

# 6-Axis Miniature Hexapod

Ideal for Fiber Alignment



## H-811.F2

- Travel ranges to  $\pm 17$  mm /  $\pm 21^\circ$
- Compact design
- Removable magnetic plate
- High dynamics and precision
- Freely programmable, virtual pivot point
- Superior lifetime

Parallel-kinematic design for six degrees of freedom making it significantly more compact and stiff than serial -kinematic systems, higher dynamic range, no moved cables: Higher reliability, reduced friction.

### Extensive Software Package

The software package supplied in the scope of delivery allows integration of the system into virtually any environment. All common operating systems such as Windows, Linux, and OS X as well as a large number of common programming languages are supported including Python, MATLAB and NI LabVIEW. Thanks to sophisticated program examples and the use of software tools such as PIMikroMove, the time between starting integrating and productive operation is shortened considerably.

### Brushless DC motor (BLDC)

Brushless DC motors are particularly suitable for high rotational speeds. They can be controlled very accurately and ensure high precision. Because they dispense with sliding contacts, they run smoothly, are wear-free and therefore achieve a long lifetime.

### Removable magnetic plate

Accelerate your workflows. The next workpiece can be prepared parallel to our automated process step. The removable magnetic plate can be disassembled quickly without tools and subsequently reassembled accurately each time.

### Fields of application

Research and industry, micromanufacturing, fiber alignment, and alignment of optical components.

## Specifications

Motion and positioning	H-811.F2	Unit	Tolerance
Active axes	X, Y, Z, $\theta_x$ , $\theta_y$ , $\theta_z$		
Travel range* in X, Y	$\pm 17, \pm 16$	mm	
Travel range* in Z	$\pm 6.5$	mm	
Travel range* in $\theta_x, \theta_y$	$\pm 10, \pm 10$	°	
Travel range* in $\theta_z$	$\pm 21$	°	
Actuator design resolution	5	nm	
Min. incremental motion X, Y	0.2	$\mu\text{m}$	typ.
Min. incremental motion Z	0.08	$\mu\text{m}$	typ.
Minimum incremental motion $\theta_x, \theta_y$	2	$\mu\text{rad}$	typ.
Minimum incremental motion $\theta_z$	3	$\mu\text{rad}$	typ.
Backlash X, Y	0.2	$\mu\text{m}$	typ.
Backlash Z	0.06	$\mu\text{m}$	typ.
Backlash $\theta_x, \theta_y$	2	$\mu\text{rad}$	typ.
Backlash $\theta_z$	3	$\mu\text{rad}$	typ.
Repeatability X, Y	$\pm 0.15$	$\mu\text{m}$	typ.
Repeatability Z	$\pm 0.06$	$\mu\text{m}$	typ.
Repeatability $\theta_x, \theta_y$	$\pm 2$	$\mu\text{rad}$	typ.
Repeatability $\theta_z$	$\pm 3$	$\mu\text{rad}$	typ.
Max. velocity X, Y, Z	20	mm/s	
Max. velocity $\theta_x, \theta_y, \theta_z$	500	mrad/s	
Typ. Velocity X, Y, Z	10	mm/s	
Typ. Velocity $\theta_x, \theta_y, \theta_z$	240	mrad/s	
<b>Alignment</b>			
Scanning time of spiraled area scan 500 $\mu\text{m}$ $\varnothing^{**}$	<2	s	
Scanning time of spiraled area scan 100 $\mu\text{m}$ $\varnothing^{**}$	<0.5	s	
Scanning time of spiraled area scan 10 $\mu\text{m}$ $\varnothing^{**}$	<0.2	s	

Mechanical properties	H-811.F2	Unit	Tolerance
Stiffness X / Y	0.7	N/ $\mu\text{m}$	
Stiffness Z	8	N/ $\mu\text{m}$	
Load capacity (horizontal base plate / any orientation)	5 / 2.5	kg	max.
Holding force, power off (horizontal base plate / any orientation)	12 / 2	N	max.
Motor type	BLDC motor		

Miscellaneous	H-811.F2	Unit	Tolerance
Operating temperature range	0 to 50	°C	
Material	Stainless steel, aluminum		
Mass	2.2	kg	±5 %
Cable length	2	m	±10 mm
Recommended controller	C-887.5x		

