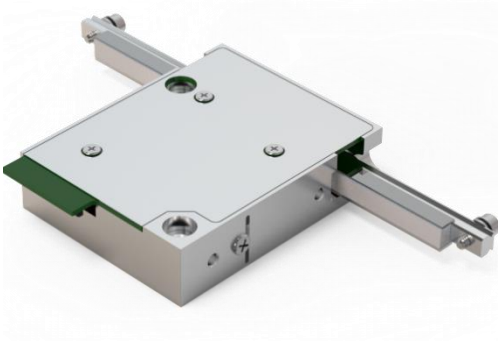
XLA-5 Series

Fast and compact linear actuator



The XLA micro linear actuators are world class in terms of weight, size and precision. The actuator is driven by the Crossfixx™ ultrasonic piezo motor, allowing an extremely compact design, variable speeds up to 200 mm/s and a total weight of less than 36 gram! The XLA-5 has an integrated encoder with a 1250, 312 or 78 nm resolution or open-loop. A wide range of rod lengths is available, allowing stroke lengths from 10 mm to 300 mm! The open-loop version also comes with an integrated controller to make the whole setup even more compact.

Key features

	closed-loop	**open-loop**
drive principle	patented Crossfixx™ ultrasonic piezo technology	
lifetime	> 1000 km / typ. 20 million cycles	
input voltage	12 to 48 V	12 V
controller	XD-OEM controller required	integrated controller

Model code structure

actuator type	**rod length (mm)**	**encoder resolution (nm)**	**FPC cable outlet (flexible printed cable)**
XLA-5	-45	-OPEN	- Z1 (straight, standard) - Z2 (angled)
		-1250	
		-312	
		-78	
	-55	same as XLA-5-40	
	-65		
	-75		
	-85		
	-95		
	-105		
	-125		
	…		
	-285		
	-305		
	-325		

Example: **XLA-5-45-312**

- XLA-5 series linear actuator
- Rod length of 45 mm
- Closed-loop actuator with integrated encoder with a resolution of 312 nm

Environmental compatibility

temperature range	-30°C to +70°C
humidity range	20% to 90% RH (non-condensing)
heat dissipation (motor only)	< 5 W
internal operation voltage	< 60 V

Motion performance

			XLA-5 all rod lengths				unit	tolerance
			-1250	**-312**	**-78**	**open-loop**		
LIMITS		type	software + mechanical			magnetic + mechanical		
ENCODER		type	optical, incremental			no encoder + integrated controller		
		grating period	79.8				µm	
		resolution	1250	312	78		nm	
		index	1 per full stroke					
		accuracy	± 5				µm	typ.
ACTUATOR	**positioning**	resolution = min. step size = min. incremental motion (MIM)	1250	350	80	20 – 50 µm (pulsed operation)	nm	typ.
		unidirectional repeatability	± 1250	± 350	± 80		nm	typ.
		bidirectional repeatability	± 2500	± 700	± 160		nm	typ.
	speed	max. speed	400			1000	mm/s	typ.
		min. speed	2 to 5			10	µm/s	typ.
		stability (at typical speed of 10 mm/s)	± 1			-	%	typ.
		point-to-point positioning time for a 1 mm step* 0 g load 100 g load	25 40			-	msec	typ.
		point-to-point positioning time 10 mm 1 mm 100 µm	130 25 20				msec	typ.

Mechanical properties

		XLA-5											unit	tolerance
rod length		**-45**	**-55**	**-65**	**-75**	**-95**	**105**	**-125**	**-145**	**-165**	**-185**	**-205**	mm	± 0.1
dimensions	closed-loop	38 x 30 x 9.1											mm	± 0.1
	open-loop	38 x 30 x 12												
stroke / travel range		10	20	30	40	60	70	90	110	130	150	170	mm	± 0.1
mass	closed-loop	35.8	36.6	37.4	38.2	39.8	40.8	41.6	42.4	43.2	50	50.8	g	± 5%
	open-loop	37.0	37.8	38.6	39.4	50.8	51.2	52	52.8	53.6	54.4	55.2		
max. acceleration		950	840	730	650	530	490	420	370	330	300	270	m/s^2	typ.
holding force		5											N	
driving force		5											N	
actuator materials		aluminum (housing) steel rod and stainless steel housing cover												
cable type		Closed loop version: FPC, 12 core, 0.5 mm pitch with opposite side contacts Open loop version: FPC, 14 core, 0.5 mm pitch with opposite side contacts												

