

High-Performance Long-Travel Linear Stages

IMS SERIES



The IMS Series linear stage complements the (M-)ILS Series by providing longer linear travel ranging from 300–600 mm. The stages feature robust designs with high performance but without high cost, making them cost-effective solutions for precision industrial and laboratory applications.

Using the same industry-proven technology as the ILS Series, the IMS Series features a FEM optimized, aluminum extruded body that is highly stiff, while minimizing the bending effect caused by different thermal expansion coefficients of the aluminum body and the steel rails.

Smooth running recirculating ball bearing slides with ball separators provide accurate linear motion and avoid ball cage migration found on linear ball bearings or crossed roller bearings.

A highly-stiff, backlash-free, 5 mm pitch ball screw ensures rapid movements with fast step and settling times, while minimizing heating and extending the lifetime of the stage.

Position measurements are read on a 4000 pts/rev. rotary encoder, mounted directly on the ball screw to avoid screw/coupling errors. For more demanding precision positioning requirements, the IMS Series is available with a highly interpolated linear scale providing 0.1 μm resolution feedback.

The completely closed design of the IMS Series with an upper rigid cover prevents damage to the drive train, underlining its robustness and long lasting values. (M-)IMS stages also feature a motor side mounted origin for repeatable initialization, limit switches to prevent over travel, and elastomeric end-of-run dampers for smooth emergency braking.



- Recirculating ball bearing slides provide accurate linear motion without the issue of ball cage migration
- FEM-optimized aluminum body offers high stiffness and minimizes thermal expansion bending effects
- Backlash-free ballscrew implements accurate linear motion without ball cage migration
- 300 to 600 mm of travel

For optimal performance, we recommend the use of our motion controllers.

The IMS Series stages are supplied with a 5-meter cable for connection to our motion controllers.

DESIGN DETAILS

Base Material	Extruded Aluminum
Bearings	Double-row recirculating ball bearings with caged balls
Drive Mechanism	Backlash-free ball screw
Drive Screw Pitch (mm)	5
Feedback	CC, PP: Screw mounted rotary encoder, 4,000 pts/rev, index pulse CCHA: Linear steel scale, 20 μm signal period, 0.1 μm resolution
Limit Switches	Optical
Origin	Optical, approx. 8 mm from motor side limit
Motor	CC, CCHA: DC servo motor UE511S2 PP: 2-phase stepper motor UE56UP, 1 Full-Step = 20 Encoder pulses; In order to close the loop on the encoder, it is needed to drive these motors in micro-step modus with at least 20 micro-steps per full-step.
Cable	5 m long motor cable included

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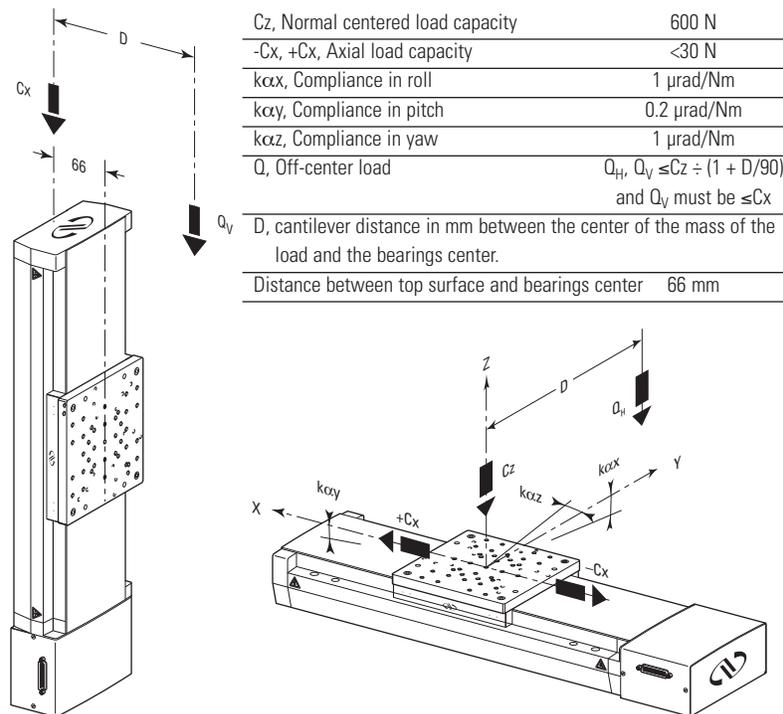
SPECIFICATIONS

