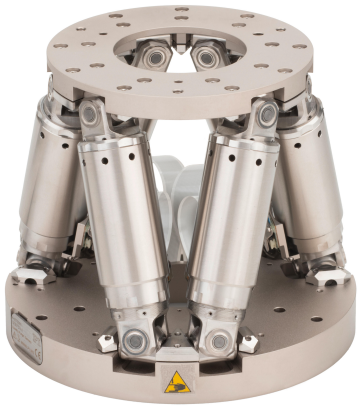
Miniature Hexapod

Fast and Compact for High-Dynamics Applications



H-811.S2

- CIPA certified
- Travel range ±17 mm / ±16 mm / ±6.5 mm
- Rotation range ±10° / ±10° / ±21°
- Dynamics to 30 Hz over a rotation range of 0.1°

Application fields
With its high dynamic properties, the 811.S2 is especially suitable for motion simulations, e.g., for testing image stabilization in cameras or mobile devices. Thanks to its small footprint and its proven reliability in applications with high numbers of cycles, the H-811 is typically employed in precision assembly and metrology. In such areas, it makes a significant contribution to boosting the productivity of complex manufacturing processes and measuring procedures.

High dynamics combined with extreme reliability
The parallel-kinematic arrangement enables the hexapod to perform motion in 6 axes in an extremely compact design. Thanks to the use of brushless DC motors and its stiff mechanical design, the H-811 offers the dynamics required for active alignment applications, even if external interference (e.g., in the case of gluing processes) occurs. Extensive software tools provide support by simplifying the system tuning and making automatic routines available for alignment to an external analog control signal.

Motion simulation for protecting the overall system
The PIVirtualMove software, which can be downloaded free of charge, simulates the travel range, the alignment, and the permissible forces and torques of the H-811 to facilitate an optimum system configuration. In this context, both the chosen center of rotation and the center of gravity of the load are taken into consideration.

Work and tool coordinate systems and an emulation tool are included in the free software package belonging to the scope of delivery of the hexapod controller. The tools provided help to protect critical components such as optical or photonic parts.

Motion	Unit	Tolerance	H-811.S2
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		25
Recommended velocity in X	mm/s		10
Maximum velocity in Y	mm/s		25
Recommended velocity in Y	mm/s		10
Maximum velocity in Z	mm/s		25
Recommended velocity in Z	mm/s		10
Maximum angular velocity in θX	mrad/s		625
Recommended angular velocity in θX	mrad/s		250
Maximum angular velocity in θY	mrad/s		625
Recommended angular velocity in θY	mrad/s		250
Maximum angular velocity in θZ	mrad/s		625
Recommended angular velocity in θZ	mrad/s		250
Amplitude-frequency product in X	mm·Hz		11.99
Amplitude-frequency product in Y	mm·Hz		10.88
Amplitude-frequency product in Z	mm·Hz		4.2
Amplitude-frequency product in θX	°·Hz		6.36
Amplitude-frequency product in θY	°·Hz		6.45
Amplitude-frequency product in θZ	°·Hz		16.23
Amplitude-frequency² product in X	mm·Hz²		72
Amplitude-frequency² product in Y	mm·Hz²		57.3
Amplitude-frequency² product in Z	mm·Hz²		24
Amplitude-frequency² product in θX	°·Hz²		52
Amplitude-frequency² product in θY	°·Hz²		28.5
Amplitude-frequency² product in θZ	°·Hz²		138.5
Amplitude error	%	Max.	10
Phase error	°	Max.	60
Maximum frequency	Hz		30

Positioning	Unit	Tolerance	H-811.S2
Minimum incremental motion in X	µm	Typ.	1
Minimum incremental motion in Y	µm	Typ.	1
Minimum incremental motion in Z	µm	Typ.	0.5
Minimum incremental motion in θX	µrad	Typ.	12
Minimum incremental motion in θY	µrad	Typ.	12
Minimum incremental motion in θZ	µrad	Typ.	25
Unidirectional repeatability in X	µm	Typ.	±0.5
Unidirectional repeatability in Y	µm	Typ.	±0.5
Unidirectional repeatability in Z	µm	Typ.	±0.2
Unidirectional repeatability in θX	µrad	Typ.	±6
Unidirectional repeatability in θY	µrad	Typ.	±6
Unidirectional repeatability in θZ	µrad	Typ.	±10
Backlash in X	µm	Typ.	0.5
Backlash in Y	µm	Typ.	0.5
Backlash in Z	µm	Typ.	0.15
Backlash in θX	µrad	Typ.	5
Backlash in θY	µrad	Typ.	5
Backlash in θZ	µrad	Typ.	10
Integrated sensor			Incremental rotary encoder

