

## Ultra Precision Elevation Stage



### UPL-120

- + Travel range 13 mm (1/2")
- + Uni- directional repeatability down to 0.05  $\mu\text{m}$
- + Maximum speed 6 mm/ sec
- + Load capacity up to 15 kg
- + Integrated optical limit switches
- + Option: linear scale (center mounted)

The UPL-120 ultra- precision elevation stage replaces our older UPL-160 stage. It was specifically designed for wafer inspection, fiber alignment and any other task where maximum positioning accuracy and reliability are absolutely mandatory.

The UPL-120 stage can be equipped with an integrated linear scale. High- quality cross roller bearings mounted on a stress- relieved tempered aluminum alloy body guarantee a maximum load capacity and smooth motion. The UPL-120 stage is offered with a 2- phase SM motor or with a DC- motor and is equipped with two optical limit switches.

### Specifications

UPL-120								
Load Characteristics	F <sub>x</sub> (N)	F <sub>y</sub> (N)	F <sub>z</sub> (N)	M <sub>x</sub> (Nm)	M <sub>y</sub> (Nm)	M <sub>z</sub> (Nm)	k <sub>ax</sub> ( $\mu\text{rad/ Nm}$ )	k <sub>ay</sub> ( $\mu\text{rad/ Nm}$ )
DC- B-028	200	150	150	130	38	130	35	65
2Phase-025	200	150	200	130	38	150	35	65

### Specifications

Travel range (mm)	13		
Straightness ( $\mu\text{m}$ )	$\pm 3$		
Pitch ( $\mu\text{rad}$ )	$\pm 100$		
Yaw ( $\mu\text{rad}$ )	$\pm 100$		
Weight (kg)	2.1		
Motor (Pitch 2 mm)	DC- B-028	2Phase-025	
Linear scale	LS-025		
Speed max. (mm/ sec)	6	6	
Resolution calculated ( $\mu\text{m}$ )	0.0134	1.34 (FS)	
Resolution typical ( $\mu\text{m}$ )	0.5	0.5	0.1
Bi- directional Repeatability ( $\mu\text{m}$ )	$\pm 1.5$	$\pm 1.5$	$\pm 0.05$
Uni- directional Repeatability ( $\mu\text{m}$ )	0.5	0.5	0.05
Nominal Current (A)	0.98	2	
Voltage Range (V)	24		
Accuracy	on request	on request	on request
Velocity Range (mm/ sec)	0.001 ... 6	0.001 ... 6	0.001 ... 6
Material	Aluminium, black anodized	Aluminium, black anodized	Aluminium, black anodized

## Order Information

6635911030

UPL-120 Ultra Precision Elevation Stage, DC Motor- B-039, 13 mm (1/2"), Open Loop, Optical Limit Switches-010

6635911130

UPL-120 Ultra Precision Elevation Stage, DC Motor- B-039, 13 mm (1/2"), Linear Steel Scale-025, Optical Limit Switches-010

6635921030

UPL-120 Ultra Precision Elevation Stage, 2- Phase Stepper Motor-070, 13 mm (1/2"), Open Loop, Optical Limit Switches-010

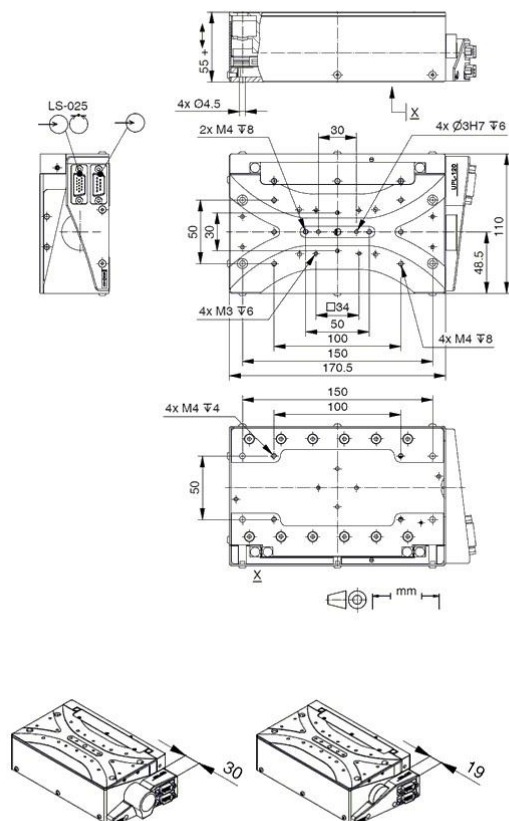
6635921130

UPL-120 Ultra Precision Elevation Stage, 2- Phase Stepper Motor-070, 13 mm (1/2"), Linear Steel Scale-025, Optical Limit Switches-010

