6-Axis Miniature Hexapod

Ideal for Fiber Alignment

H-811.F2

- Travel ranges to ±17 mm / ±21°
- 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 dynamics, no moved cables: Higher reliability, reduced friction.

Extensive Software Package
The software package included in the scope of delivery allows integration of the system into virtually any environment. All common operating systems such as Windows, Linux, and macOS as well as a large number of common programming languages such as Python, MATLAB, and NI LabVIEW are supported. Thanks to sophisticated program examples and the use of software tools such as PIMikroMove, the time between starting integration 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.

PI Hexapod Simulation Tool
The simulation software simulates the limits of the workspace and load capacity of a hexapod. Therefore, even before purchasing, you can check whether a particular hexapod model can handle the loads, forces, and torques occurring in an application. For this purpose, the simulation tool takes the position and motion of the hexapod as well as the pivot point and several reference coordinate systems into account.

Application fields
Industry and research, micromanufacturing, fiber alignment, and the alignment of optical components.

Motion	Unit		H-811.F2
Active axes			X, Y, Z, θX, θY, θZ
Travel range in X	mm		±17
Travel range in Y	mm		±16
Travel range in Z	mm		±6.5
Rotation range in θX	°		±10
Rotation range in θY	°		±10
Rotation range in θZ	°		±21
Maximum velocity in X	mm/s		10
Maximum velocity in Y	mm/s		10
Maximum velocity in Z	mm/s		10
Maximum angular velocity in θX	mrad/s		250
Maximum angular velocity in θY	mrad/s		250
Maximum angular velocity in θZ	mrad/s		250
Typical velocity in X	mm/s		5
Typical velocity in Y	mm/s		5
Typical velocity in Z	mm/s		5
Typical angular velocity in θX	mrad/s		120
Typical angular velocity in θY	mrad/s		120
Typical angular velocity in θZ	mrad/s		120

Positioning	Unit	Toleran-ce	H-811.F2
Integrated sensor			Incremental rotary encoder
Unidirectional repeatabili-ty in X	µm	Typ.	±0.15
Unidirectional repeatabili-ty in Y	µm	Typ.	±0.15
Unidirectional repeatabili-ty in Z	µm	Typ.	±0.06
Unidirectional repeatabili-ty in θX	µrad	Typ.	±2
Unidirectional repeatabili-ty in θY	µrad	Typ.	±2
Unidirectional repeatabili-ty in θZ	µrad	Typ.	±3
Minimum incremental motion in X	µm	Typ.	0.2
Minimum incremental motion in Y	µm	Typ.	0.2
Minimum incremental motion in Z	µm	Typ.	0.08
Minimum incremental motion in θX	µrad	Typ.	2
Minimum incremental motion in θY	µrad	Typ.	2
Minimum incremental motion in θZ	µrad	Typ.	3
Backlash in X	µm	Typ.	0.2
Backlash in Y	µm	Typ.	0.2
Backlash in Z	µm	Typ.	0.06
Backlash in θX	µrad	Typ.	2
Backlash in θY	µrad	Typ.	2
Backlash in θZ	µrad	Typ.	3
Scanning time of spiraled area scan 10 µm Ø	s	Typ.	<0.2
Scanning time of spiraled area scan 100 µm Ø	s	Typ.	<0.5
Scanning time of spiraled area scan 500 µm Ø	s	Typ.	<2

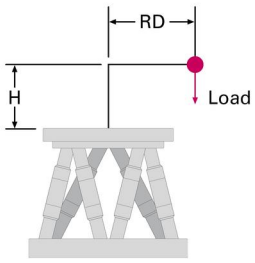
Drive Properties			H-811.F2
Drive type			Brushless DC motor

Mechanical Properties	Unit		H-811.F2
Stiffness in X	N/µm		0.7
Stiffness in Y	N/µm		0.7
Stiffness in Z	N/µm		8
Maximum holding force, base plate in any orienta-tion	N		2
Maximum holding force, base plate horizontal	N		12
Maximum load capacity, base plate in any orienta-tion	kg		2.5
Maximum load capacity, base plate horizontal	kg		5
Overall mass	kg		2.2
Material			Stainless steel, aluminum

