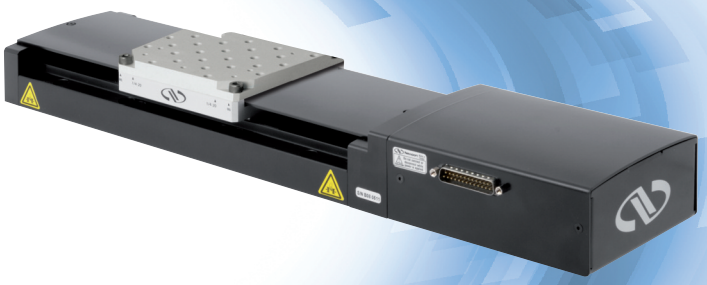
High-Performance Mid-Range Travel Linear Stages



ILS SERIES

The ILS Series linear stage offers 50–250 mm travel range and combines fast, sub-micron resolution motion with highly stiff and robust package designs. Its extruded aluminum body has been optimized to avoid bending effects caused by the different thermal expansion coefficients of the aluminum body and steel rails. The special U-profile also provides stiffness to the structure while keeping the mass low.

A preloaded, backlash-free ballscrew provides rapid movements with fast step and settling times. The screw is accurately profiled to reduce heating factors to a minimum and extend the lifetime of the stage. Recirculating ball bearings slides ensure accurate linear motion and avoid ball cage migration found on linear ball bearings or crossed roller bearings.

Position measurements are read on a 4000 cts/rev. encoder located directly on the screw to avoid additional screw/motor coupling errors. For more demanding precision positioning requirements, the HA versions feature an integrated linear scale providing 0.1 µm resolution feedback.

An upper rigid cover prevents damage to the drive train. ILS Series stages also feature a center mounted origin for repeatable initialization, limit switches to prevent over travel, and elastomeric end-of-run dampers for smooth emergency braking.

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

The ILS Series stages are supplied with a 3-meter cable for connection to our motion controllers

- Stiff, FEM optimized extruded aluminum body prevents thermal bending effects
- Preloaded, backlash-free ballscrew drive allows rapid movements with short step and settling time
- Precision recirculating ball bearing slides provide accurate linear motion without ball cage migration
- 50 to 250 mm of travel
- Ideal for extended use in light industrial applications

DESIGN DETAILS

Base Material	Extruded Aluminum
Bearings	Double-row recirculating ball bearings
Drive Mechanism	Backlash-free ball screw
Drive Screw Pitch (mm)	2
Feedback	CC, CCL, PP: Screw mounted rotary encoder, 4,000 cts/rev, index pulse HA: Linear steel scale, 20 µm signal period, 0.1 µm resolution
Limit Switches	Optical
Origin	Optical, at center of travel, including mechanical zero signal
Cable	3 m long cable included

SPECIFICATIONS

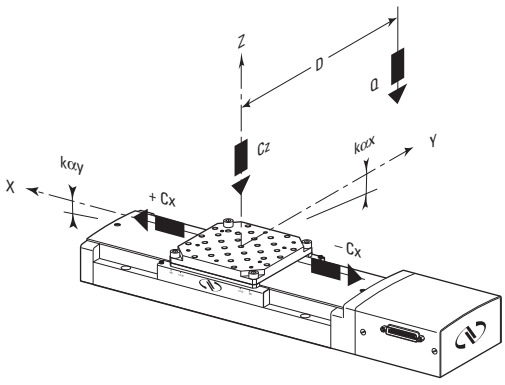
		PP, CC, CCL [1]	HA
Travel Range (mm)		50, 100, 150, 200 and 250	
Minimum Incremental Motion (µm)		1.0	0.3
Uni-directional Repeatability, Typical (Guaranteed) (µm)		1.0	0.4
Bi-directional Repeatability, Typical (Guaranteed) [2] (µm)	ILS50:	±0.40 (±1.0)	±0.10 (±0.35)
	ILS100:	±0.40 (±1.0)	±0.10 (±0.35)
	ILS150:	±0.45 (±1.0)	±0.15 (±0.35)
	ILS200:	±0.45 (±1.0)	±0.15 (±0.35)
	ILS250:	±0.60 (±1.0)	±0.15 (±0.35)
Accuracy CC, PP & CCL, Typical (Guaranteed) [2] (µm)	ILS50:	±0.6 (±1.5)	±0.3 (±2.0)
	ILS100:	±0.8 (±2.0)	±0.6 (±1.5)
	ILS150:	±1.5 (±2.5)	±1.2 (±2.0)
	ILS200:	±1.2 (±3.7)	±0.8 (±3.0)
	ILS250:	±1.7 (±5.0)	±1.5 (±3.75)
Maximum Speed (mm/s)	PP, CCL: 50 CC: 100	100	
Pitch, Typical (Guaranteed) [2][3] (µrad)	ILS50:	±15 (±25)	±17 (±25)
	ILS100:	±20 (±100)	±25 (±50)
	ILS150:	±37 (±75)	±50 (±75)
	ILS200:	±37 (±100)	±35 (±100)
	ILS250:	±42 (±125)	±45 (±125)
Yaw, Typical (Guaranteed) [2][3] (µrad)	ILS50:	±12 (±25)	±7 (±25)
	ILS100:	±17 (±37)	±17 (±37)
	ILS150:	±20 (±65)	±25 (±65)
	ILS200:	±25 (±80)	±25 (±80)
	ILS250:	±25 (±95)	±30 (±95)
MTBF (h)		20,000	