Drive Properties			H-811.S2
Drive type			Brushless DC motor

Mechanical Properties	Unit		H-811.S2
Stiffness in X	N/µm		0.7
Stiffness in Y	N/µm		0.7
Stiffness in Z	N/µm		8
Maximum load capacity, base plate in any orientation	kg		0.9
Maximum load capacity, base plate horizontal	kg		2.5
Maximum holding force, base plate in any orientation	N		2.5
Maximum holding force, base plate horizontal	N		15
Overall mass	kg		2.2
Material			Stainless steel, aluminum

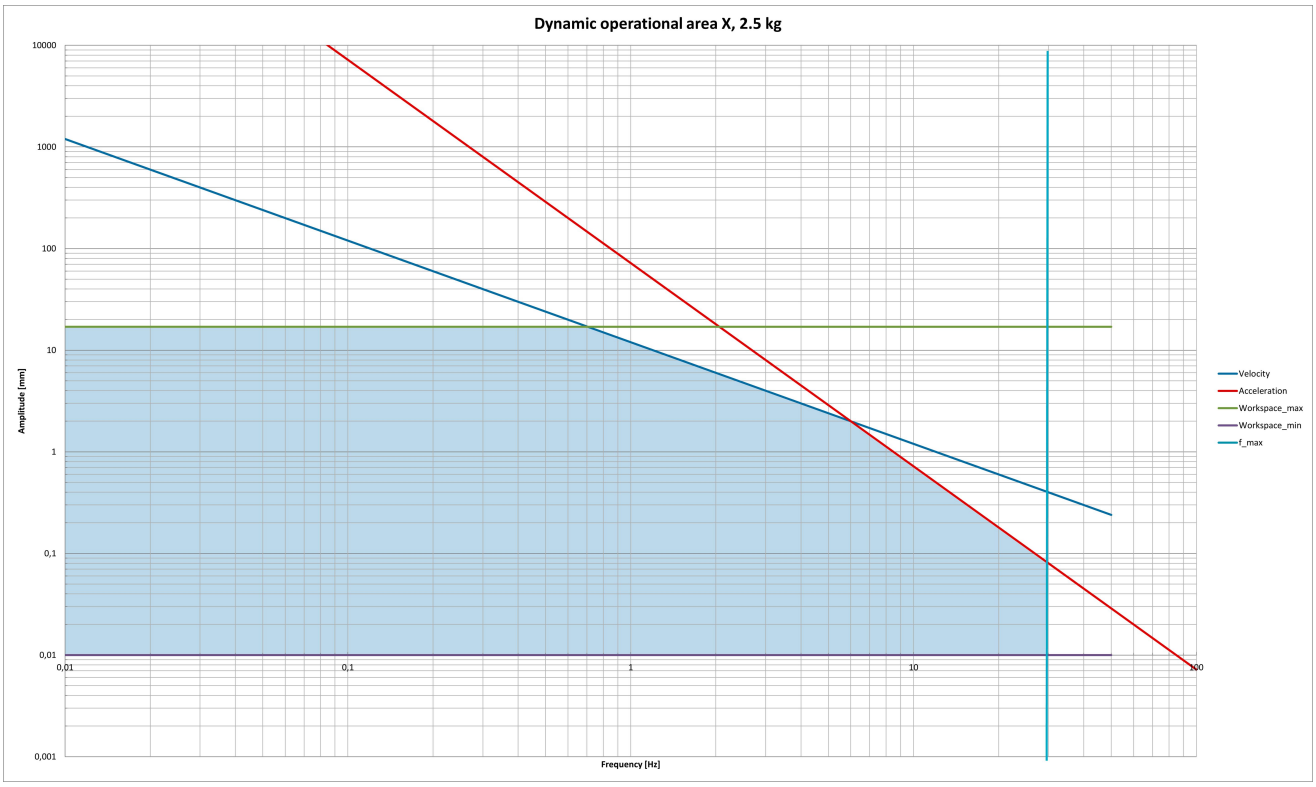
Miscellaneous	Unit		H-811.S2
Operating temperature range	°C		0 to 50
Connector for data transmission			HD D-sub 78 (m)
Connector for supply voltage			M12 4-pole (m)
Cable length	m		0.5
Outer diameter power supply cable	mm		4.95
Minimum bending radius for fixed installation, power supply	mm		25
Outer diameter data transmission cable	mm		9.5
Minimum bending radius for fixed installation, data transmission	mm		95
Recommended controllers/ drivers			C-887.5x