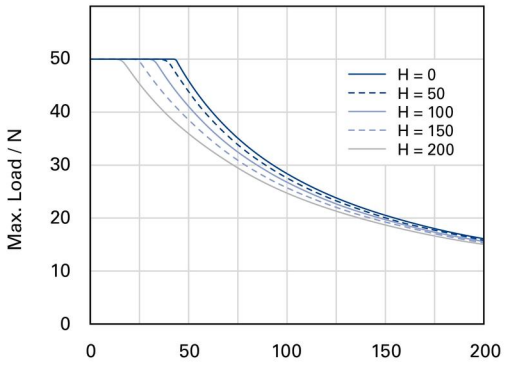
Miscellaneous	Unit		H-811.F2
Connector for supply voltage			M12 4-pin (m)
Recommended controllers / drivers			C-887.5x
Cable length	m		0.5
Operating temperature range	°C		0 to 50
Outer diameter power supply cable	mm		4.95
Minimum bending radius for fixed installation, power supply	mm		25
Outer diameter data transmission cable	mm		9.5
Minimum bending radius for fixed installation, data transmission	mm		95
Connector for data transmission			HD D-sub 78-pin (m)

Technical data specified at 22±3 °C.
The maximum travel ranges of the individual coordinates (X, Y, Z, θX, θY, θZ) are interdependent. The data for each axis shows its maximum travel range when all other axes are in the zero position of the nominal travel range and the default coordinate system is in use, or rather when the pivot point is set to 0,0,0.
Scanning times: Typical time span for scanning the entire area and moving to the highest intensity
The cables fixed to the H-811.F2 are 0.5 m long respectively.
The cables fixed to the H-811.F2 are not drag chain compatible.
Connecting cables are not included in the scope of delivery and must be ordered separately.
Ask about customized versions.

Drawings / Images

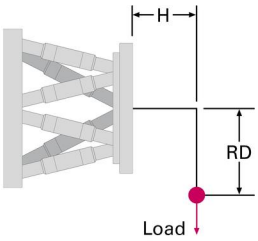


H-811.F2



Maximum loads on the H-811.F2 when mounted horizontally

Drawings / Images



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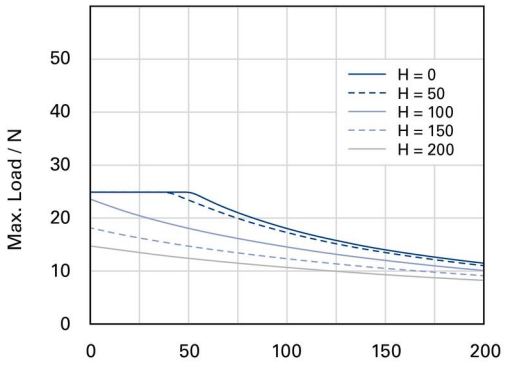
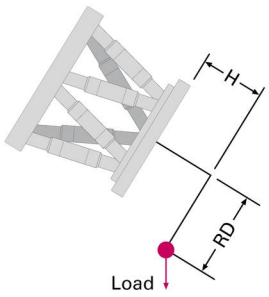


Maximum loads on the H-811.F2 when mounted vertically



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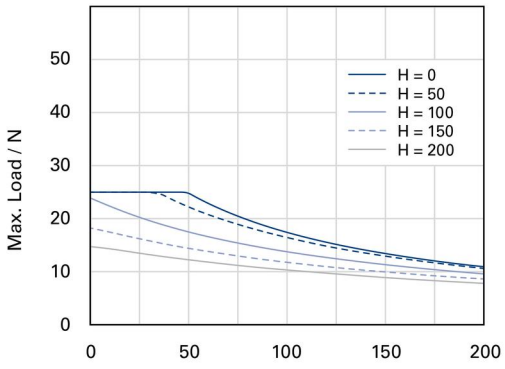
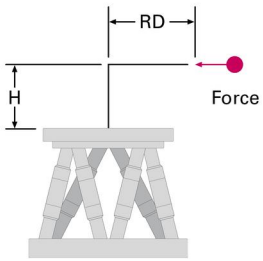


