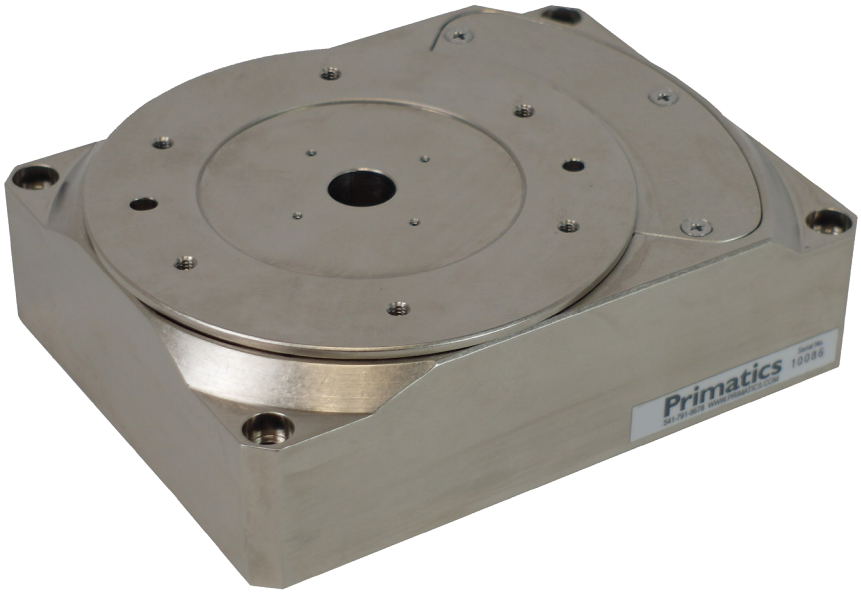
PLR40

Shown with custom
E-nickel finish



Features

- Direct drive servo motor
- Compact design, 40mm tall
- Resolution to .085 arcsec
- 100 degree travel
- Limit sensors
- Angular contact, spindle bearing set
- Low maintenance and long life
- Error mapped accuracy option
- ISO 4 cleanroom option

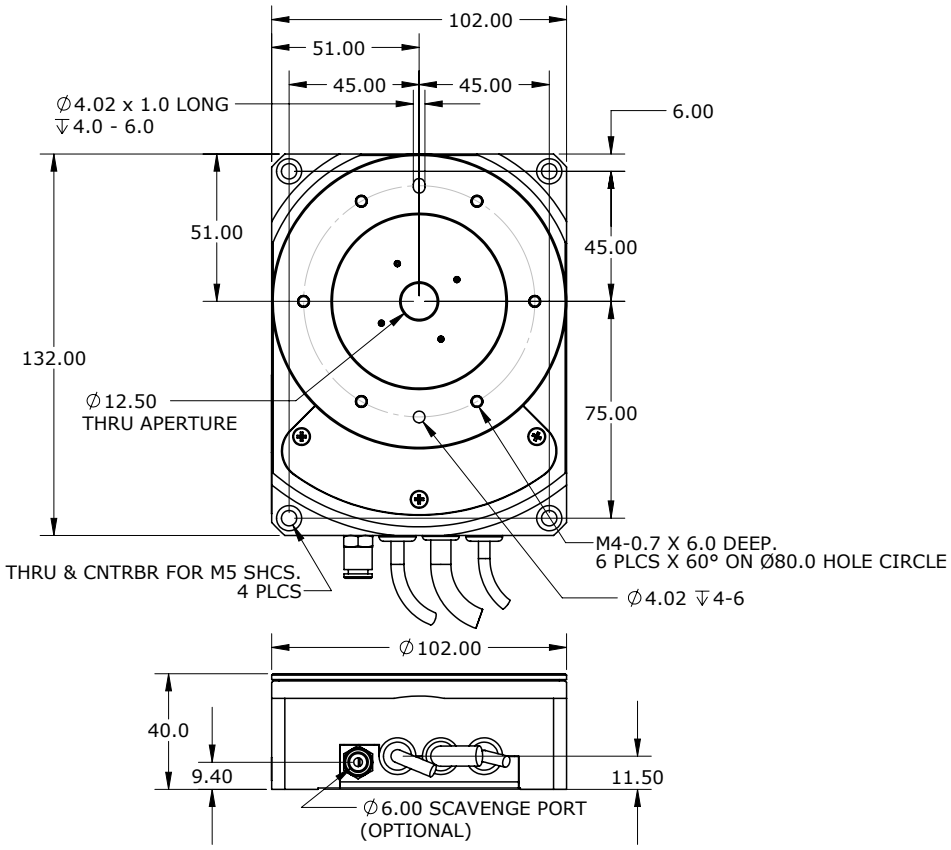
Overview

The Primatics PLR40 limited-rotation table is among the most advanced and lowest profile (40 mm) direct drive rotary stages available. It features a high performance direct drive motor that creates sub arc-second repeatability and fast settling times, making it ideal for applications that require small angular adjustments. The compact design also has a smaller footprint than comparable worm drives. Travel is 100 degrees.