The cables fixed to the H-811.S2 are 0.5 m long respectively.
The cables fixed to the H-811.S2 are not drag chain compatible.
Connecting cables are not included in the scope of delivery and must be ordered separately.

When measuring position specifications, typical velocity is used. The data is included in the delivery of the product in the form of a measurement report and is stored at PI. 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.

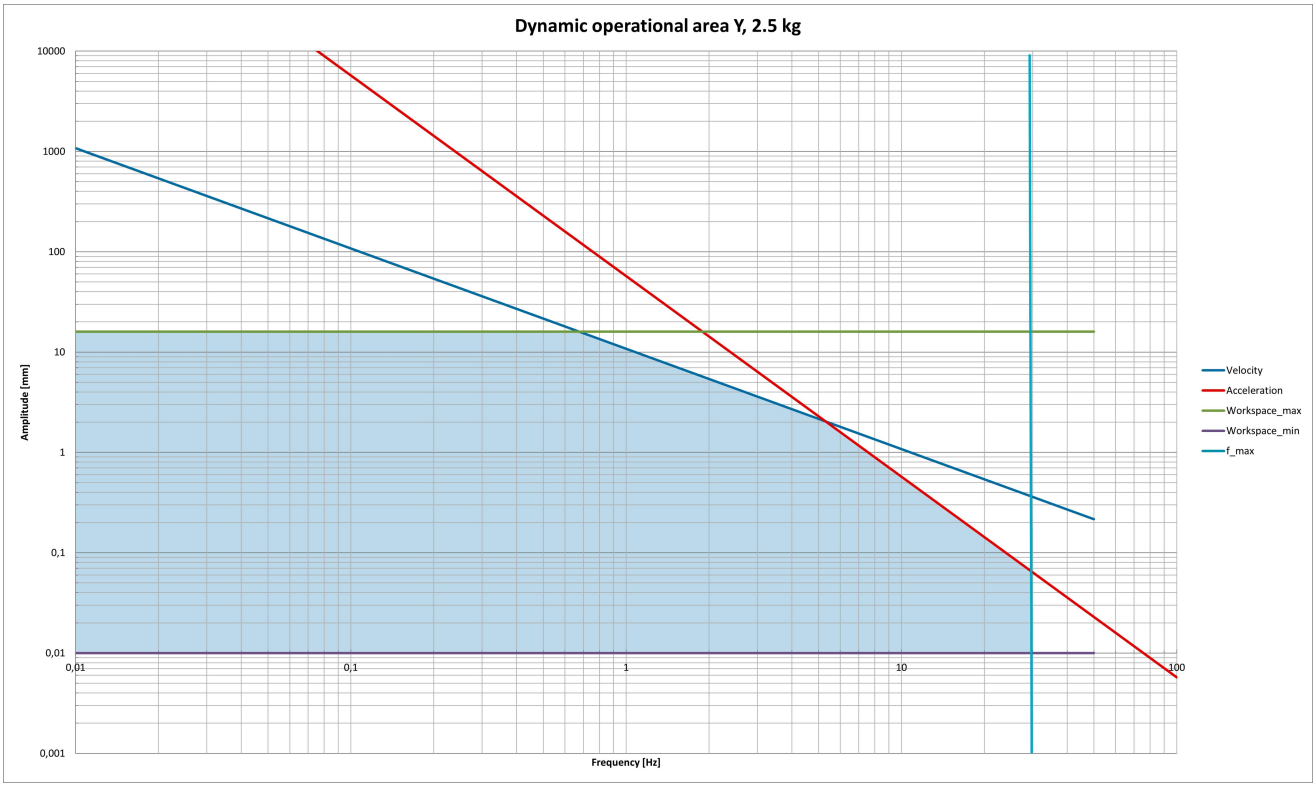
At PI, technical data is specified at 22 ±3 °C. Unless otherwise stated, the values are for unloaded conditions. Some properties are interdependent. The designation "typ." indicates a statistical average for a property; it does not indicate a guaranteed value for every product supplied. During the final inspection of a product, only selected properties are analyzed, not all. Please note that some product characteristics may deteriorate with increasing operating time.