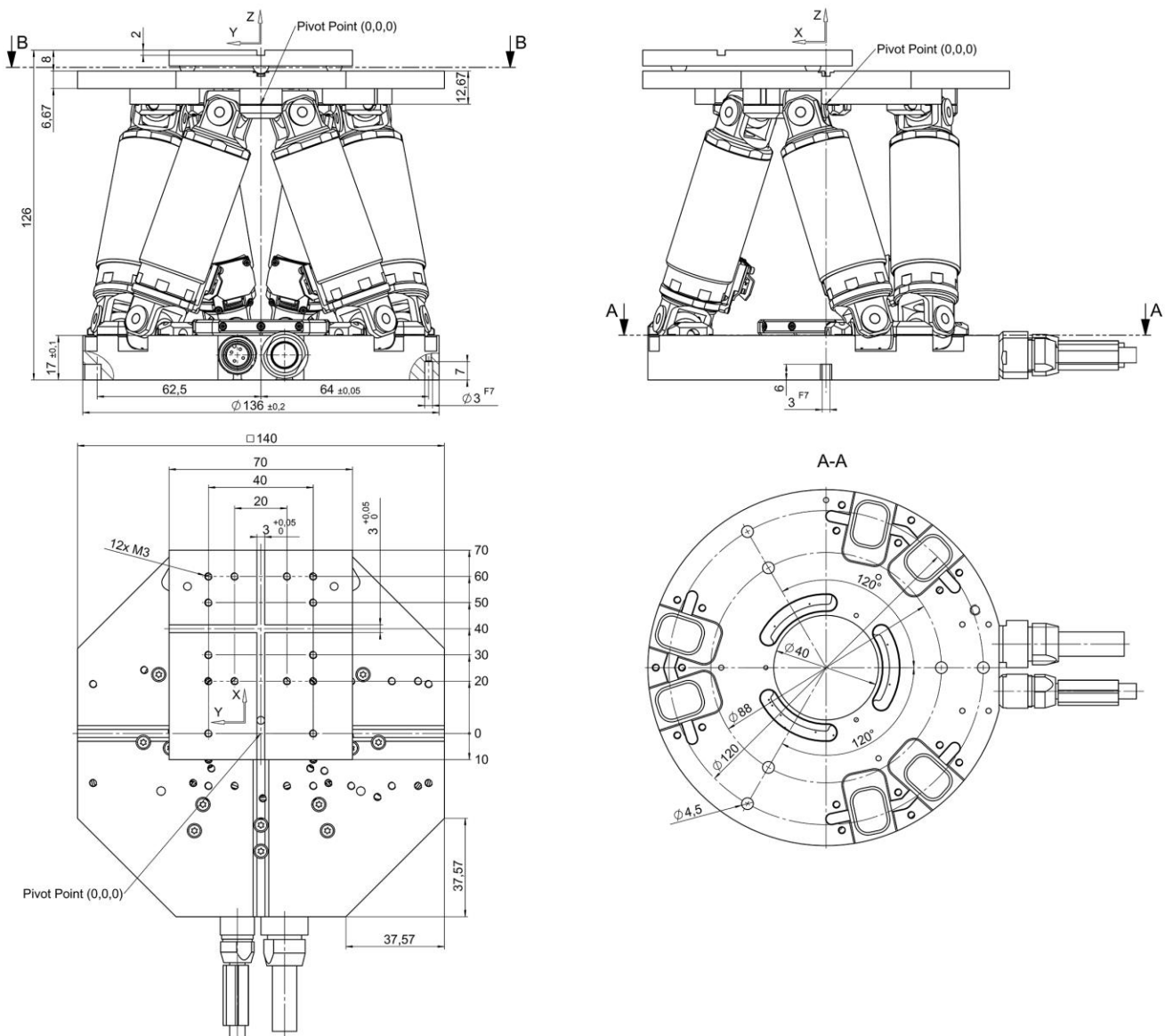
Technical data specified at 20±3 °C.

\* The travel ranges of the individual coordinates (X, Y, Z,  $\theta_x$ ,  $\theta_y$ ,  $\theta_z$ ) are interdependent. The data for each axis in this table shows its maximum travel range, where all other axes and the pivot point are at the reference position.

\*\* Typical time period to scan the full area and move to the maximum intensity

Ask about customized versions.

## Drawings / Images



H-811.F2, dimensions in mm

## Ordering Information

### **H-811.F2**

Miniature hexapod microrobot for optical alignment, removable magnetic plate, brushless DC motor, 5 kg load capacity, 20 mm/s velocity, 2 m cable length