Smart Design

The PLR40s high efficiency neodymium servo motor permits greater acceleration, shorter settling times and less motor heating than other types of direct drive stages. In addition, the PLR40 motor has a high pole count, which aids in obtaining low velocity ripple even at very low speeds. The PLR40s high performance motor, coupled with its platen-mounted, gold-plated, steel tape scale, results in high servo stiffness over a wide dynamic range. An angular-contact, spindle bearing set guarantees long, trouble-free operation with very low runout. It can be equipped with a scavenge port for ISO 4 cleanroom service.

Dimensions


102.00
51.00
45.00
45.00
∅4.02 x 1.0 LONG
↧4.0 - 6.0
6.00
51.00
45.00
132.00
∅12.50
THRU APERTURE
75.00
M4-0.7 X 6.0 DEEP.
6 PLCS X 60° ON Ø80.0 HOLE CIRCLE
THRU & CNTRBR FOR M5 SHCS.
4 PLCS
∅4.02 ↧4-6
∅102.00
40.0
9.40
11.50
∅6.00 SCAVENGE PORT
(OPTIONAL)

Specifications

Specifications	Notes	PLR40		
Travel (deg)		+95/-5		
Nominal Resolution (arcsec)		0.085	0.21	Analog
Accurac, Calibrated (arcsec)	1	+/-30	+/-30	+/-30
Error Mapped Accuracy (arcsec)	1	+/- 5	+/- 5	N/A
Max Speed (rpm)	1,2,5	30	75	90
Bi-directional Repeatability (arcsec)		+/-1.50	+/-1.50	+/-1.50
Axial Runout (μm)		4		
Radial Runout (μm)		4		
Continuous Torque (N-m)	2,3	0.4		
Peak Torque (N-m)	2,4	2.7		
Axial Load Capacity (kg)		3		
Radial Load Capacity (kg)		2		
Moment Capacity (N-m)		0.2		
Stage Mass (kg)		1.5		

Notes: 1 - Resolution and controller dependent; 2 - 100VDC minimum bus voltage; 3 - Assumes maximum 25°C temperature rise; 4 - At 10% duty cycle and 1 second maximum; 5 - 12 MHz encoder; All specifications subject to change without notice.

Stage Information	Notes	PLR40
Tabletop Inertia (kg-m^2)		3.20E-04
Maximum Acceleration, Unloaded (rad/s^2)	1	3600
Typ. Breakaway Torque (N-m)		0.03
Typ. Running Torque (N-m)		0.045
Max Motor Bus Voltage (VDC)		170
Length of Stage Cable (mm)		950
Bearing Life x 10^6 (Revs)		100
Max Inertial Payload (kg-m^2)		0.01

Notes: 1 - Assumes 100VDC bus. All specifications subject to change without notice.

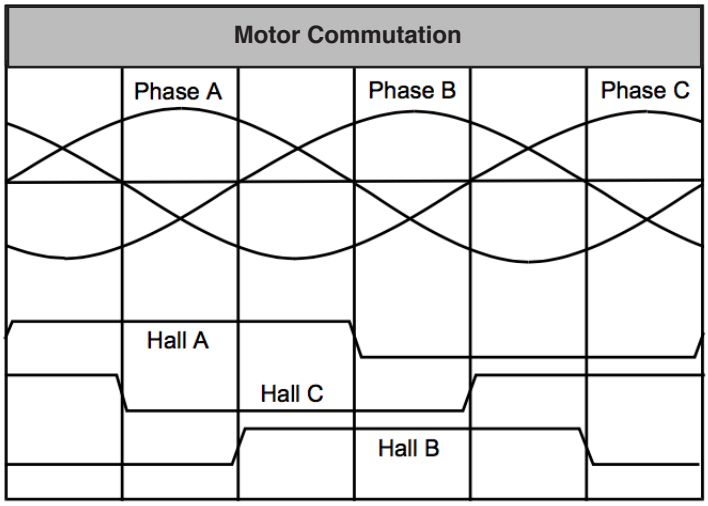
Motor, Encoder, Limits Data

Parameter	Notes	PLR40
Motor		
Motor Type		Brushless Servo
Continuous Torque (N-m)	1	0.4
Continuous Current (Arms)	1	0.5
Peak Torque (N-m)	2,3	2.7
Peak Current (Arms)	2,3	3.4
Torque Constant (N-m/Arms)		0.81
Back EMF Constant (V/Krpm)		60.5
Winding Resistance (ohms)		20.7
Winding Inductance (mH)		20.0
Motor Constant (N-m√Watt)		0.12
Thermal Resistance (°C/W)		1.8
Poles		12
Hall Sensor Power		5 to 24VDC, 30mA
Hall Outputs		Open collector, current sinking, 20mA max
Encoder		
Encoder Power		5VDC +/- 5%, 160mA (Sin/Cos), 275mA (Digital)
Output		Sin/Cos or Square wave differential line driver
Index		Synchronized pulse, duration equal to one resolution bit
Limit Sensors		
Sensor Power		12 to 24VDC, 50mA
Output		Current sinking, 100mA max

