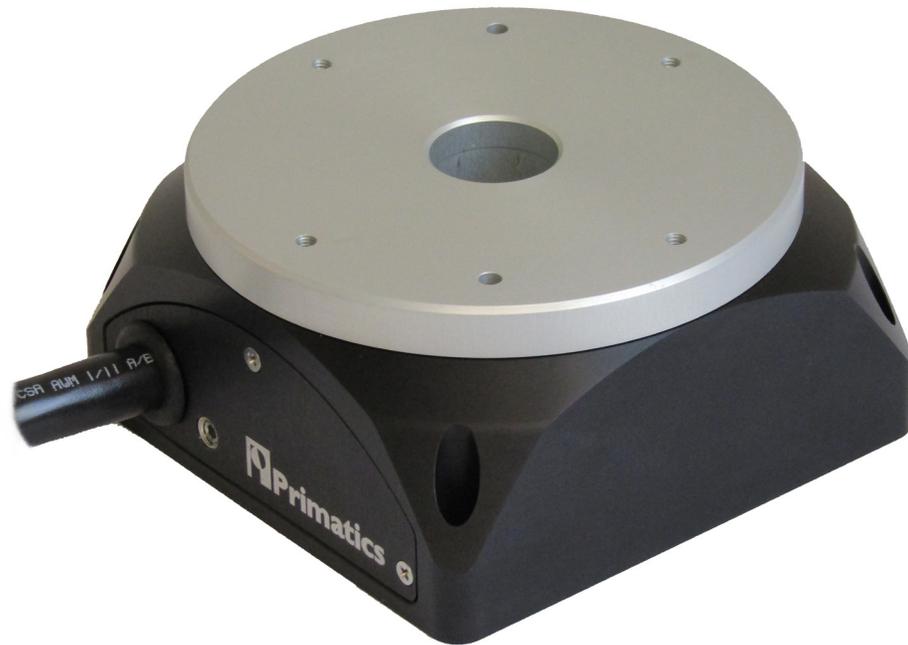


PDR110C



Features

- Direct drive continuous rotary motion
- Compact design
- Low maintenance and long life
- Resolution to 0.079 arcsec
- Home sensor
- Single cable connection
- Oversized cross roller bearing
- Error mapped accuracy option
- ISO 4 cleanroom option

Overview

Primatics PDR110C rotary stage is among the most advanced direct drive tables available. It features a high performance direct drive motor that provides arcsecond repeatability and fast settling times making the PDR110C ideal for semiconductor wafer inspection, high speed laser machining and precision metrology. The compact design also yields a smaller footprint than comparable worm drives.