Drawings / Images

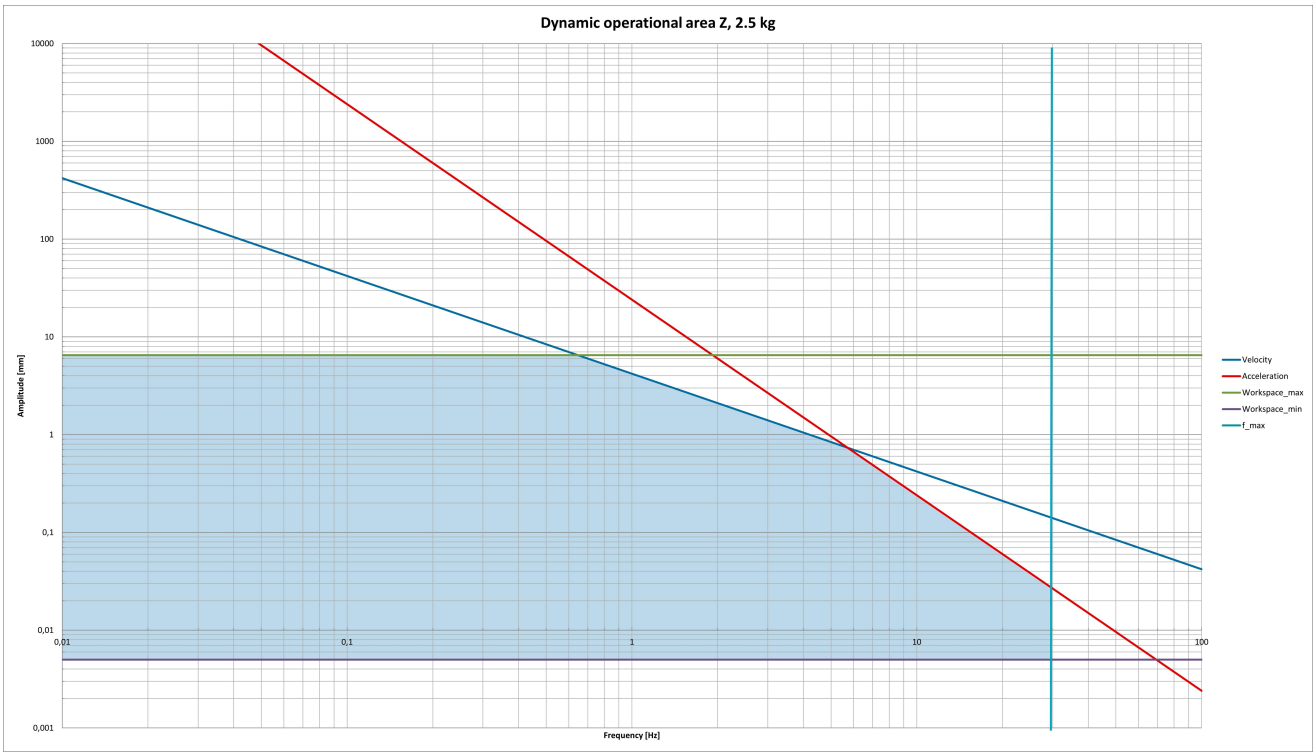


Dynamic working range of the H-811.S2, X, 2.5 kg