Notes: 1 - Assumes maximum 25°C temperature rise; 2 - Assumes 100VDC bus; 3 - At 10% duty cycle and 1 second maximum;
All specifications subject to change without notice

Connectors

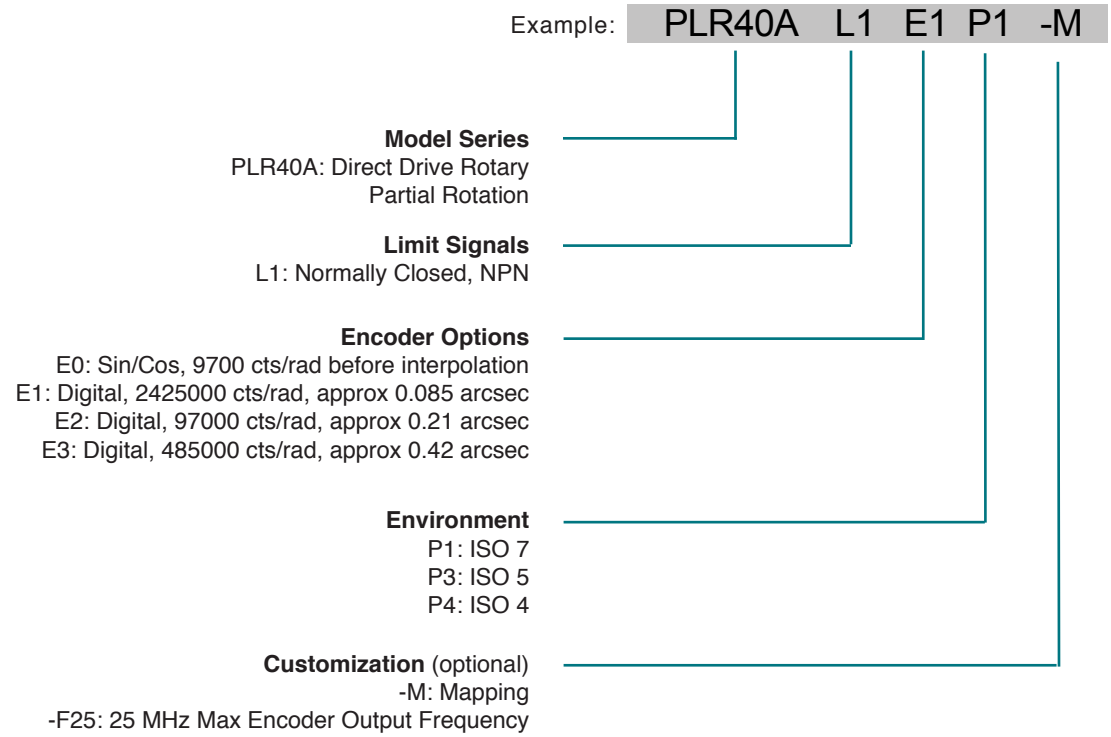
Motor Connector: DB9W4P	
PIN	Function
A1	Motor Phase A
A2	Motor Phase B
A3	Motor Phase C
A4	Motor Shield
1	Temp-1
2	Temp-2
3	Hall A
4	Hall B
5	Hall C
Shell	Shield



Encoder Connector: DB15P		
PIN	Digital Encoder	Analog Encoder
1	N/A	Encoder Cos-
2	Encoder GND	Encoder Sin-
3	N/A	Encoder Index+
4	Encoder I-	Encoder 5V
5	Encoder B-	N/A
6	Encoder A-	N/A
7	Encoder 5V	N/A
8	N/A	N/A
9	N/A	Encoder Cos+
10	N/A	Encoder Sin+
11	N/A	Encoder Index-
12	Encoder I+	Encoder GND
13	Encoder B+	N/A
14	Encoder A+	N/A
15	N/A	N/A

Sensor Connector: DB9P	
PIN	Function
1	Hall Power
2	Hall GND
3	Hall A
4	Hall B
5	Hall C
6	Limit Power
7	Limit GND
8	Forward Limit
9	Reverse Limit

Model Configuration



Notes: 1) Standard encoder max output frequency is 12 MHz. Not all configurations are valid - consult factory for assistance