



XLS-3 系列 --- 具有高力矩输出的精密的线性压电平台



XLS-3 系列是由超声波压电马达驱动的精密切线性平台。这些平台将高速定位与纳米精度相结合，在较小体积的情况下达到高力矩输出。Xeryon 的超声波压电马达确保您长寿命、无噪音和无振动运行。此外，自锁压电马达保证平台在掉电时锁住平台的位置。来自运动产生的热很小，从而铸就了稳定的纳米定位系统。

XLS-3 可用于测量应用，例如用于零件的校准或样品的修正。XLS-3 系列有不同长度版本，且易于堆叠成为 XY 或 XYZ 运动平台。

Key features

drive principle	patented Crossfixx™ ultrasonic piezo technology
bearings	precision crossed-roller
lifetime distance	> 100 km
control principle	closed-loop or open-loop position control
operating voltage	20 to 48 V

Model code structure

stage type	stage length (mm)	encoder resolution (nm)	optional	
			vacuum compatibility (10 ⁻⁶ mbar)	short cage for increased stroke
XLS-3	-40	-OPEN	-HV	-SC
		-1250		
		-312		
		-78		
		-5		
		-1		
	-50	same as for XLS-3-40		
	-60			
	-70			
	-80			
	-100			
	-120			

Environmental compatibility

temperature range	-30°C to +70°C
humidity range	20% to 90% RH (non-condensing)
heat dissipation (motor only)	< 1 W
mounting surface flatness	< flatness specification of stage

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Motion performance

		XLS-3 all lengths						unit	tolerance	
		-OPEN	-1250	-312	-78	-5	-1			
ENCODER	resolution									
	type	NA ¹	inductive, incremental			optical, incremental				
	grating period	NA ¹	1280			20			µm	
	resolution	NA ¹	1250	312	78	5	1	nm		
	index	NA ¹	1 per full stroke							
	accuracy	NA ¹	± 10	± 5	± 1			µm	typ.	
STAGE	positioning	resolution = min. step size = min. incremental motion (MIM)	50000 ²	1250	350	80	25		nm	typ.
		unidirectional repeatability	± 50000 ²	± 1250	± 350	± 80	± 25		nm	typ.
		bidirectional repeatability	± 50000 ²	± 2500	± 700	± 160	± 50		nm	typ.
	speed	max. speed	1000	200			150	25	mm/s	typ.
		min. speed	5000 ³	5			2	1	µm/s	typ.
		stability (at typical speed of 10 mm/s)	± 10	± 1					%	typ.
		point-to-point positioning time for a 1 mm step ⁴	NA	300 500			500 800		msec	typ.

¹ a closed-loop control can be achieved by connecting an external position encoder to the controller

² when using stage in burst mode (50µm bursts)

³ lower average speeds can be achieved when using burst mode

⁴ settling within bidirectional repeatability range

Note: a detailed description of the technical terms used in this datasheet can be found on the Terminology page of our website.

Mechanical properties

		XLS-3 -40	XLS-3 -50	XLS-3 -60	XLS-3 -70	XLS-3 -80	XLS-3 -100	XLS-3 -120	unit	tolerance
dimensions	length	40	50	60	70	80	100	120	mm	± 0.1
	width	47.6								
	height	16.8								
stroke/ travel range	standard cage	25	30	40	45	50	75	100	mm	± 0.1
	short cage (-SC)	30	38	48	52	69	85	109		
mass (w/o connector)		81	101	120	141	161	201	241	g	± 5%
load capacity (payload limitation)		1.5							kg	max.
load capacity* (bearing force limitation)	vertical	396	475	633	712	792	990	1188	N	max.
	lateral	396	475	633	712	792	990	1188		
	tilt around pitch axis	1.50	1.88	2.25	2.63	3.00	3.75	4.50	Nm	
	tilt around yaw axis	1.50	1.88	2.25	2.63	3.00	3.75	4.50		
	tilt around roll axis	7.74	9.29	12.38	13.92	15.48	19.35	23.23		
holding force		3							N	min.
driving force		3							N	min.
stage material	slider/base bearings	anodised aluminium stainless steel								
cable length**		1.5							m	± 0.1
connector (stage to controller)		1x 15-pin D-sub HD male (standard) 1x 15-pin D-sub female (-HV)								