Drawings / Images

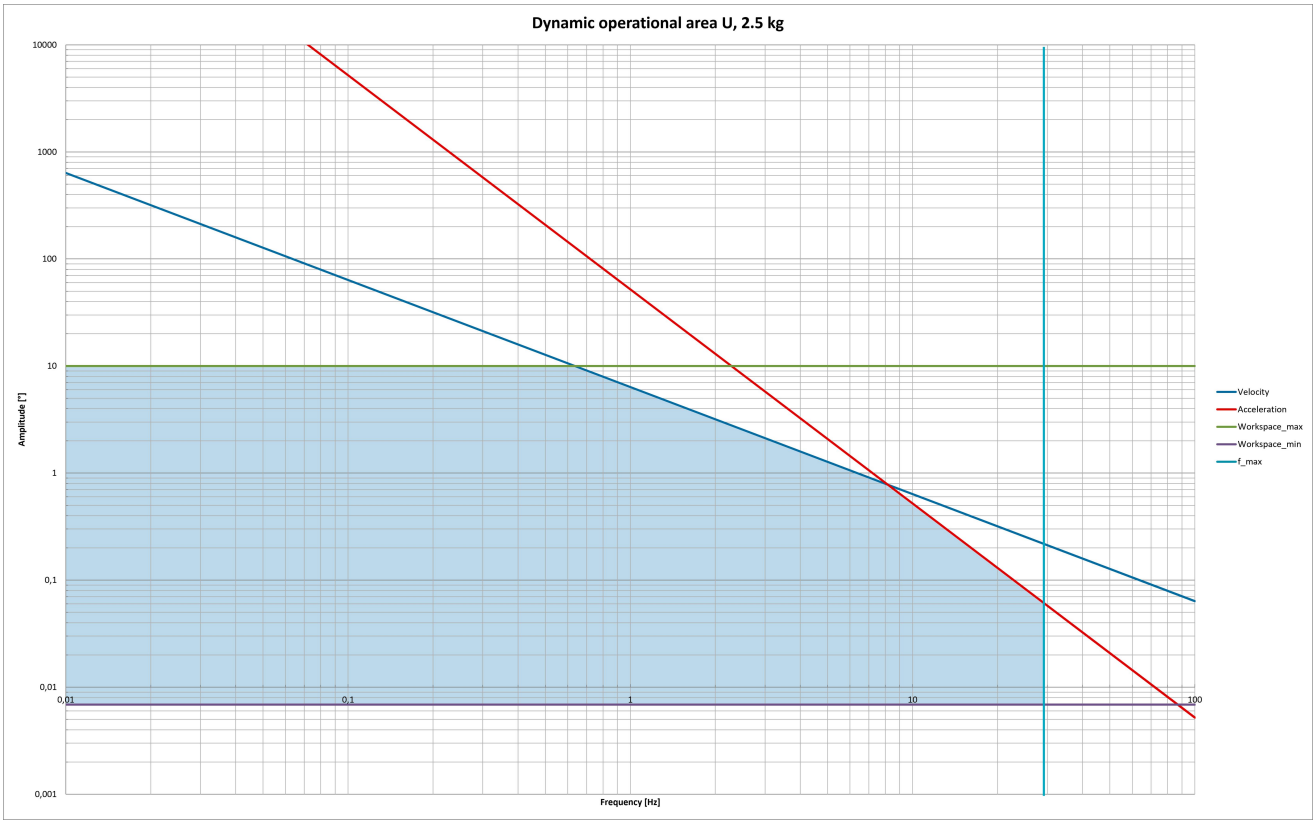


Dynamic working range of the H-811.S2, Y, 2.5 kg