	PP	CC	HA
Travel Range (mm)		300, 400, 500 and 600	
Minimum Incremental Motion (μm)		1.25	0.2
Uni-directional Repeatability, Typical (Guaranteed) (μm)	IMS300:	± 0.45 (± 0.65)	± 0.12 (± 0.25)
	IMS400, IMS500, IMS600:	± 0.50 (± 0.65)	± 0.12 (± 0.25)
Bidirectional Repeatability, Typical (Guaranteed) (μm)	± 0.70 (± 1.25)	± 0.20 (± 0.50)	
Accuracy, Typical (Guaranteed) ⁽¹⁾ (μm)	IMS300, IMS400:	± 2.5 (± 5.0)	± 2.0 (± 4.0)
	IMS500:	± 3.0 (± 6.0)	± 2.5 (± 5.0)
	IMS600:	± 4.0 (± 9.0)	± 3.5 (± 6.5)
Maximum Speed (mm/s)	100	200	200
Pitch, Typical (Guaranteed) ⁽¹⁾⁽²⁾ (μrad)	IMS300, IMS400, IMS500:	± 37 (± 75)	
	IMS600:	± 50 (± 125)	
Yaw, Typical (Guaranteed) ⁽¹⁾⁽²⁾ (μrad)	IMS300:	± 15 (± 50)	± 25 (± 50)
	IMS400:	± 15 (± 75)	
	IMS500:	± 25 (± 75)	
	IMS600:	± 30 (± 75)	
MTBF (h)		20,000	

¹⁾ Shown are peak to peak, guaranteed specifications or \pm half the value as sometimes shown. For the definition of typical specifications which are about 2X better than the guaranteed values, visit www.newport.com for the Motion Control Metrology Primer.

²⁾ To obtain arcsec units, divide μrad value by 4.8.