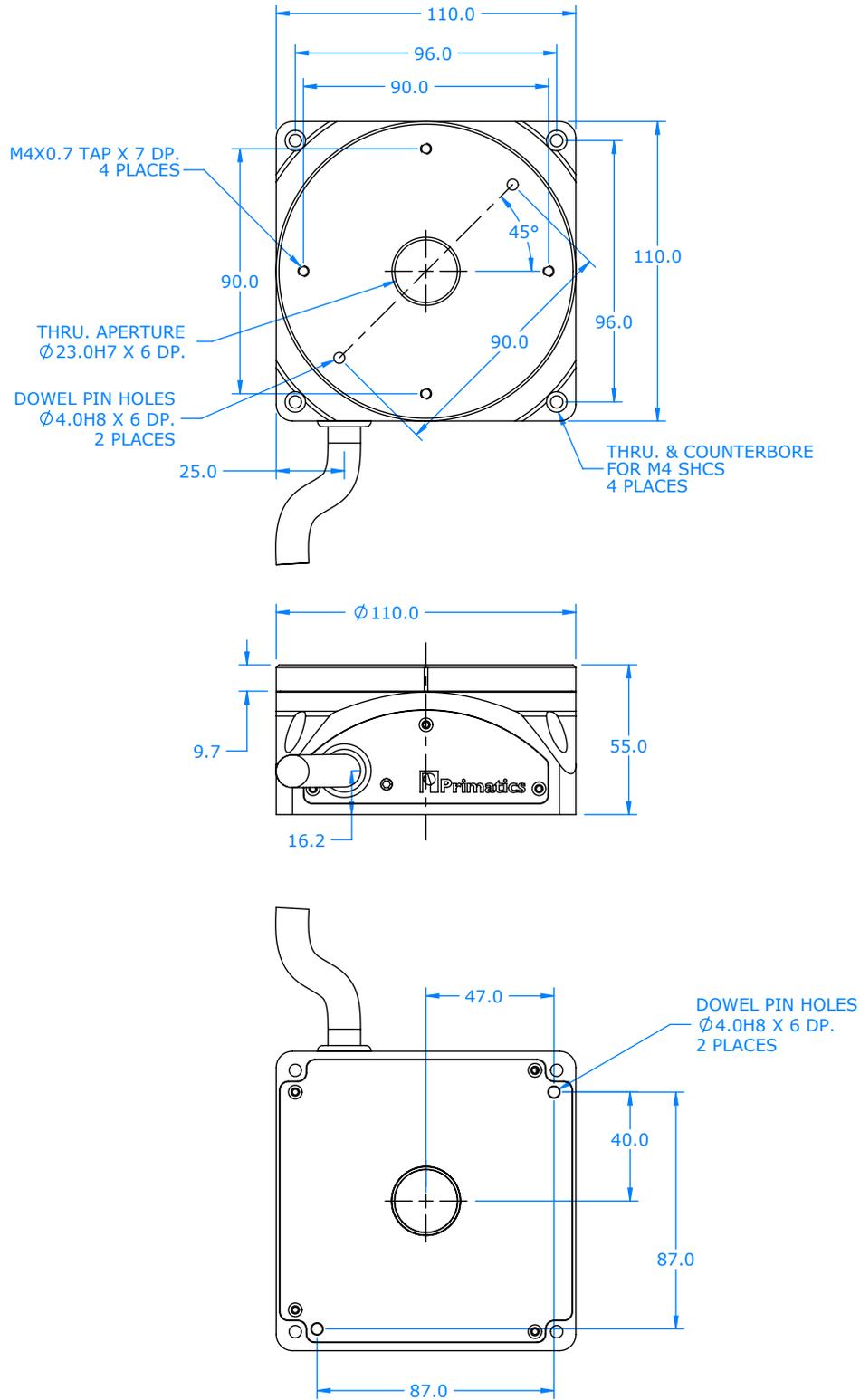
Smart Design

The PDR110C incorporates a high pole count brushless servo motor which provides low velocity ripple even at low speeds. The high resolution glass disk optical encoder mounted directly to the rotating platen yields arcsecond resolution. A single electrical cable affixed to the stage simplifies integration and cable management. The oversized cross roller bearing supports the rotating platform, delivering high load capacity, excellent rigidity and long life. A large center aperture allows a convenient routing of hoses or cables to the attached payload.

Applications

Direct drive technology eliminates the backlash and wear found in mechanical drives such as worm gears. The direct connection of the motor and high resolution encoder provide high servo stiffness and response. These features combine to make the PDR110C an ideal choice for inspection and measuring applications found in many markets. For larger payloads consider the PDR160C or PDR210.

Dimensions



Specification

Specifications	Notes	PDR110C		
Travel (deg)		360 Continuous		
Resolution (arcsec)		0.079	0.40	4.0
Accuracy (arcsec)		+/-47	+/-47	+/-50
Error Mapped Accuracy (arcsec)	1	+/- 5	+/- 5	N/A
Max Speed (rpm)	1,2,5	30	110	350
Bi-directional Repeatability (arcsec)		+/-1	+/-1.44	+/-8
Axial Runout (μm)		4		
Radial Runout (μm)		6		
Continuous Torque (N-m)	2,3	0.4		
Peak Torque (N-m)	2,4	2.7		
Axial Load Capacity (kg)		10		
Radial Load Capacity (kg)		5		
Stage Mass (kg)		1.9		

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 - 12.5 MHz encoder; All specifications subject to change without notice.

Stage Information	Notes	PDR110C
Tabletop Inertia ($\text{kg}\cdot\text{m}^2$)		5.57E-04
Maximum Acceleration, Unloaded (rad/s^2)	1	3600
Typ. Breakaway Torque (N-m)		0.06
Typ. Running Torque (N-m)		0.045
Max Motor Bus Voltage (VDC)		100
Length of Stage Cable (mm)		450
Bearing Life x 10^6 (Revs)		100
Max Inertial Payload ($\text{kg}\cdot\text{m}^2$)		0.01