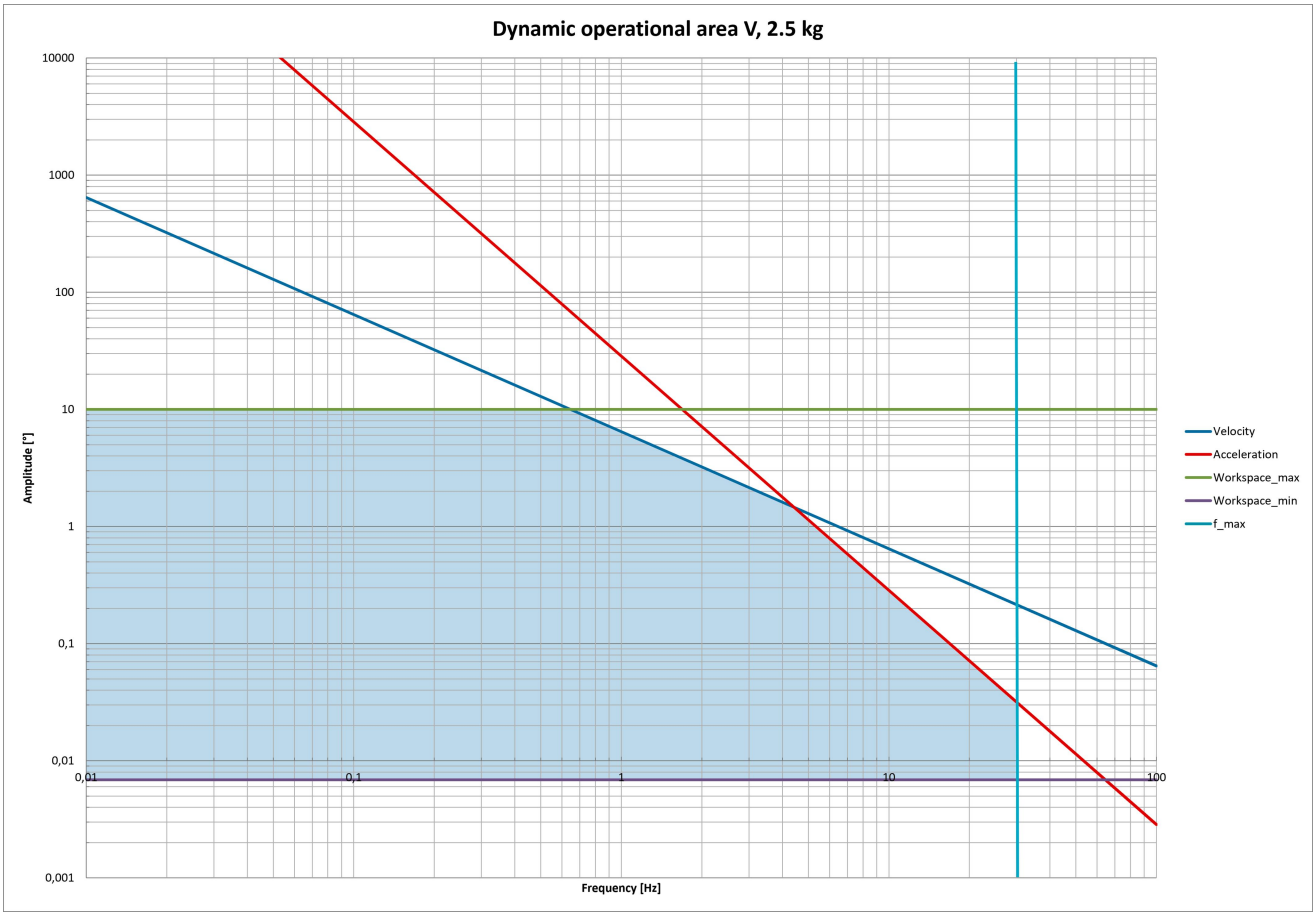
Dynamic working range of the H-811.S2, Z, 2.5 kg