LOAD CHARACTERISTICS AND STIFFNESS

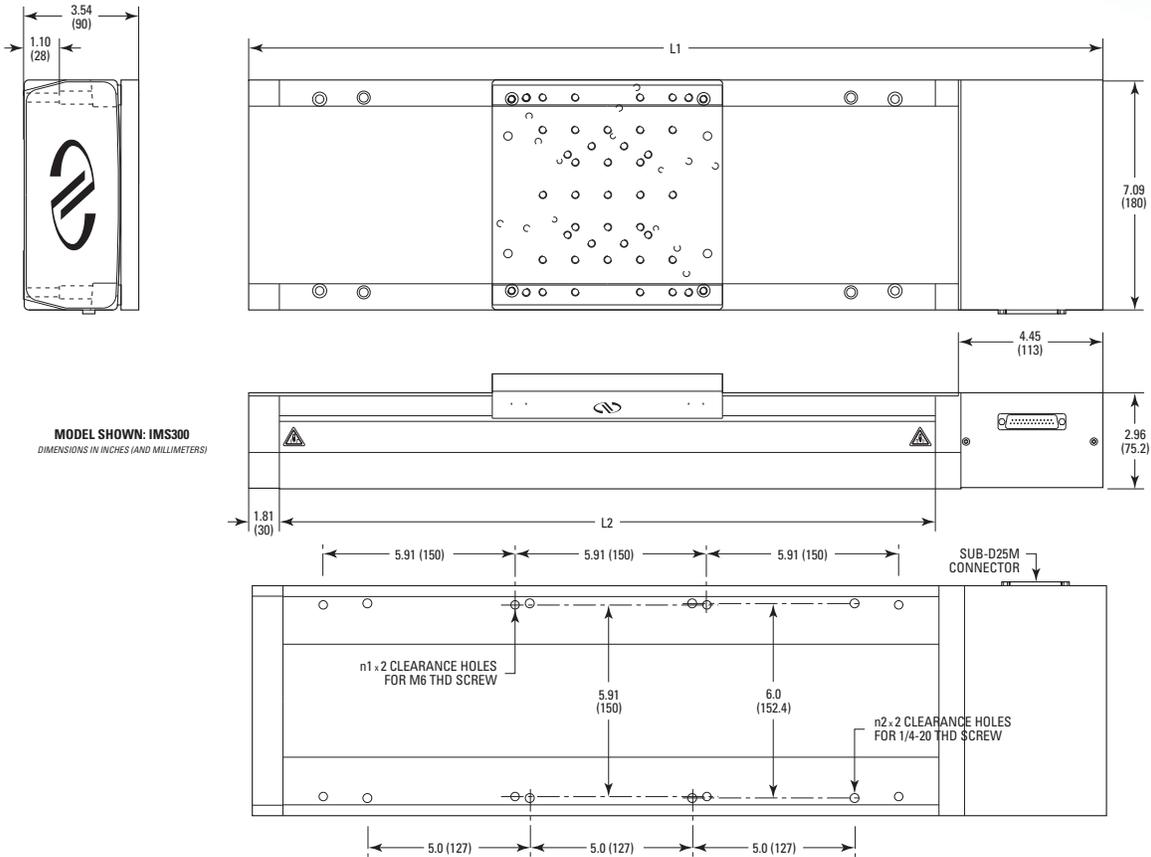


RECOMMENDED CONTROLLER/DRIVERS

XPS-Q2	2-axis Universal Controller/Driver, ethernet
ESP301-1G	ESP301 Motor Controller/Driver, 1-Axis, GPIB, USB, RS232
XPS-DRV03	High performance PWM drive module for DC motors, 5 A/48 V max.
XPS-DRV01	PWM drive module for DC brush and stepper motors, 3 A/48 V max.
XPS-EDBL	High-power, 3-phase, sinusoidal DC brushless motor driver

DIMENSIONS

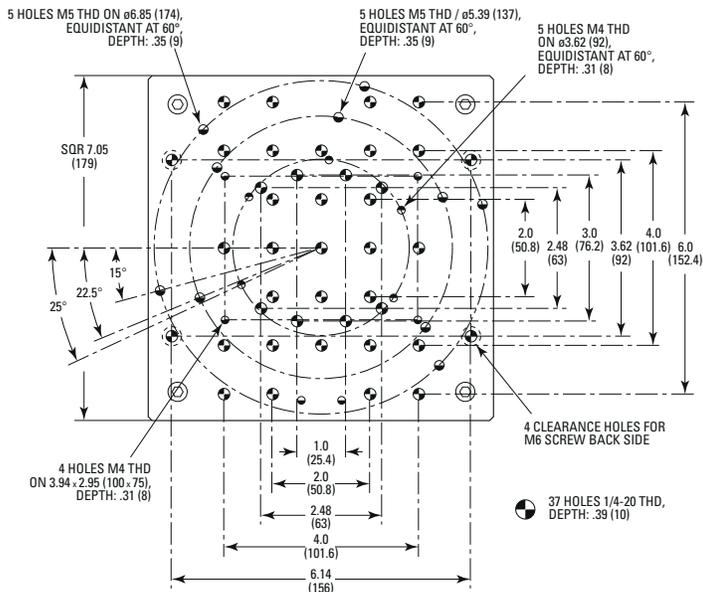
(M-)IMS Stages



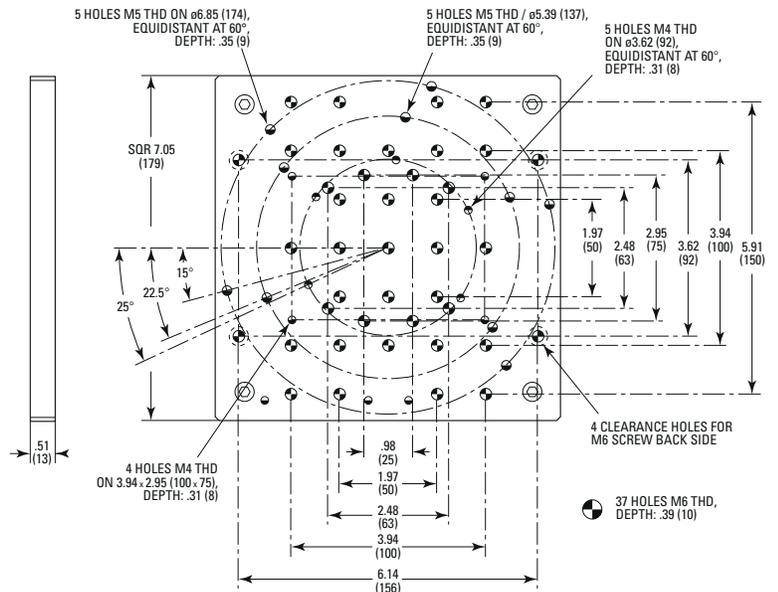
MODEL (METRIC)	n1	n2	TRAVEL	L1	L2
(M-)IMS300	4	4	11.81 (300)	26.30 (668)	20.20 (513)
(M-)IMS400	4	4	15.75 (400)	30.24 (768)	24.13 (613)
(M-)IMS500	4	6	19.69 (500)	34.17 (868)	28.07 (713)
(M-)IMS600	6	6	23.62 (600)	38.11 (968)	32.01 (813)