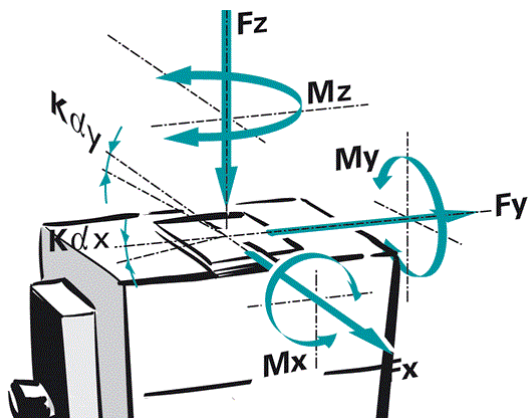
6635921130-0001

UPL-120 Ultra Precision Elevation Stage, 2- Phase Stepper Motor-070, 13 mm (1/2"), Linear Steel Scale-025, Optical Limit Switches-010, 1Vpp

## Drawings / Images



DC- B-028,  
2Phase-025



## 4.110 Ultra Precision Elevation Stage UPL-120 Vacuum



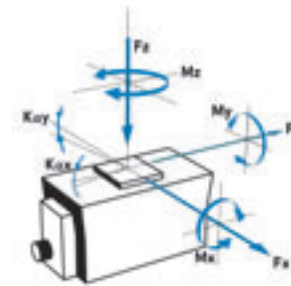
### FACTS

Load characteristics	$F_x(N)$	$F_y(N)$	$F_z(N)$	$M_x(Nm)$	$M_y(Nm)$	$M_z(Nm)$	$k_{ax}(\mu rad/Nm)$	$k_{ay}(\mu rad/Nm)$
FV	200	150	150	130	38	130	35	65
HV	200	150	150	130	38	130	35	65
UHVG	200	150	150	130	38	130	32	65



### KEY FEATURES

- Vacuum up to 10<sup>-9</sup> hPa
- Travel range 13 mm (1/2")
- Uni-directional repeatability down to 0.05  $\mu$ m
- Maximum speed 2 mm/sec
- Load capacity up to 15 kg
- Integrated limit switches
- Option: linear scale (center mounted)



alignment and any other task where maximum positioning accuracy and reliability are absolutely mandatory. The UPL-120 Vacuum stage can be equipped with an integrated linear scale. High-quality cross roller bearings mounted on a stress-relieved tempered aluminum alloy body guarantee a maximum load capacity and smooth motion.

The UPL-120 Vacuum stage is offered with a special 2-phase stepper vacuum motor and is equipped with two limit switches.

Please see "GLOSSARY Vacuum Specification" for all vacuum specification.

The UPL-120 Vacuum ultra-precision elevation stage replaces our older UPL-160 Vacuum stage. It was specifically designed for wafer inspection, fiber

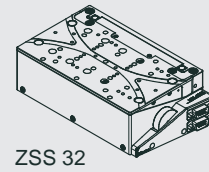
### TECHNICAL DATA

Travel range (mm)	13
Straightness / Flatness ( $\mu$ m)	$\pm 3$
Pitch ( $\mu$ rad)	$\pm 100$
Yaw ( $\mu$ rad)	$\pm 100$
Weight (kg)	2.1