* valid for stages with standard cage

** extension cables available or shorter cable on request

Error motion

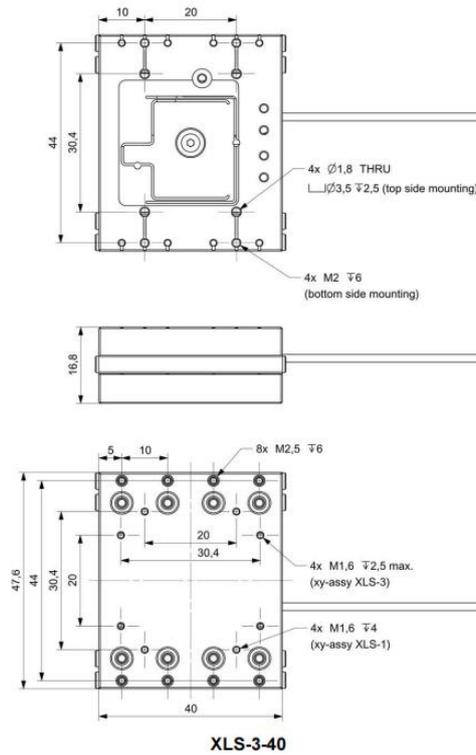
		XLS-3 length 40 to 70		XLS-3 length 80 to 120		unit	tolerance
		-1250 -312	-78 -5 -1	-1250 -312	-78 -5 -1		
error motion	straightness	± 5	± 1	± 10	± 2	µm	max.
	flatness	± 5	± 1	± 10	± 2	µm	max.
	pitch	120	24	120	24	µrad	max.
		25	5	25	5	arcsec	
	roll	120	24	120	24	µrad	max.
25		5	25	5	arcsec		
yaw	60	12	60	12	µrad	max.	
	12.5	2.5	12.5	2.5	arcsec		

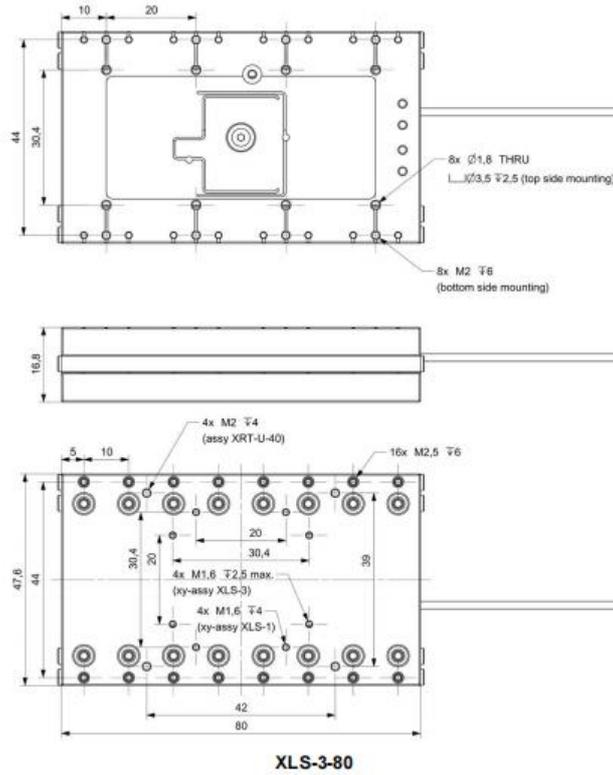
Controller/software

The XLS-3 series linear stages are compatible with all Xeryon controllers. 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

Drawings (STEP-files are available on our website)





Note: stages XLS-3-50, XLS-3-60, XLS-3-70, XLS-3-100 and XLS-3-120 have similar mounting holes as shown in the drawings above.