[1] ILS-CCL used with the SMC100CC controller only.

[2] Shown are peak to peak, guaranteed specifications or ±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.

[3] To obtain arcsec units, divide µrad value by 4.8.

LOAD CHARACTERISTICS AND STIFFNESS



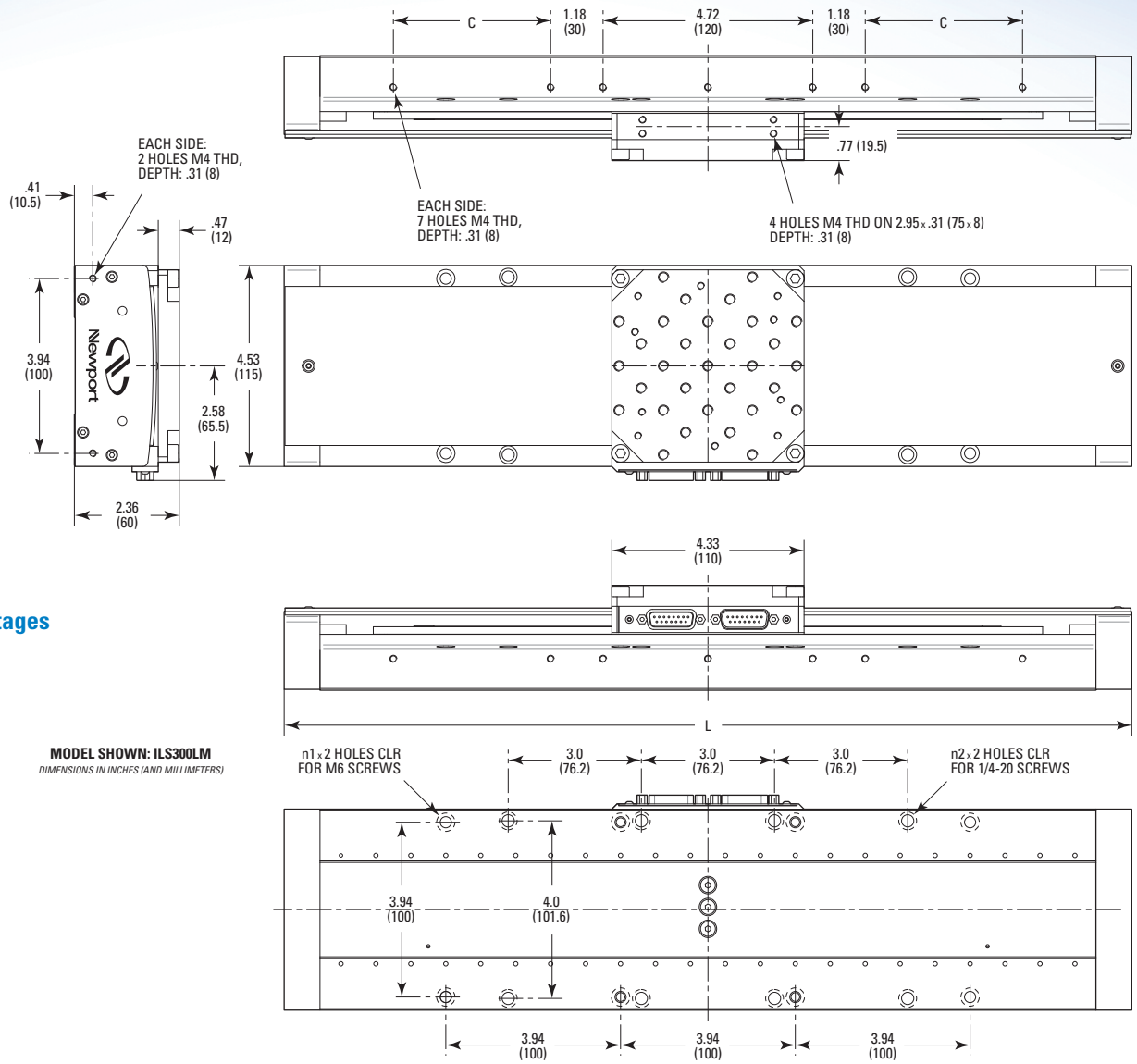
Cz, Normal center load capacity on bearings	250 N
+Cx/-Cx, Direct/Inverse load capacity on X axis	<40 N
kαx, Compliance in roll	15 µrad/Nm
kαy, Compliance in pitch	10 µrad/Nm
kαz, Compliance in yaw	10 µrad/Nm
Q, Off-center load with D = Cantilever distance in mm	Q ≤Cz ÷ (1 + D/60)

