

4 LASERS

Compact motorized beam expanders MEX



Motorized laser beam expanders MEX series are used to increase the laser beam diameter and adjust divergence. Standard or custom-made beam expanders feature a unique mechanical closed loop sliding-lens design ensuring high pointing stability and minimal

dimensions. These variable magnification [zoom] beam expanders and reducers are designed for required wavelength and each type of our beam expanders have motorized divergence adjustability.

- Main features**
- Highest beam pointing stability (< 0.1 mrad)
  - All-in-one design with integrated controller
  - Two lens simultaneous movement assuring no misfocus
  - Absolute encoder (both lenses)
  - Adjustment time < 1s (all magnifications)
  - Fused silica optical elements
  - No homing after switching on/off
  - Diffraction limited performance for all magnifications

- Application examples**
- Precise laser micromachining
  - Life sciences
  - Research

**Standard specifications**

MOTORIZED BEAM EXPANDERS SPECIFICATIONS	
Adjustment	Motorized
Divergence	Adjustable
Clear input aperture	11.5 mm
Lens material	UVFS
Transmission	>97%
Controller	Integrated
Control interface	USB or RS232
Housing material	Black anodized aluminum
LDIT	3 μJ/cm <sup>2</sup> (10 ns @ 255nm) 5 μJ/cm <sup>2</sup> (10 ns @ 332 nm) 10 μJ/cm <sup>2</sup> (10 ns @ 1064 nm)

\*Custom design available

Standard products

ITEM MODEL	EXPANSION	CLEAR INPUT APERTURE	CLEAR OUTPUT APERTURE	RECOMMENDED MAX. INPUT BEAM SIZE, 1/ε <sup>2</sup>	DIMENSIONS (H X W X L)	WAVELENGTH	POINTING STABILITY	SKU
MEX13	1.0x - 3.0x continuous	11.5 mm	23 mm	47 mm - 1x 46 mm - 3x	45 x 45 x 140 mm	343-355 nm	< 0.2 mrad	4857
						343-355 nm	< 0.3 mrad	4838
						515-532 nm	< 0.2 mrad	4856
						515-532 nm	< 0.3 mrad	4833
						1030-1064 nm	< 0.3 mrad	4825
						1030-1064 nm	< 0.3 mrad	4855
						343-355 + 515-532 nm	< 0.2 mrad	4928
343-355 + 515-532 nm	< 0.3 mrad	4121						
MEX18	1.0x - 8.0x continuous	11.5 mm	38 mm	47 mm - 1x 45 mm - 5x 43 mm - 8x	45 x 45 x 237 mm	515-532 nm	< 0.3 mrad	5862
						1030-1064 nm	< 0.3 mrad	4861
						343-355 + 515-532 nm	< 0.3 mrad	4864
						515-532 + 1030-1064 nm	< 0.3 mrad	4863

Mounting options for motorized beam expanders MEX

MOUNTING OPTION	FOR BEAM HEIGHT OF	SKU
Manual 4 axis translation stage M5TAGE	27 mm (4.2 mm travel)	12371

**PHOTO TECHNICA** www.phototechnica.co.jp 〒336-0017 埼玉県さいたま市南区南浦和 1-2-17  
 フォトテクニカ株式会社 TEL:048-871-0067 FAX:048-871-0068  
 e-mail: voc@phototechnica.co.jp

4 LASERS

High-power motorized beam expanders MEX-HP



High power motorized laser beam expanders MEX series are used to increase the laser beam diameter and adjust divergence. The optical design is dedicated for high power ultraviolet femtosecond laser applications. These magnification [zoom] beam expanders are designed for required wavelength and each type of our beam

expanders has motorized divergence adjustability. Standard or custom-made beam expanders feature a unique mechanical closed loop sliding-lens design ensuring high pointing stability and minimal dimensions.

- Main features**
- High power optical design (up to 200 W @ 1030 nm, 500 fs, 1 Mhz)
  - No internal reflections on optical elements
  - Highest beam pointing stability < 0.2 mrad
  - All-in-one design with an integrated controller
  - Two lens simultaneous movement assuring no misfocus
  - Absolute encoder (both lenses)
  - Fused silica optical elements
  - Diffraction limited performance for all magnifications

- Application examples**
- Precise laser micromachining
  - High power laser beam management
  - Research

