XLS-1 系列 --- 紧凑和精密的线性压电平台

XLS-1 系列是由超声波压电马达驱动的精密线性平台。这种平台将高速定位与纳米精度相结合。Xeryon 的超声波压电马达确保平台的长寿命、无噪音、无振动地使用。此外，自锁压电马达在断电时保持住平台的原有位置。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-1 可用于测量应用，例如用于零件的校准或样品的修正。XLS-1 系列有不同长度版本，且易于堆叠成为 XY 运动平台。所有平台都可以配备一个短保持架，以增加冲程。

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-1	-30	-OPEN	-HV	-SC
		-1250		
		-312		
		-78		
		-5		
		-1		
	-40	same as for XLS-1-30		
	-50			
	-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

Motion performance

			XLS-1 all lengths						unit	tole-rance
		resolution	-OPEN	-1250	-312	-78	-5	-1		
ENCODER		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] 0 g load 100 g load	NA	300 500			500 800		msec 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-1 -30	XLS-1 -40	XLS-1 -50	XLS-1 -60	XLS-1 -70	XLS-1 -80	XLS-1 -100	XLS-1 -120	unit	tole-rance
dimensions	length	30	40	50	60	70	80	100	120	mm	± 0.1
	width	34									
	height	13									
stroke/ travel range	standard cage	10	25	30	40	45	50	75	100	mm	± 0.1
	short cage (-SC)	19	30	38	48	52	69	85	109		
mass (w/o connector)		40	50	63	76	88	105	126	151	g	± 5%
load capacity (payload limitation)		0.5								kg	max.
load capacity* (bearing force limitation)	vertical	237	396	475	633	712	792	990	1188	N	max.
	lateral	237	396	475	633	712	792	990	1188		
	tilt around pitch axis	1.13	1.50	1.88	2.25	2.63	3.00	3.75	4.50	Nm	
	tilt around yaw axis	1.13	1.50	1.88	2.25	2.63	3.00	3.75	4.50		
	tilt around roll axis	3.02	5.05	6.06	8.07	9.08	10.10	12.62	15.15		
holding force		1								N	min.
driving force		1								N	min.
stage material	slider/base	anodised aluminium									
	bearings	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

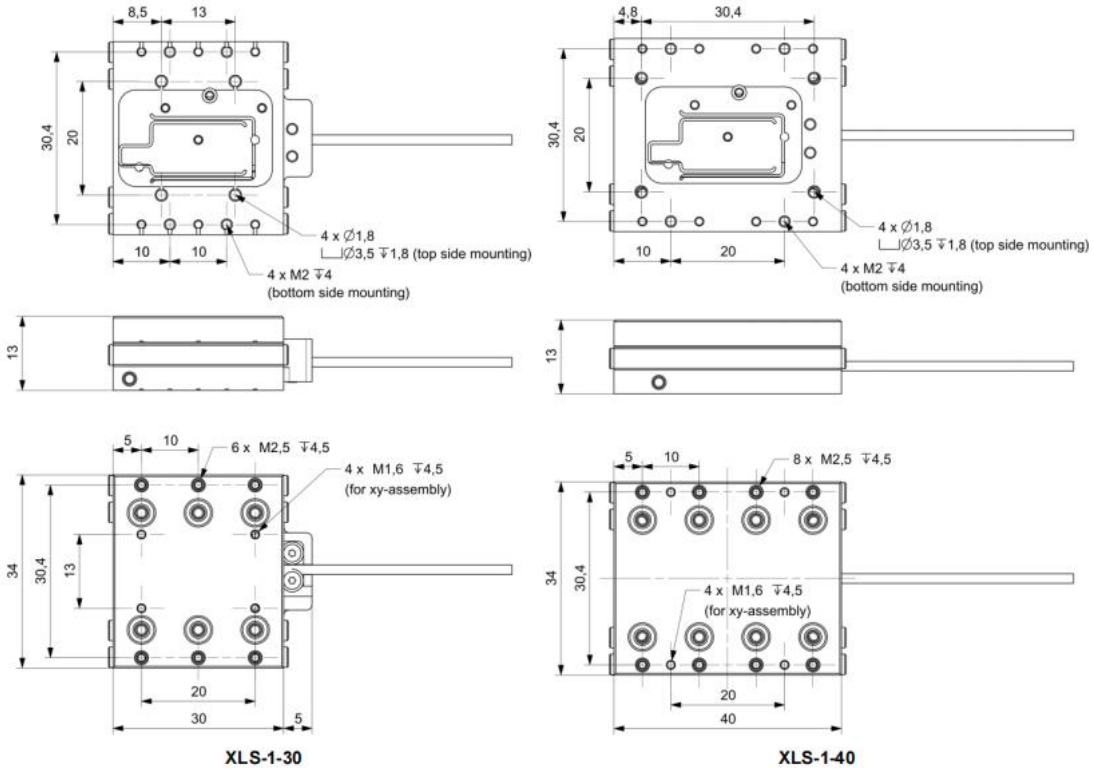
		XLS-1 length 30 to 70		XLS-1 length 80 to 120		unit	tolerance
	resolution	-open -1250 -312	-78 -5 -1	-open -1250 -312	-78 -5 -1		
error motion	straightness	± 5	± 1	± 10	± 2	µm	max.
	flatness	± 5	± 1	± 10	± 2	µm	max.
	pitch	120 25	24 5	120 25	24 5	µrad arcsec	max.
	roll	120 25	24 5	120 25	24 5	µrad arcsec	max.
	yaw	60 12.5	12 2.5	60 12.5	12 2.5	µrad arcsec	max.

