

H-815 Compact Hexapod for Industrial Use

APPLICATION EXAMPLES

- Microassembly production processes
- Silicon Photonics
- PCB manufacturing
- Optical alignment applications

SPECIFICATIONS

- Travel range x/y/z: ±20/ ±20/ ±10 mm
- MIM x/y/z: 0.1/0.1/0.1 μm
- Load capacity: 10 kg
- Velocity: 20 mm/s
- Baseplate diameter/height: 222/155 mm

TOP FEATURES

- Brakes for safe handling and operation
- Absolute encoders avoiding referencing
- Robust design for long lifetime
- Compact design for easy integration
- Pluggable cables for simple cable routing



Hexapod for Industrial Applications

Compact, Robust and Precise



H-815

- Safe handling and operation thanks to integrated brakes
- Avoidance of homing motion due to absolute encoder
- Long service life thanks to robust design
- Easy integration due to compact design
- Easy cable management with pluggable cables

Highest Robustness in Compact Installation Space

The parallel-kinematic arrangement enables the hexapod to perform motion in 6 axes in an extremely compact design. The industrial hexapod reaches velocities of up to 20 mm/s and offers high precision: minimum incremental motion of 0.05 μ m and repeatability of ±0.06 μ m. The maximum travel is ±20 mm in the linear axes and ±16° in the rotary axes. In addition, the system provides reliable positioning with payloads up to 10 kg. Thanks to its integrated brakes, this hexapod offers maximum safety and robustness in a compact installation space. The absolute encoder enables immediate operation without referencing move, increasing efficiency and process reliability with high positioning accuracy.

Application fields

The H-815 hexapod is a high-precision, multi-axis motion solution for demanding alignment processes in photonics. With its high precision and repeatability, the H-815 is ideal for aligning the smallest components, such as lenses or other optical components. The hexapod performs complex positioning tasks quickly, accurately, and reproducibly in six degrees of freedom.

The industrial hexapod's robust design provides exceptional durability and reliability. The H-815 is designed for permanent use in industrial automation and assembly processes in demanding environments. At the same time, the H-815 increases the productivity of complex manufacturing and metrology processes.

Order Information

H-815.D6A3P

Hexapod for industrial applications; BLDC motor; 10 kg payload; 20 mm/s maximum velocity; absolute measuring encoder. Connecting cables are not included in the scope of delivery and must be ordered separately.



H-815 hexapod with struts 1 to 3 connected to the controller

Page 1 10.04.2025



Drawings





H-815, dimensions in mm, at zero position of nominal travel range. Note that a comma is used in the drawings instead of a decimal point. *Max. footprint with cables can vary.



Motion	Unit		H-815.D6A3P
Active axes			Χ Υ Ζ ΘΧ ΘΥ ΘΖ
Travel range in X	mm		±20
Travel range in Y	mm		±20
Travel range in Z	mm		±10
Rotation range in θX	•		±9
Rotation range in θY	•		±9
Rotation range in θΖ	•		±16
Maximum velocity in X	mm/s		20
Recommended velocity in X	mm/s		15
Maximum velocity in Y	mm/s		20
Recommended velocity in Y	mm/s		15
Maximum velocity in Z	mm/s		20
Recommended velocity in Z	mm/s		15
Maximum angular velocity in θX	mrad/s		-
Recommended angular velocity in $\boldsymbol{\theta}\boldsymbol{X}$	mrad/s		_
Maximum angular velocity in θY	mrad/s		_
Recommended angular velo- city in θΥ	mrad/s		_
Maximum angular velocity in θΖ	mrad/s		-
Recommended angular velo- city in θΖ	mrad/s		_
Amplitude-frequency pro- duct in X	mm·Hz		9
Amplitude-frequency pro- duct in Y	mm·Hz		8
Amplitude-frequency pro- duct in Z	mm∙Hz		3.4
Amplitude-frequency pro- duct in θX	°∙Hz		2.97
Amplitude-frequency pro- duct in θY	°∙Hz		2.97
Amplitude-frequency pro- duct in θΖ	°∙Hz		6.88
Amplitude-frequency ² pro- duct in X	mm·Hz²		91.2
Amplitude-frequency ² pro- duct in Y	mm·Hz²		91.2
Amplitude-frequency ² pro- duct in Z	mm·Hz²		-
Amplitude-frequency² pro- duct in θΧ	°·Hz²		-
Amplitude-frequency ² product in θY	°·Hz²		-
Amplitude-frequency ² product in θZ	°·Hz²		-
Amplitude error	%	Max.	-



Positioning	Unit	Tolerance	H-815.D6A3P
Minimum incremental moti- on in X	μm	Тур.	0.1
Minimum incremental moti- on in Y	μm	Тур.	0.1
Minimum incremental moti- on in Z	μm	Тур.	0.05
Minimum incremental motion in $\boldsymbol{\theta}\boldsymbol{X}$	μrad	Тур.	3
Minimum incremental motion in θY	μrad	Тур.	3
Minimum incremental motion in $\boldsymbol{\theta} \boldsymbol{Z}$	μrad	Тур.	3
Unidirectional repeatability in X	μm	Тур.	±0.15
Unidirectional repeatability in Y	μm	Тур.	±0.15
Unidirectional repeatability in Z	μm	Тур.	±0.06
Unidirectional repeatability in θX	μrad	Тур.	±2
Unidirectional repeatability in θY	μrad	Тур.	±2
Unidirectional repeatability in 0Z	μrad	Тур.	±3
Backlash in X	μm	Тур.	2
Backlash in Y	μm	Тур.	2
Backlash in Z	μm	Тур.	0.1
Backlash in θX	μrad	Тур.	-
Backlash in $ heta$ Y	μrad	Тур.	-
Backlash in θΖ	μrad	Тур.	-
Integrated sensor			Absolute rotary encoder, multi-turn

Drive Properties	Unit	H-815.D6A3P
Drive type		Brushless DC motor
Nominal voltage	V	24
Maximum power consumpti- on	w	_
Short-term maximum opera- ting frequency	Hz	-

Mechanical Properties	Unit	H-815.D6A3P
Stiffness in X	N/μm	0.7
Stiffness in Y	N/μm	0.7
Stiffness in Z	N/μm	8
Maximum load capacity, ba- se plate horizontal	kg	10
Maximum load capacity, ba- se plate in any orientation	kg	4
Maximum holding force, ba- se plate horizontal	N	100
Maximum holding force, ba- se plate in any orientation	N	40
Overall mass	kg	-
Material		Aluminum

Miscellaneous	Unit	H-815.D6A3P
Operating temperature ran- ge	°C	-10 to 50
Vacuum class	hPa	-
Connector for data transmis- sion		HD D-sub 78 (m)
Connector for supply voltage		M12 4-pole (m)
Recommended controllers/ drivers		C-887.5x



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, θ X, θ Y, θ Z) 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 Pl, 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



Maximum loads on the H-815.D6A3P when mounted horizontally





Maximum loads on the H-815.D6A3P when mounted vertically



Maximum loads on the H-815.D6A3P when mounted at the most unfavorable angle





Maximum permissible force acting on the H-815.D6A3P when mounted horizontally



Dynamic working range of the H-815.D6A3P, X, 10 kg





Dynamic working range of the H-815.D6A3P, Y, 10 kg



Dynamic working range of the H-815.D6A3P,Z, 10 kg





Dynamic working range of the H-815.D6A3P, U (Θ X), 10 kg

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Drawings / Images



Dynamic working range of the H-815.D6A3P, V (Θ Y), 10 kg





Dynamic working range of the H-815.D6A3P, W (Θ Z), 10 kg