		XLA-5						unit	tolerance
rod length		**-225**	**-245**	**-265**	**-285**	**-305**	**-325**	mm	± 0.1
dimensions	closed-loop	38 x 30 x 9.1						mm	± 0.1
	open-loop	38 x 30 x 12							
stroke / travel range		190	210	230	250	270	290	mm	± 0.1
mass	closed-loop	51.6	52.4	53	53.8	54.6	55.4	g	± 5%
	open-loop	56	56.8	57.6	58.4	59.2	60		
max. acceleration		250	220	210	200	180	170	m/s^2	typ.
holding force		5						N	
driving force		5						N	
actuator materials		aluminum (housing) steel rod and stainless steel housing cover							
cable type		Closed loop version: FPC, 12 core, 0.5 mm pitch with opposite side contacts Open loop version: FPC, 14 core, 0.5 mm pitch with opposite side contacts							

Controller/software

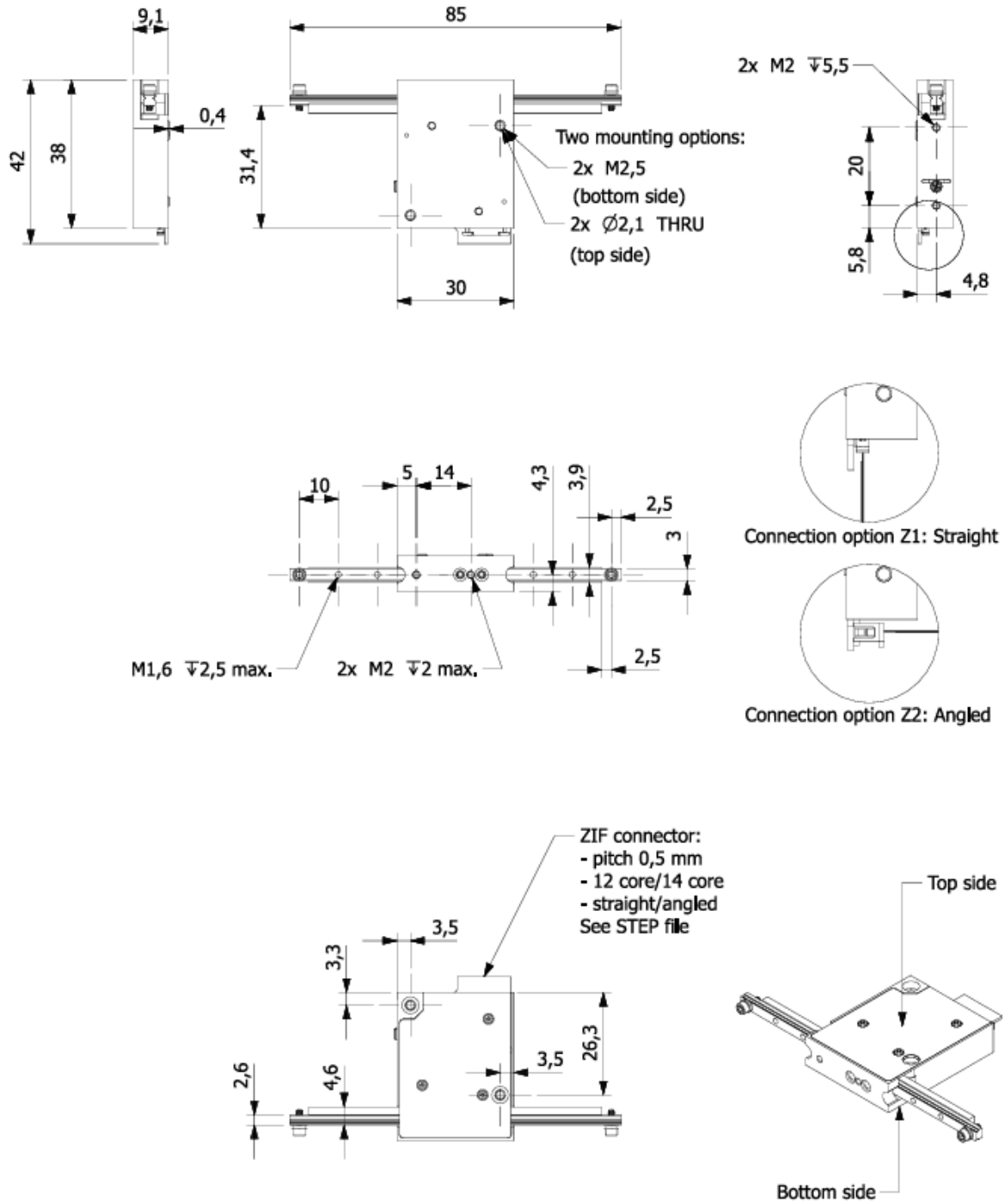
The XLA-5 **closed-loop** actuators are compatible with the **XD-OEM Controller**.

The XLA-5 **open-loop** actuators have a **built-in controller**.

Controlling of the stage is done with:

- Easy-to-use Windows interface
- LabVIEW interface program (compiled program or source)
- MATLAB interface script
- C++ and Python libraries

Drawing



	max. tightening torque
M1,6	16 cNm
M2	34 cNm
M2,5	60 cNm