Drawings / Images



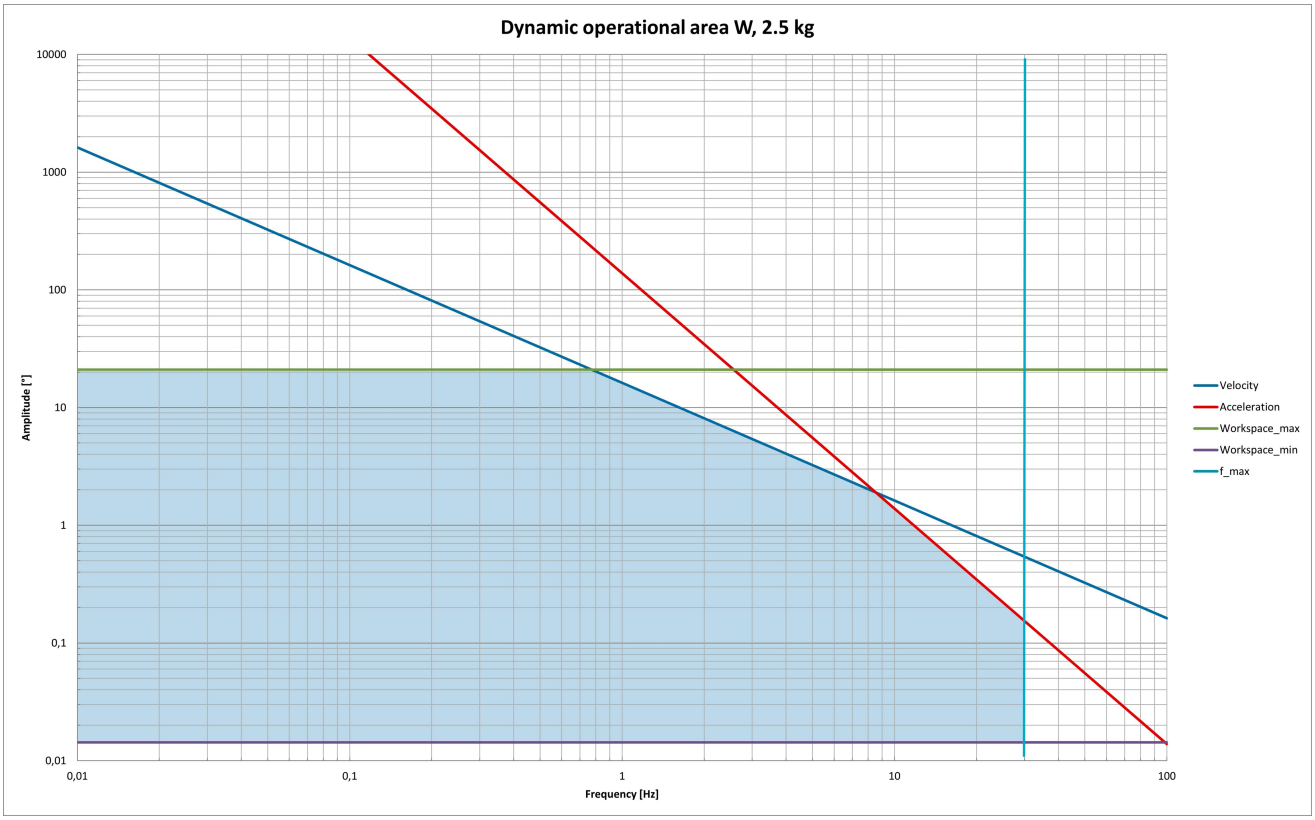
Dynamic working range of the H-811.S2, U (ΘX), 2.5 kg