Maximum loads on the H-811.F2 when mounted at the most unfavorable angle

Drawings / Images



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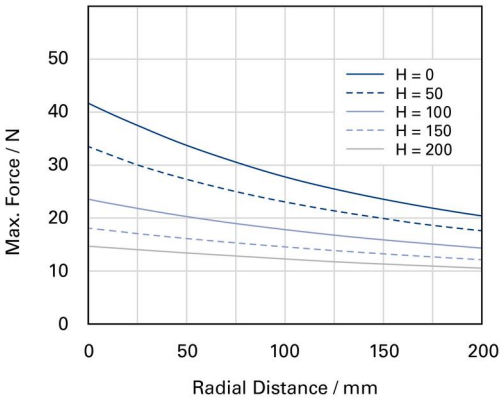
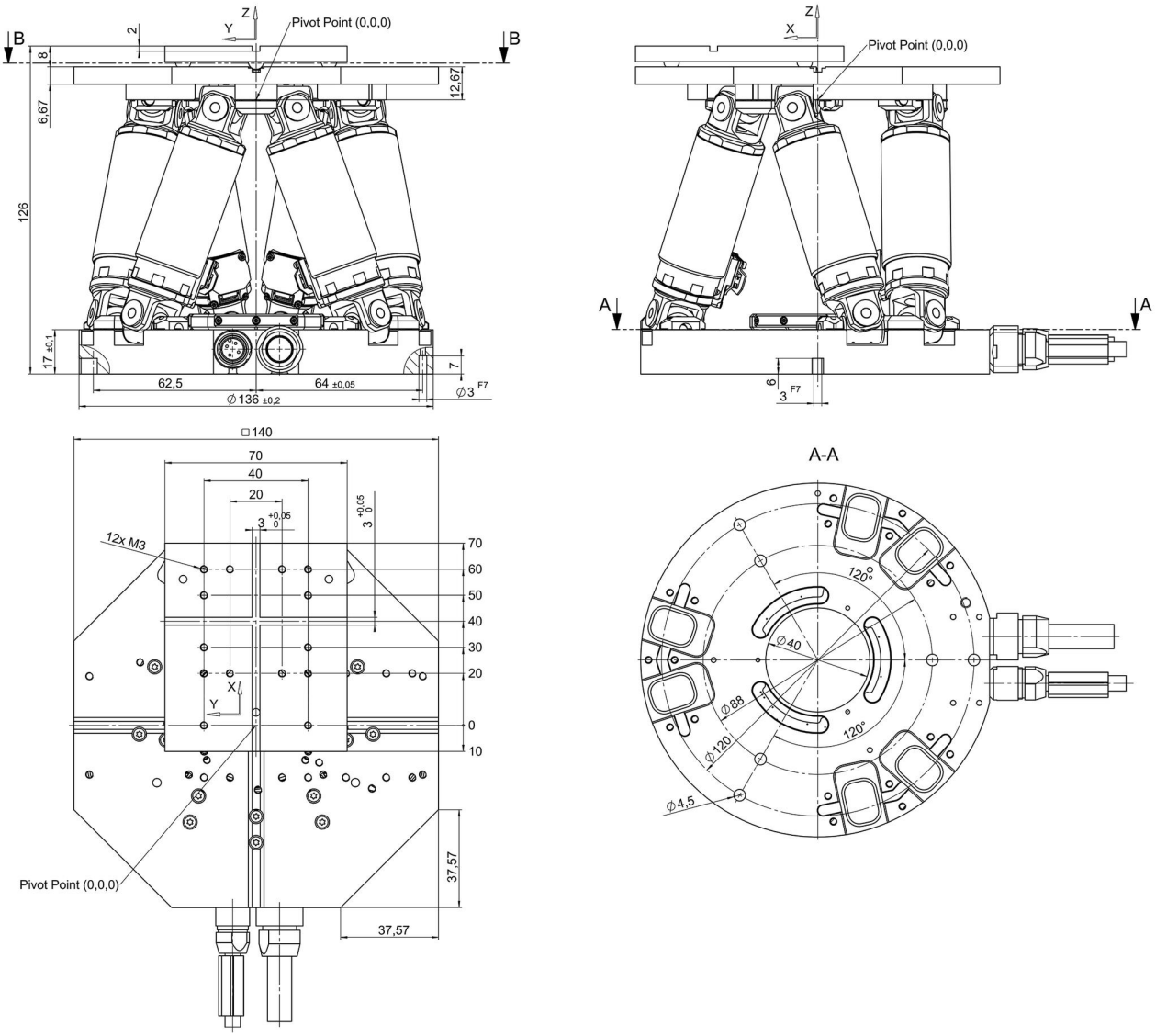


Maximum permissible force acting on the H-811.F2 when mounted horizontally

Drawings / Images



H-811.F2, dimensions in mm, at zero position of nominal travel range

Order Information

H-811.F2
Miniature hexapod microrobot for optical alignment, removable magnetic plate, brushless DC motor, 5 kg load capacity, 10 mm/s velocity, 0.5 m cable length. Connecting cables are not included in the scope of delivery and must be ordered separately.