displacement sensor
- [NM] Non-magnetic
- [VAC] Vacuum



TECHNICAL DATA SHEET

APA400M

v3.3

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