Controller/software

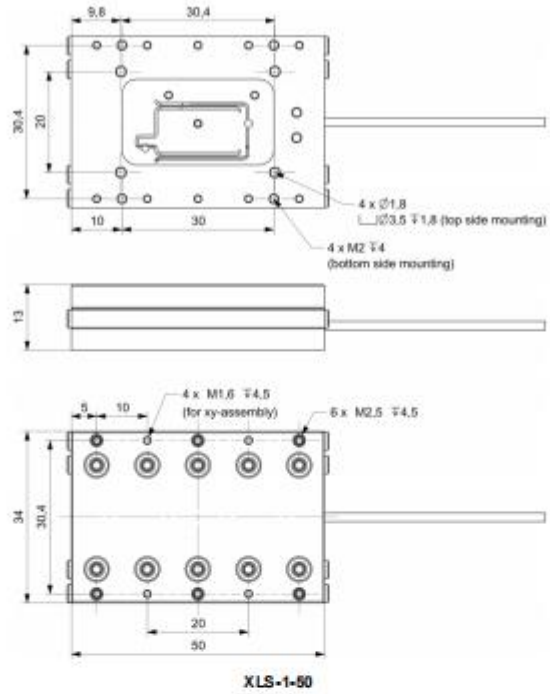
The XLS-1 series linear stages are compatible with all Xeryon controllers. Controlling of the stage is done with:

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

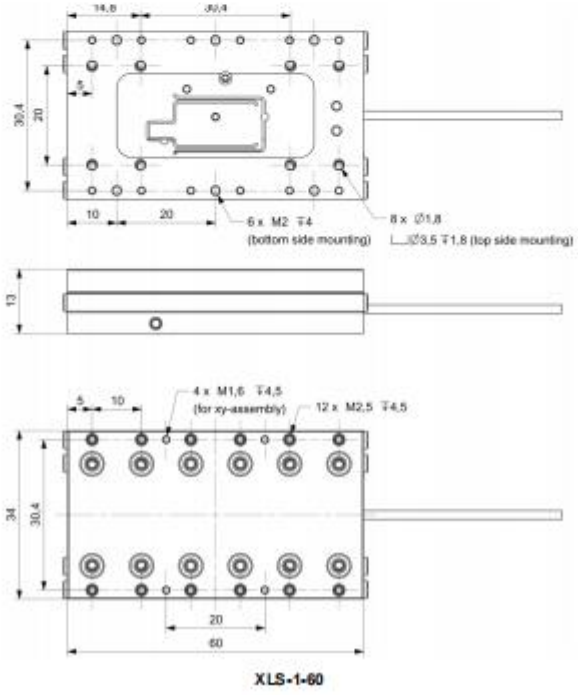
Drawings (STEP-files are available on our website)