RECOMMENDED CONTROLLER/DRIVERS

ESP301-1G	ESP301 Motor Controller/Driver, 1-Axis, GPIB, USB, RS232
SMC100CC	Single-axis DC motor controller/driver
SMC100PP	Single-axis stepper motor controller/driver
XPS-Q2	2-axis Universal Controller/Driver, ethernet
XPS-RL2	2-axis Universal Controller/Driver, ethernet, Basic GPIO and PCO

DIMENSIONS

(M-)ILS-LM Stages



MODEL SHOWN: ILS300LM

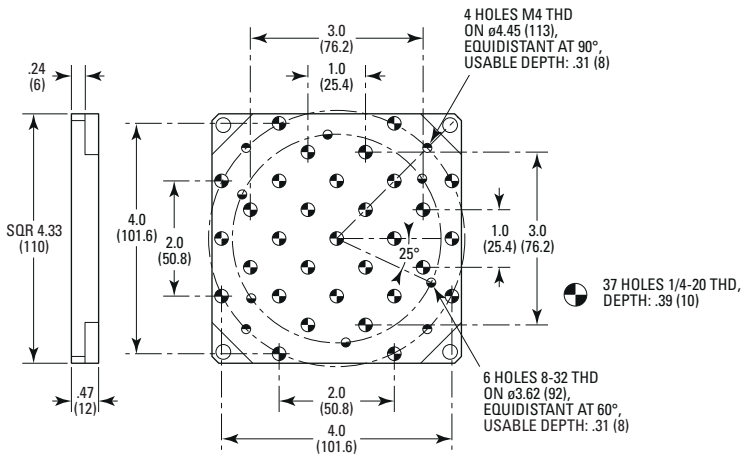
DIMENSIONS IN INCHES (AND MILLIMETERS)

MODEL (METRIC)	n1	n2	C	TRAVEL	L
(M-)ILS100LM	2	2	1.08 (27.5)	3.94 (100)	11.22 (285)
(M-)ILS200LM	4	4	2.76 (70)	7.87 (200)	15.16 (385)
(M-)ILS300LM	4	4	3.54 (90)	11.8 (300)	19.09 (485)

Top Plate Interfaces

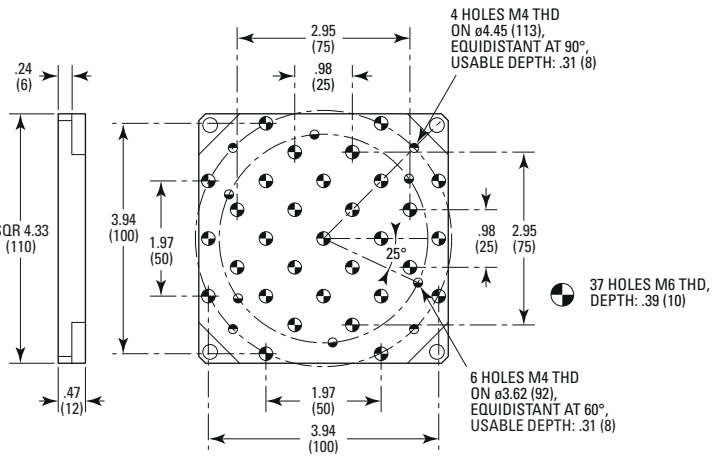
MODEL SHOWN: ILS & ILS-LM INTERFACE

DIMENSIONS IN INCHES (AND MILLIMETERS)