Drawings / Images



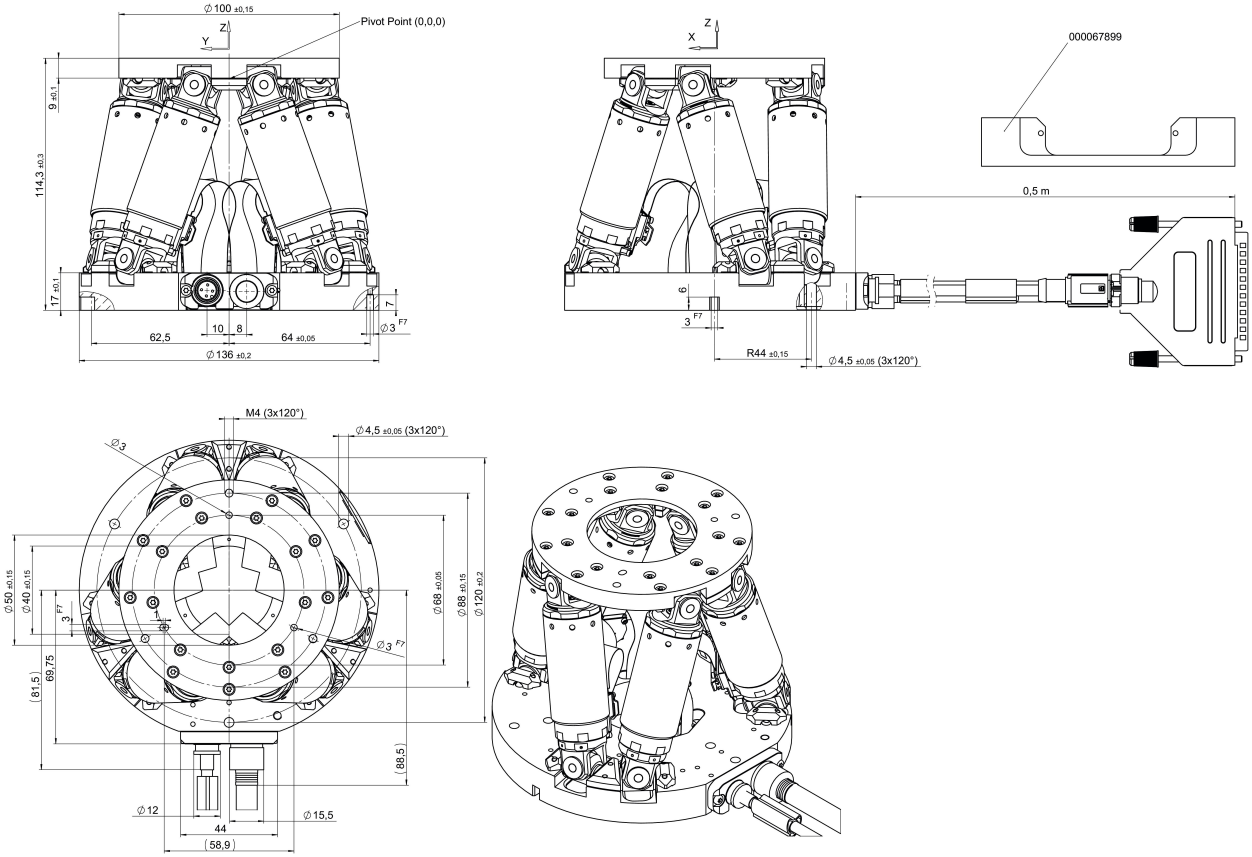
Dynamic working range of the H-811.S2, V (ϴY), 2.5 kg

Drawings / Images

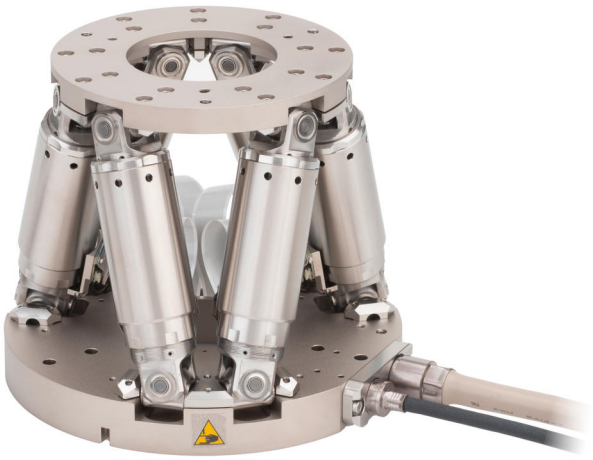


Dynamic working range of the H-811.S2, W (ΘZ), 2.5 kg

Drawings / Images



H-811.S2, dimensions in mm, at zero position of nominal travel range. Note that a comma is used in the drawings instead of a decimal point.



View of H-811 with cable outlet

Drawings / Images

The hexapod positioning system with the C-887 hexapod controller has been certified by CIPA standards (Camera & Imaging Products Association) for image testing and camera qualification applications.

Order Information

H-811.S2
Miniature hexapod for highly dynamic applications; BLDC motor; 2.5 kg payload; 25 mm/s maximum velocity; 0.5 m cable length. Connecting cables are not included in the scope of delivery and must be ordered separately.