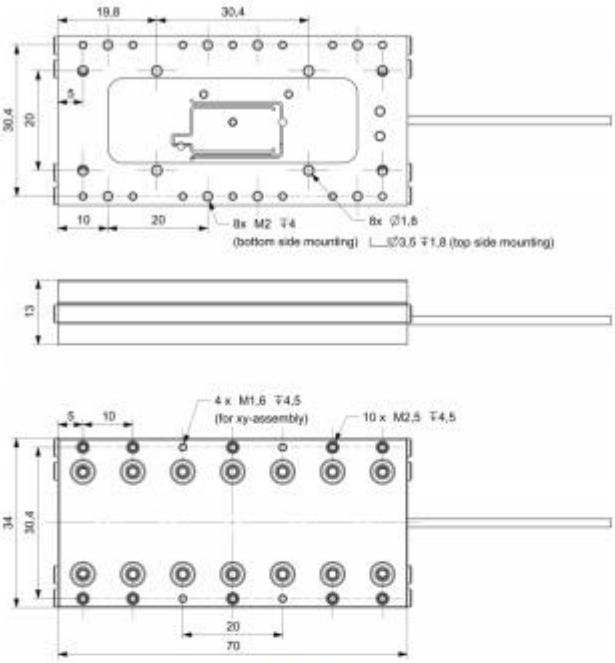
XLS-1-30 XLS-1-40



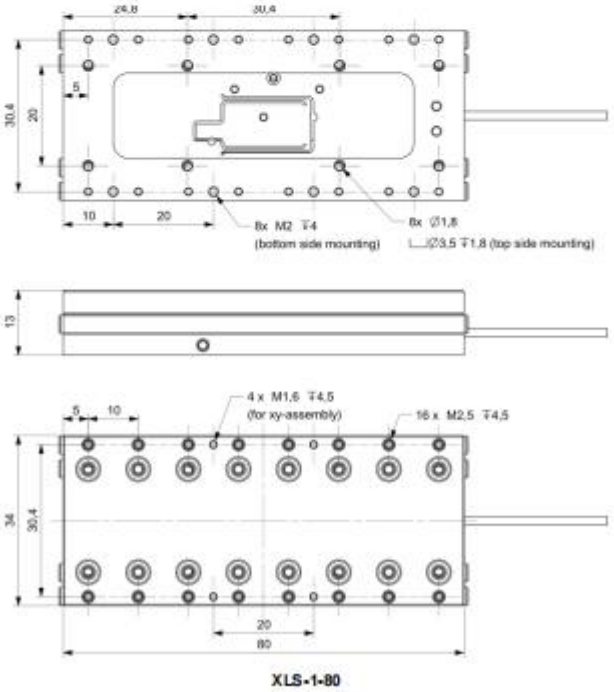
XLS-1-50



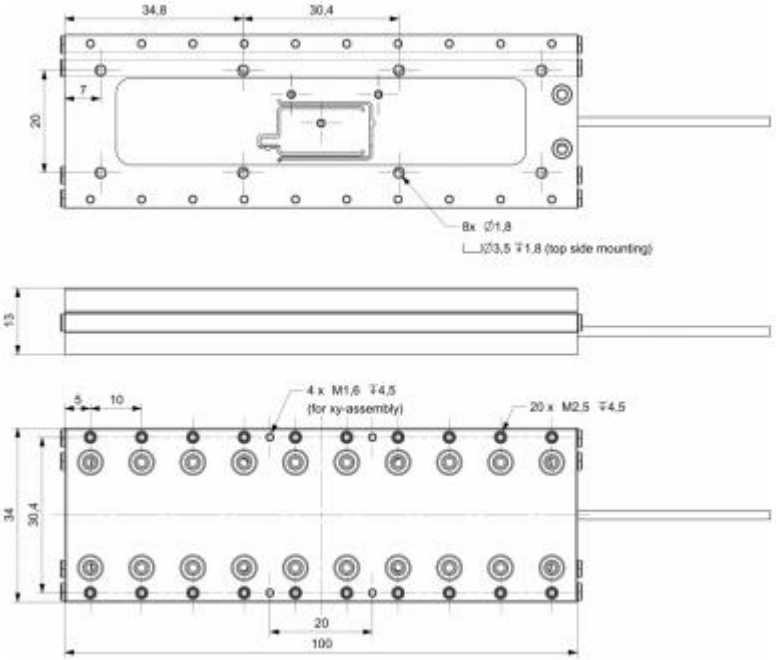
XLS-1-60



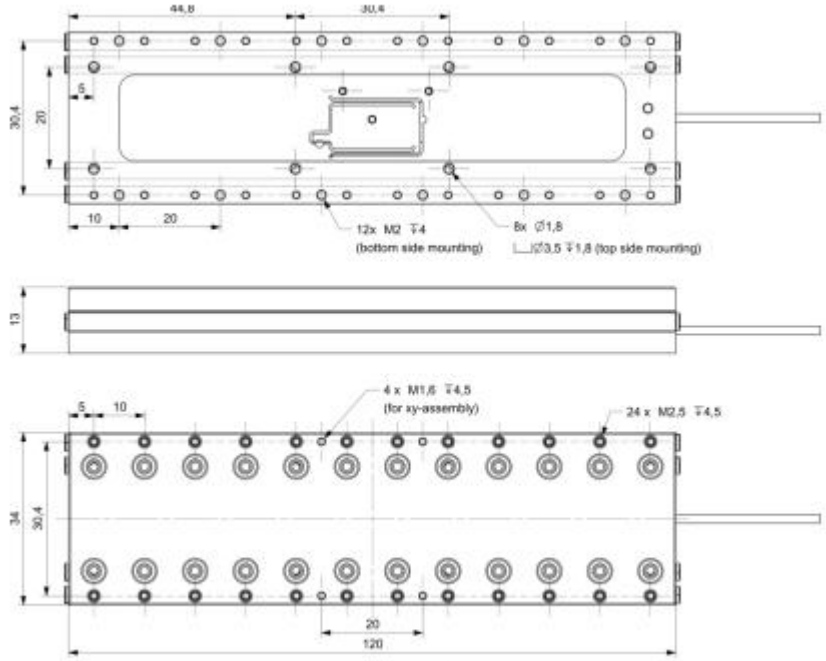
XLS-1-70



XLS-1-80



XLS-1-100



XLS-1-120