MODEL SHOWN: M-ILS & M-ILS-LM INTERFACE

DIMENSIONS IN INCHES (AND MILLIMETERS)



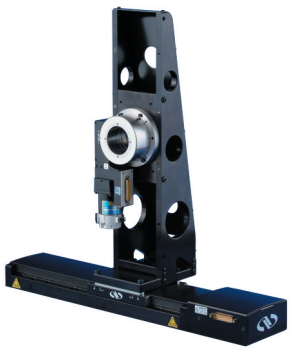
ORDERING INFORMATION

Model	Series	Travel (mm)	Drive
M-	ILS	50, 100, 150, 200, 250	CC, CCL, HA, PP

Example:
*The **ILS150HA** is an ILS stage with 150 mm travel, a DC motor drive with linear encoder, in English version.*

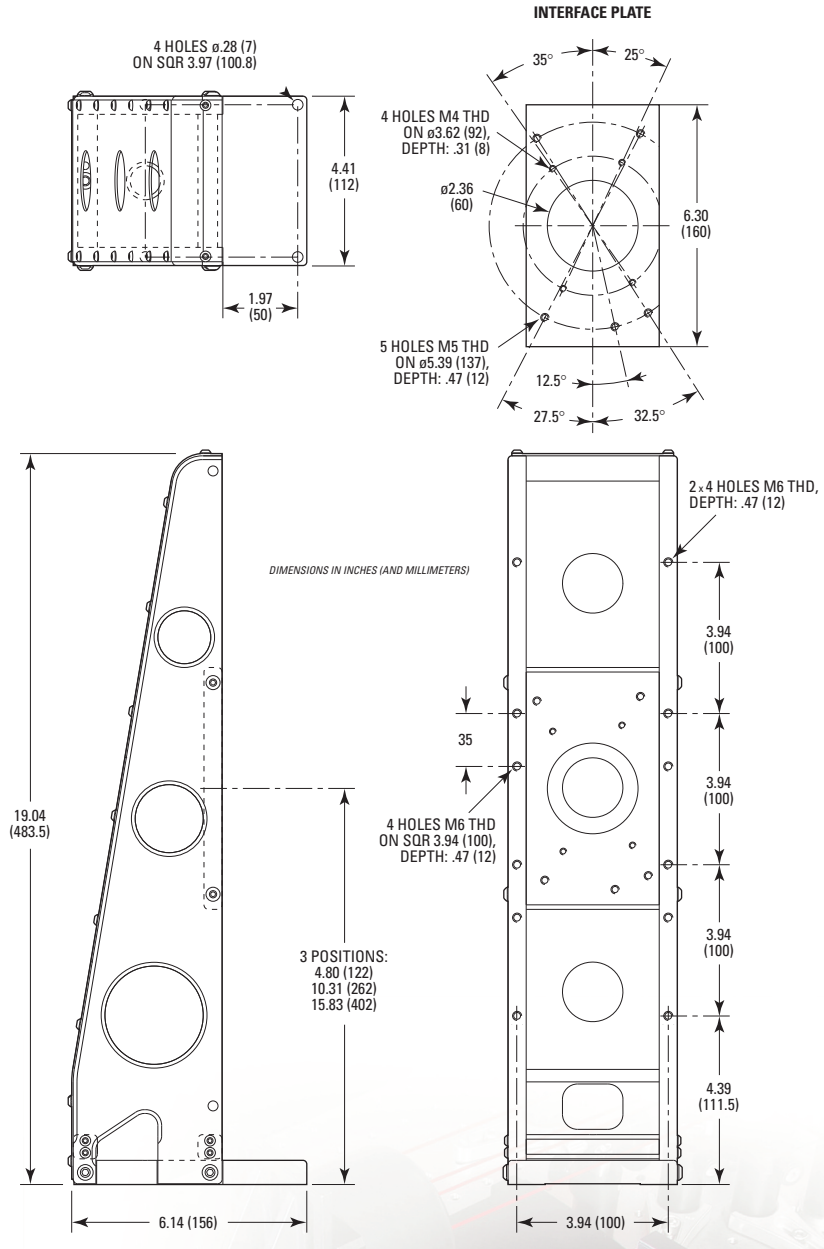
M-: For metric version
CC: DC motor
CCL: DC motor for SMC100CC controller
HA: DC motor with linear encoder
PP: Stepper motor

Two IMS stages, one ILS stage, and one EQ120 bracket in an XYZ configuration.



An RVS80 mounted in a vertical configuration with an EQ120 bracket to an ILS stage.

ACCESSORY: EQ120 BRACKET



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