CRYO LINEAR ACTUATOR (CLA)

Features

- Nanometer step size
- Driving forces up to 50N
- 20 mK to 375K, vacuum compatible
- Full ceramic screw and nut, uncoated
- Extreme stability due to self locking nature
- No power dissipation when "off"
- Robust design for easy handling
- High drive stiffness
- Cryo Optical Encoder option "COE"

Description / Applications

The Cryo Linear Actuator is developed for nanometer level positioning in a cryo-vacuum environment and can be seen as an actuated set screw. Piezo ceramics in the disc-shaped head generate torque pulses which cause the connected screw to rotate in the stationary nut yielding linear motion. Both screw and nut are ceramic and run without coatings which could be worn off due to extensive use. Being self-locking by nature stability in the sub-nanometer range is obtained. The result is an actuator suited for set and forget applications with nanometric step size and high driving forces.

Specifications

specs	unit	CLA2201	CLA2201-COE	CLA2601	CLA2601-COE	CLA2603	CLA2603-COE
ACTUATOR SPECIFICATIONS							
Active axes	-	1					
Type of motion	-	x					
Range	mm	12	6	12	6	12	6
Min. step size @ ambient	nm	5				15	
Min. step size @ 4K	nm	1				3	
Max. velocity @ ambient	µm/s	25				75	
Max. velocity @ 4K	µm/s	15				45	
Axial stiffness	N/m	8e7					
Min. required preload	N	3					
Max. driving force @4K	N	20		30		50	
Operating frequency	Hz	1-600					
Operating voltage	V	-20 ... +130					
Operating temperature	K	0.02-375					
Main construction material	-	Stainless steel 316L, ceramic, aluminium (COE)					
Mass	grams	29	34	43	48	39	44
Screw pitch	mm/turn	0,25					
Dissipation @ ambient	mJ/step	0,59				1,48	
Dissipation @ 4K	mJ/step	0,055				0,14	
Encoder resolution *	PPR	N/A	710	N/A	850	N/A	850
DRIVE ELECTRONICS							
Controller/driver	-	CAB-230(115), CADM2					
Encoder readout	-	N/A	OEM2	N/A	OEM2	N/A	OEM2
* Linear resolution can be found by dividing the spindle pitch by PPR (pulses per revolution)							