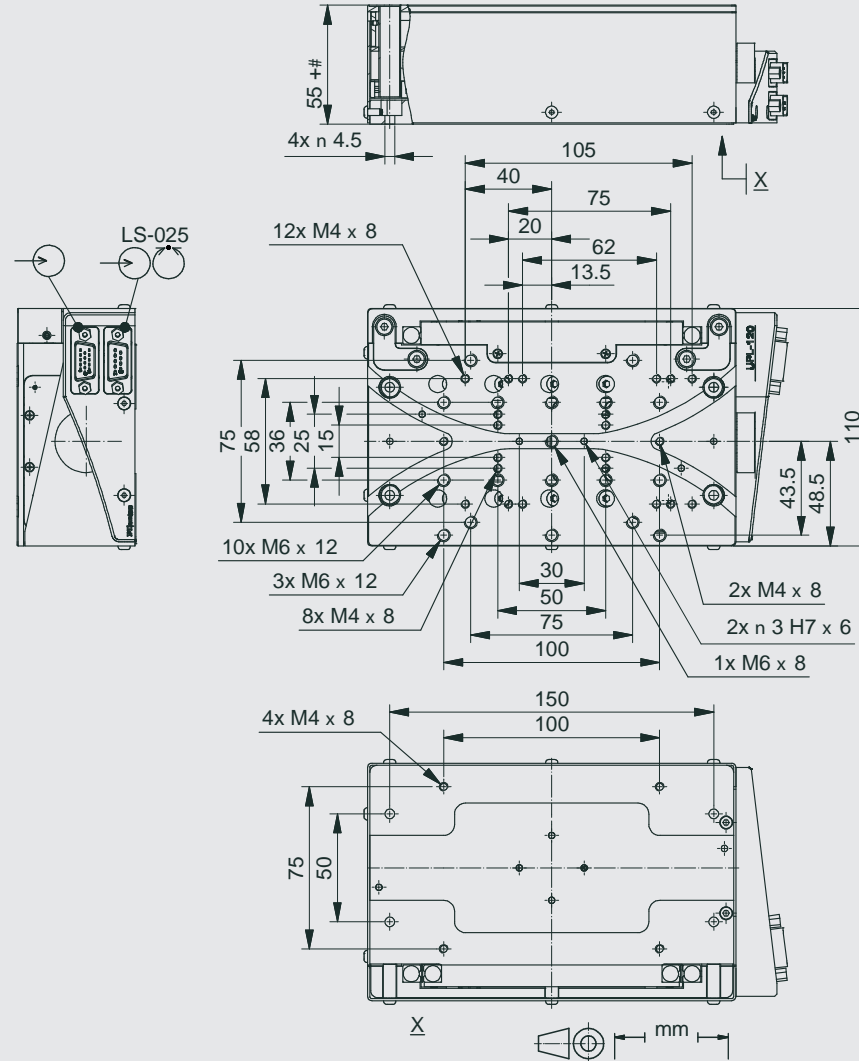
Vacuum type	FV	HV	UHVG	HV
Linear scale				HV
Speed max. (mm/sec)	2	0.75	0.75	
Resolution calculated ( $\mu$ m)	1.34 (FS)	1.34 (FS)	1.34 (FS)	0.05
Resolution typical ( $\mu$ m)	0.5	0.5	0.5	0.1
Bi-directional Repeatability ( $\mu$ m)	$\pm 1.5$	$\pm 1.5$	$\pm 1.5$	$\pm 0.05$
Uni-directional Repeatability ( $\mu$ m)	0.5	0.5	0.5	0.05
Nominal Current (A)	1.2	1.2	1.2	

Accuracy	on request
Velocity range (mm/sec)	0.001 ... 2
Material	Aluminum or Stainless steel, suitable for vacuum

**Vacuum Note:** FS = full step, RE = rotary encoder  
More info: Detailed information concerning motors and encoders, see appendix.



drawings for the corresponding vacuum class must be requested separately.  
 The installed motor types are:  
 ZSS 32.200.1.2-E for FV  
 VSS 32.200.1.2-E for HV & UHVG



- APPLICATIONS
- CONTROLLERS
- ROBOTICS
- LINEAR STAGES**
- ROTATION STAGES
- PIEZO STAGES
- ACCESSORIES
- APPENDIX

- UPM-160
- HPS-170
- LS-270
- LS-180
- LS-120
- LS-110
- PLS-85
- LS-65
- MTS-65
- MTS-70
- VT-80
- LS-40
- MCS
- NPE-200
- UPL-120**
- ES-100
- ES-82
- MA-35
- MP-20
- MP-20 B
- MP-15

Order No.	6635-V-			0	0
FV		1			
HV		2			
UHVG		3			
13 mm (1/2")		1			
open loop		0			
closed loop (only up to HV)		1			