Top Plate Interfaces

MODEL SHOWN: IMS INTERFACE
DIMENSIONS IN INCHES (AND MILLIMETERS)



MODEL SHOWN: M-IMS INTERFACE
DIMENSIONS IN INCHES (AND MILLIMETERS)



ORDERING INFORMATION

Model	Series	Travel (mm)	Drive
M-	IMS	300	CC CCHA PP
		400	
		500	
		600	

Example:
 The **IMS500PP** is an IMS stage with 500 mm travel, a stepper motor with rotary encoder, in English version.

- M-: For metric version
- CC: DC motor with rotary encoder
- CCHA: DC motor with linear encoder
- PP: Stepper motor with rotary encoder

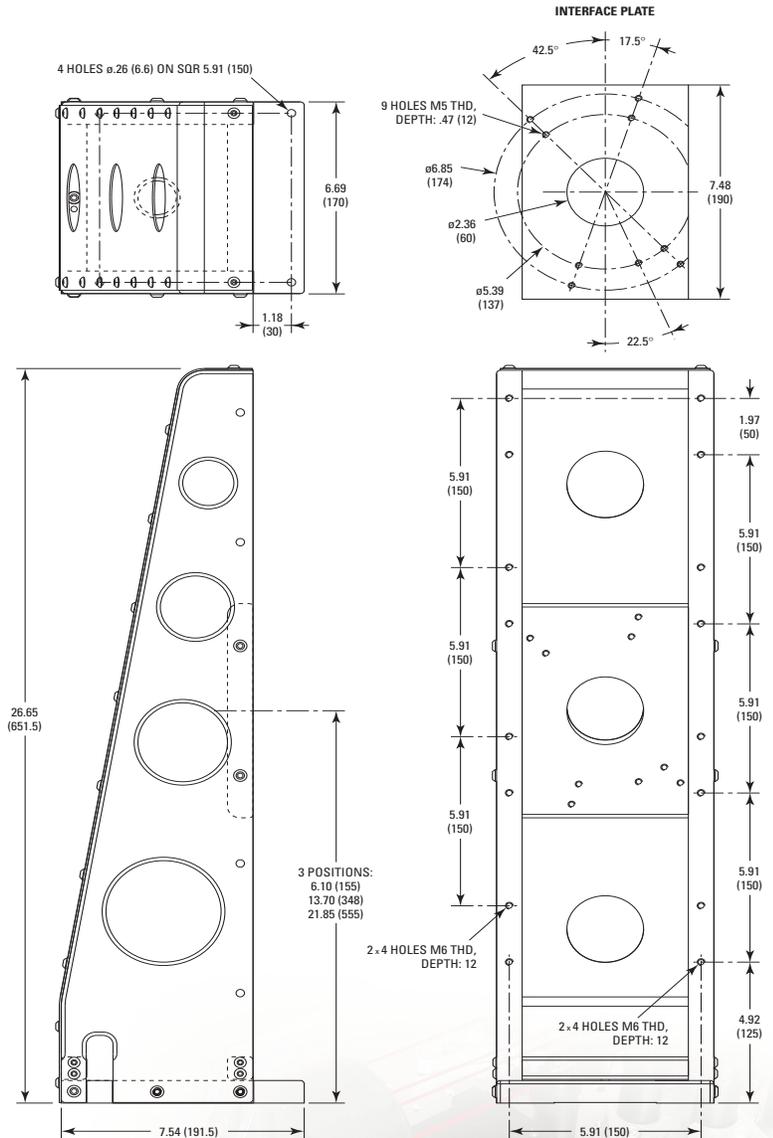
ACCESSORY: EQ180 BRACKET



EQ180 bracket on an IMS stage with an IMS stage in vertical position.



EQ180 bracket with an IMS stage and a RV160 rotation stage.



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