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

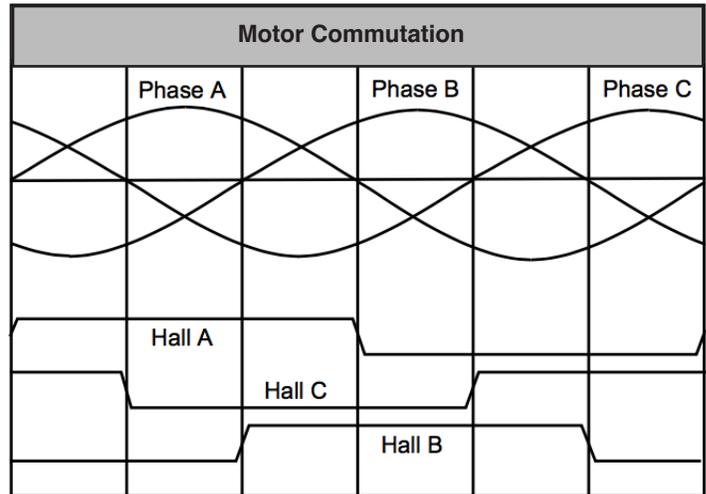
Motor, Encoder, Home Sensor Data

Parameter	Notes	PDR110C
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 \sqrt Watt)		0.12
Thermal Resistance ($^{\circ}$ 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%, 180mA
Output		Square wave differential line driver
Index		Synchronized pulse, duration equal to one resolution bit
Home sensor		
Sensor Power		12 to 24VDC, 50mA
Output		Current sinking, 100mA max

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

Connector

Motor, Encoder and Home	
Connector: Canon 1929926-0480	
Size 20, 28 pins	
PIN	Function
A	Motor Phase A
B	Motor Phase B
C	Motor Phase C
D	Motor Shield
E	Encoder 5V
F	Encoder Ch A+
G	Encoder Ch A-
H	Encoder Ch B+
J	Encoder Ch B-
K	Encoder Shield
L	Home Power
M	Home Return and Signal Common
N	Home
P	Not Used
R	Not Used
S	Signal Shield
T	Hall V+
U	Hall V-
V	Encoder Power Return
W	Encoder Ch I+
X	Encoder CHI I-
Y	Forward Limit (see Note)
Z	Reverse Limit (see Note)
a	Key
b	Hall A
c	Hall B
d	Not Used
e	Hall C

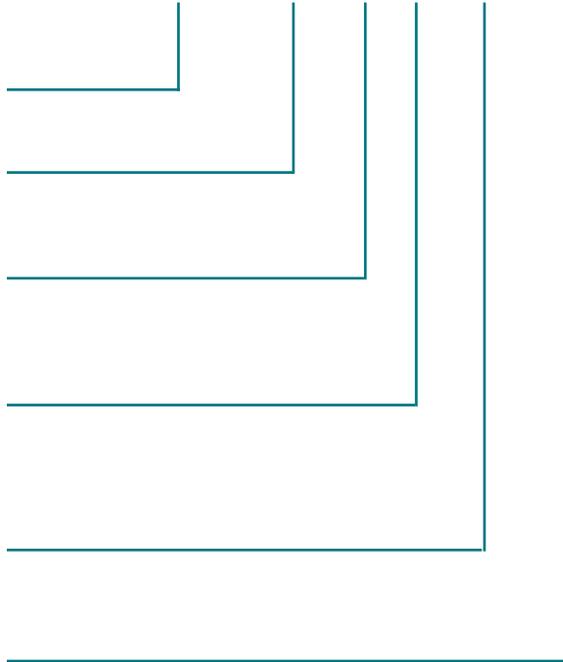


Notes: The PDR series does not include limit sensors. The Limit Signal options are provided for compatibility with motion controller requirements.

Model Configuration

Example: **PDR110C H1 L1 E1 P4 -M**

- Model Series**
PDR110C: Direct Drive Rotary
- Home Sensor**
H1: Normally Closed
H2: Normally Open
- Limit Signals¹**
L1: Normally Closed
L2: Normally Open
- Encoder Resolution²**
E2: 4.0 arcsec; 327,680 cts/rev
E3: 0.40 arcsec; 3,276,800 cts/rev
E4: 0.079 arcsec; 16,384,000 cts/rev
- Environment**
P1: ISO 7
P4: ISO 4
- Customization (optional)**
-M: Mapping
-F25: 25 MHz Max Encoder Output Frequency



Notes: 1) The PDR series does not include limit sensors. The Limit Signal options are provided for compatibility with motion controller requirements. 2) Standard encoder max output frequency is 12.5 MHz.
Not all configurations are valid - consult factory for assistance

Accessories

Model	Description
CABLE-SERVO-STAGE-PIGTAIL	Un-terminated at user end. 12 ft. standard
CABLE-SERVO-STAGE -DMC40X0-I200	Use with Galil DMC-40x0-I200 with trap servo drives. 12 ft. standard
CABLE-SERVO-STAGE -DMC40X0-I200-SINE	Use with Galil DMC-40x0-I200 with trap servo drives. 12 ft. standard
CABLE-SERVO-STAGE-MC4U W/ HALLS	Use with ACS MC4U. 12 ft. standard
CABLE-SERVO-ACS-CMNT-DIG	Use with ACS MC4U. 12 ft. standard