XWS series

Integrated XY piezo stage - 100 x 100 mm

The XWS is an integrated XY piezo stage driven by ultrasonic piezo motors. These stages combine high-speed positioning with nanometre precision and offer precise planar motion over a 100 x 100 mm surface. Xeryon's ultrasonic piezo motor ensures you a long lifetime, noiseless and vibration-free operation. In addition, the self-locking piezo motor holds the position of the stage when powered off. The reduced heat dissipation leads to a very stable nano-positioning system. The XWS is used in both microscopy and non-microscopy applications.

Key features

drive principle	patented Crossfixx™ ultrasonic piezo technology
bearings	precision linear recirculating roller
lifetime distance	> 1000 km / typ. 20 million cycles
control principle	closed-loop position control
stage inserts	M6 breadboard insert (standard) Blank insert (optional, instead of standard) Xeryon breadboard insert (optional, instead of standard) Sample or multiwell holding adapter (optional, drawing not included here) Other inserts or adapters upon request

Model code structure

stage type	encoder resolution (nm)
XWS	-1250
	-312
	-78

Environmental compatibility

temperature range	-30°C to +70°C (transport) +10°C to +40°C (operation)
humidity range	max. 75% RH (non-condensing)
heat dissipation (motor only)	< 5 W
mounting surface flatness	< flatness specification of stage

Motion performance

			resolution	-1250	-312	-78	unit	tole-rance
ENCODER			type	optical, incremental				
			grating period	20			µm	
			resolution	1250	312	78	nm	
			index	1 per full stroke				
			accuracy	± 10	± 5	± 1	µm	typ.
STAGE	positioning		resolution = min. step size = min. incremental motion (MIM)	1	1	1	enc. count	typ.
			unidirectional repeatability	± 1	± 1	± 1	enc. count	typ.
			bidirectional repeatability	± 2	± 2	± 2	enc. count	typ.
	speed		max. speed	250			mm/s	typ.
			min. speed	5			µm/s	typ.
			stability (at typical speed of 10 mm/s)	± 1			%	typ.
			point-to-point positioning time for a 1 mm step[1] (without load)	300			msec	typ.
			point-to-point positioning time 10 mm / 1 mm / 100 µm	300 / 150 / 100	450 / 225 / 150		msec / msec / msec	typ.

[1] settling within bidirectional repeatability range

Note: a detailed description of the terms used in this datasheet can be found in the piezo selection guide on our website.
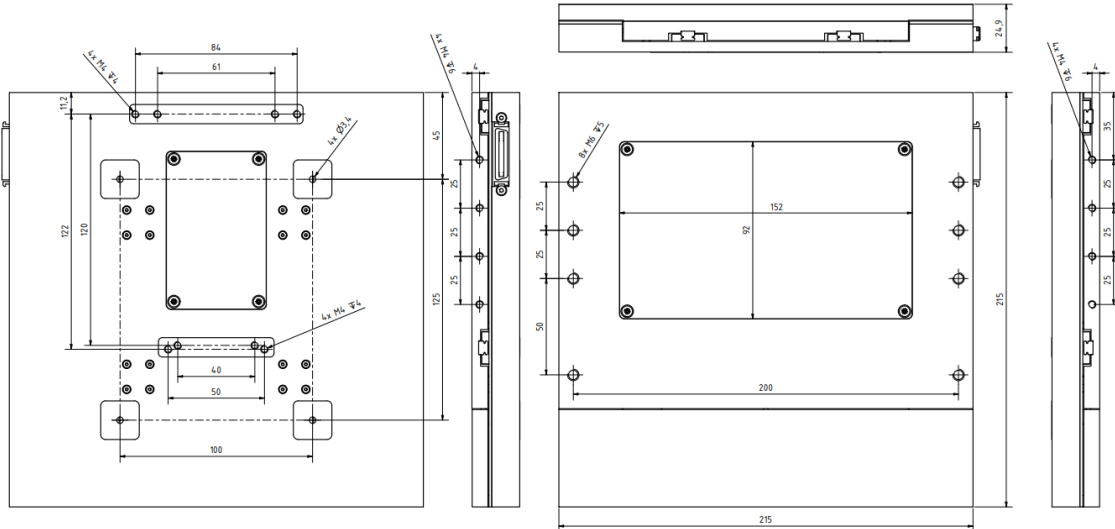
Mechanical properties

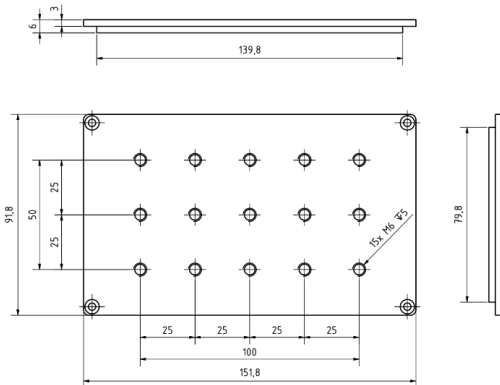|		XWS (all models)	unit	tolerance
dimensions	length	215	mm	± 0.1
	width	215		
	height	24,9		
stroke / travel range standard cage		100 x 100	mm	± 0.1
max. acceleration (without load)		1	m/s^2	typ.
mass (w/o connector)		2,5	kg	± 5%
load capacity (payload limitation)		3	kg	max.
driving force		5	N	min.
holding force		5	N	min.
passive holding stiffness (XY)		1	N/µm	typ.
stage material slider/base		aluminium, black anodized		
cable length		2	m	± 0.1

Controller/software

An integrated XY stage and controller + software from Wienecke & Sinske are included by default. Other controls upon request.
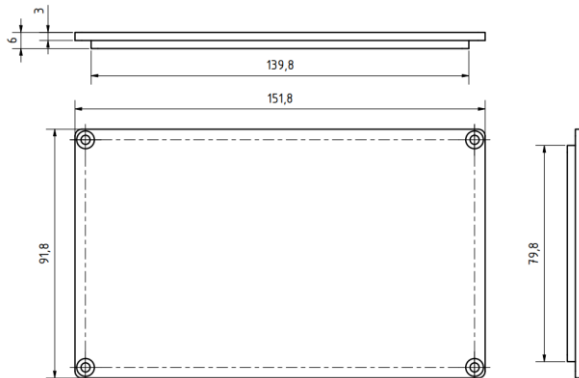
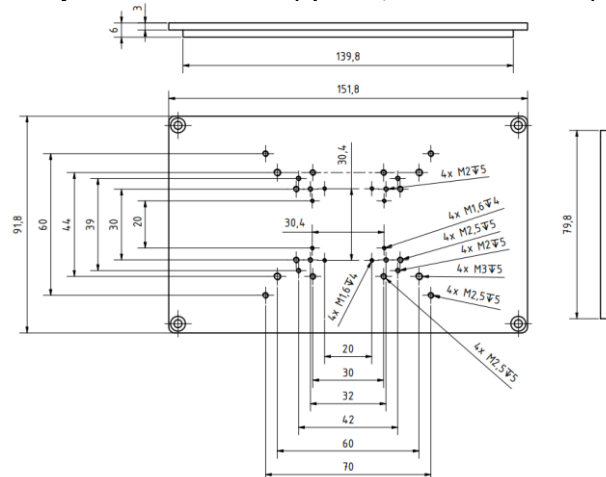# Drawings (STEP-files are available on our website)

Stage dimensions

M6 breadboard insert (standard)

Blank insert (optional, instead of standard)

Xeryon breadboard insert (optional, instead of standard)

XWS