**Standard specifications**

HIGH POWER MOTORIZED LASER BEAM EXPANDERS SPECIFICATIONS	
Adjustment	Motorized
Divergence	Adjustable
Lens material	UVFS
Transmission	>97% (MEX13-HP), >95% (MEX18-HP)
Control interface	USB or RS232
Controller	Integrated
Housing material	Black anodized aluminum
Max. laser power	Up to 200 W @ 1030 nm, 500 fs, 1 Mhz
LDIT	3 μJ/cm <sup>2</sup> (10 ns @ 330nm) 5 μJ/cm <sup>2</sup> (10 ns @ 332 nm) 10 μJ/cm <sup>2</sup> (10 ns @ 1064 nm)

\*Custom design available

Standard products

ITEM MODEL	EXPANSION	CLEAR INPUT APERTURE	CLEAR OUTPUT APERTURE	RECOMMENDED MAX. INPUT BEAM SIZE, 1/ε <sup>2</sup>	DIMENSIONS (H X W X L)	WAVELENGTH	POINTING STABILITY	SKU
MEX13-HP	1.0x - 3.0x continuous	11.5 mm	28 mm	47 mm - 1x 46 mm - 3x	40 x 40 x 207 mm	343-355 nm	< 0.5 mrad	9242
						343-355 nm	< 0.2 mrad	9243
						515-532 nm	< 0.5 mrad	9240
						515-532 nm	< 0.2 mrad	9241
						1030-1064 nm	< 0.5 mrad	9238
						1030-1064 nm	< 0.2 mrad	9239
						343-355 + 515-532 nm	< 0.5 mrad	9244
343-355 + 515-532 nm	< 0.2 mrad	9247						
MEX18-HP	1.0x - 5.0x continuous	11.5 mm	24 mm	47 mm - 1x 43.5 mm - 5x	45 x 45 x 250 mm	515-532 + 1030-1064 nm	< 0.5 mrad	9246
						515-532 + 1030-1064 nm	< 0.5 mrad	9244
						515-532 + 1030-1064 nm	< 0.2 mrad	9245
						343-355 nm	< 0.5 mrad	9252
						515-532 nm	< 0.5 mrad	9250
						1030-1064 nm	< 0.5 mrad	9248
						515-532 + 1030-1064 nm	< 0.5 mrad	9256

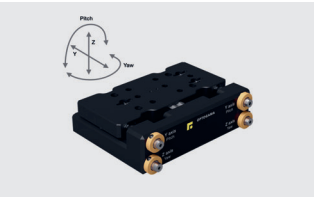
Mounting options for high-power motorized beam expanders MEX-HP

MOUNTING OPTION	FOR BEAM HEIGHT OF	SKU
Manual 4 axis translation stage M5TAGE-HP (Additional adapter included)	27 mm (4.2 mm travel)	12371

**PHOTO TECHNICA** www.phototechnica.co.jp 〒336-0017 埼玉県さいたま市南区南浦和 1-2-17  
 フォトテクニカ株式会社 TEL:048-871-0067 FAX:048-871-0068  
 e-mail: voc@phototechnica.co.jp

4 LASERS

Manual 4 axis translation stage



M5TAGE is an industrial mounting solution for MEX compact series beam expanders. This 4-axis manual translation stage contains a locking mechanism preserving the aligned position. It features sapphire contact pads determining long-lasting and smooth micro screw operation.

There are four M6 x 0.25 micro screws for adjusting platform's pitch, yaw, Y and Z axis. Two micro screws control platform's pitch and Z axis, while another two-control yaw and Y axis. All of them can be adjusted with 2 mm HEX screwdriver.

- Main features**
- Sapphire contact pads
  - Platform's locking mechanism
  - Industrial design
  - 4 axis fine adjustment
  - Maximum load up to 1.5 kg

- Application examples**
- Motorized beam expander MEX fine adjustment
  - Precise alignment of optical components and other laser accessories

**Standard specifications**

SPECIFICATIONS	
Travel range	Y axis: 8 mm (4.2 mm)
	Z axis: 4 mm (4.2 mm)
	Yaw: ±5 deg
	Pitch: ±2.5 deg
Resolution	Y axis: 4 mm (4.2 mm)
	Z axis: 145 μm/div
	Yaw: 0.018 deg/div
Maximum load	Pitch: 0.010 deg/div
	Mounted horizontally: 1.5 kg
	Mounted vertically: 0.4 kg

Standard products

MODEL	DIMENSION (W X H X L)	WEIGHT	HEX SCREWDRIVER	SKU
M5tage	75 x 28 x 100 mm	27 mm (4.2 mm travel)	3mm, 2mm, 1.5 mm HEX	12371

**PHOTO TECHNICA** www.phototechnica.co.jp 〒336-0017 埼玉県さいたま市南区南浦和 1-2-17  
 フォトテクニカ株式会社 TEL:048-871-0067 FAX:048-871-0068  
 e-mail: voc@phototechnica.co.jp