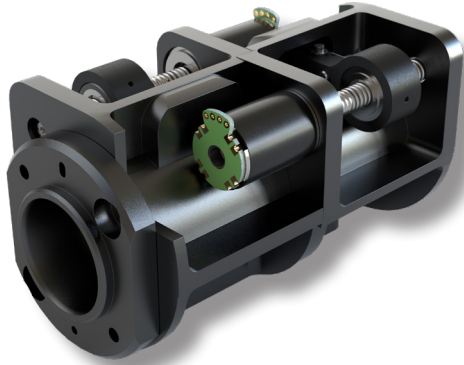# HIGHLY COAXIAL LENS ACTUATOR

KEY FEATURES

- Accurate positioning system
- Low friction motorized mechanism
- Innovative and compact mechanical design
- Key solution for lens displacements with perfect alignment
- Bespoke design

OVERVIEW

This optomechanical platform, is a highly accurate motorized solution for the linear displacement of lenses sharing a common optical path. Thanks to an innovative mechanical design composed of two precise guiding bearing perfectly adjusted inside a common shared hole, amazing lateral positioning repeatability are achieved. Thought as a technical solution for any optical system requiring very low optical axis deviation and high compactness, a large panel of customizations are possible and welcomed.

TECHNICAL SPECIFICATIONS

Spécification	Configuration	Customization
Number of lens holder	2	1
Optical key dimensions	-	Yes, see p.2
Max Stroke (per lens)	7.5 mm (screw driving solution)	Yes
Max Stroke (per lens)	3 mm (with cam solution)	Yes
Max. lens diameter	½" (12.7 mm)	Yes
Optical aperture	11 mm	Yes
Z- Pos. unidirectional repeatability	+/- 5 [µm]	-
X,Y lateral repeatability	+/- 1 [µm]	-
Lens holder tilts repeatability	+/- 0.006° (0.1 mrad)	-
X, Y mismatch accuracy between both lens holders	< 5 µm	-
Nominal Speed	5 mm/s	Yes
Motor type	Stepper (Faulhaber DM1220)	Yes
Drive mechanism	Ball screws or cam	Lead screws
Motor regulation	Open loop	Closed loop
Standard lens fixing feature	-	Yes
Frame design	-	Yes
Mechanical dimensions	78 x 42 x 42 mm	Yes

Remark: Typical values, measured on a screw type configuration, open loop regulation, electronic not included
Device under development, values subject to modifications

OPTICAL KEY DIMENSIONS

Dim	STD	Customizations*
A	27.5	Yes
B	28	Yes
E	18	Yes
F	18	Yes
G	78	Yes
H	11	Yes
I	12.7	Yes
J	12.7	Yes
K	11	Yes
With ball screw configuration		
C, D	7.5	Yes
With cam configuration		
-	3	Yes
Typical values in [mm]		
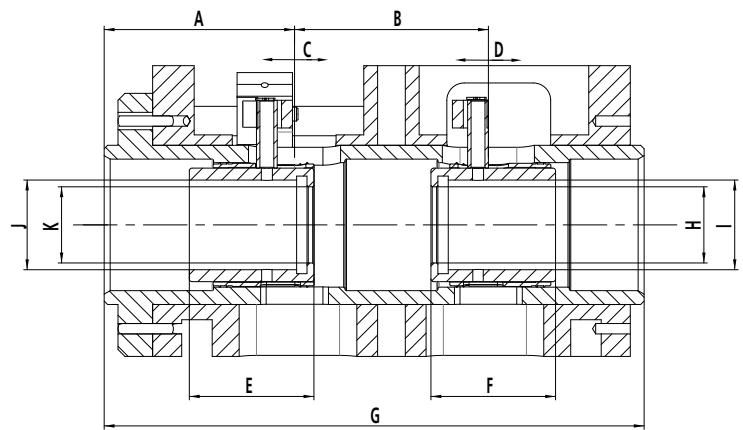
Screw version of the platform

* Values subject to mechanical limitations, to be discussed

PLATFORM INTEGRATION

Designed as a highly customizable solution, several adapters allowing different mounting interfaces including C-Mount and RMS threading or specific geometries for the compatibility with optical cage systems are proposed. These adapters give a complete versatility to the present device as part of systems in the realization of more complex optical designs. Many optical elements such as light sources, cameras or fixed lenses with diameters up to one inch can easily be added to the system.

MPS adapters	Compatible with standard adapters	Thorlabs ref.
RMS	RMS – C-Mount	RMSA6
	RMS – SM1	SM1A4
CASYS	30 mm cage system	ERx + CPxx

Technical documents	Type	Link
CAD files	STEP	Available soon
Drawings	PDF	Available soon
Motor	DM1220 (stepper)	Available soon

MOUNTING EXAMPLE

The platform has not been developped as a standalone optical device. It has been thought to give you the possibility to add dynamic operations in your own optical device. With addition of standard external mounting elements for optics it is possible to easily built complex optical systems.
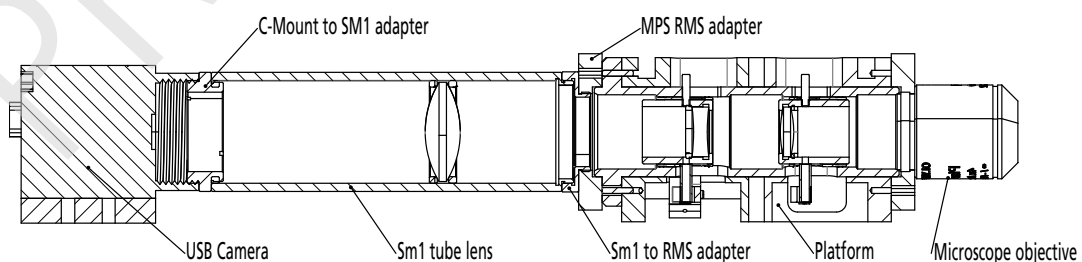
Integration example of the platform with help of external standard mounting elements for optics