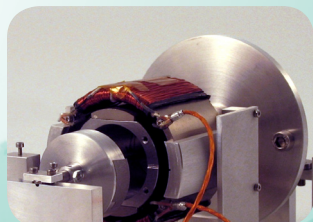


Limited Angle Torque Actuators



The Limited Angle Torque (LAT) actuators are rotating actuators over an angle below $\pm 15^\circ$. They offer a smooth, accurate motion in conjunction with an elastic guiding for precise motion and pointing assemblies. The LAT have been initially developed for space applications, (and thus display some reduded coils) for pointing functions.

Objective

The purpose of the LAT family is to provide a controllable rotating actuator over an angle of $\pm 15^\circ$. The LAT provide an almost constant torque over the functional angular range, providing a controllability similar to Voice Coil Actuator. It can therefore be used in a closed loop with a sensor and a linear amplifier (such as the LA24 amplifier) to get an accurate pointing system.

Assembly

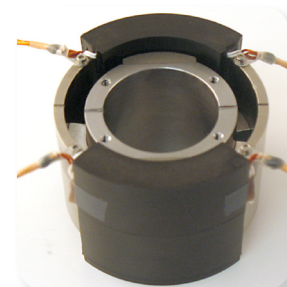
The architecture of the device is composed of a toroidal stator including 2 nominal coils and 2 reduded coils. The rotor supports the magnets. It can be used as a position actuator and a closed loop can be set with a proximity sensor to get a high position accuracy. Limited Angle Torque Actuators find applications as pointing in gimbal systems, scanning systems, position controls.

Performances of the LAT actuators

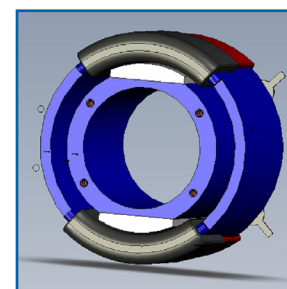
The LAT actuators use a toroidal winding and can thus dissipate the Joule losses in the stator. The performances are given with a nominal centering of the rotor with a concentricity of 0.05 mm.

Customization

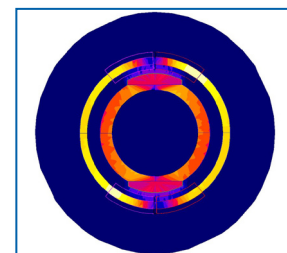
Several LAT actuators can be designed and customized for a new application.



View of the LAT100.



CAD Assembly of the LAT100.



Magnetic induction in the LAT100.

References	Unit	LAT20	LAT100
Notes		preliminary	preliminary
Stroke	°	± 15	± 15
Peak Torque	N.m	0,02	0,13
Nominal Torque	N.m	0,006	0,044
Peak power	W	1,77	4,86
Nominal power	W	0,16	0,541
Temperature range	°C	-40/80	-40/80
Torque constant	N.m/A	2,7	10
Motor constant	N.m/W ^{1/2}	0,015	0,06
Electrical time response	ms	0,59	0,84
Winding resistance	Ohm	3,58	12
Nominal current	A	0,21	0,21
Electrical interface		4 AWG26 Kapton ins.	4 AWG26 Kapton ins.
Total mass	g	117	621
Moment of inertia (rotor)	kg.m ²	95,06E-6	14,04E-4
Outer diameter	mm	49	85
Height	mm	20	60

For more information, please contact:

CEDRAT TECHNOLOGIES
 15 Chemin de Malacher - Inovallée
 38246 Meylan Cedex - France
actuator@cedrat.com
 Phone: +33 (0)4 76 90 50 45 - Fax: +33 (0)4 56 38 08 30