

About the Company

Thorlabs has been an active member of the Photonics community for over 25 years.

We strive to be the ultimate resource for the photonics community-a place to find the products you need to enable your experiments, as well as the information you need to get your application working.

Thorlabs designs, develops, and manufactures building blocks for the photonics industry including equipment for opto-mechanics, motion control, nano-positioning, alignment, optical components, laser diodes, tunable lasers and vibration isolation systems. In addition to core photonics building blocks, we now provide system level solutions including complete OCT and imaging systems.

Trademarks

THORLABS is a registered trademark of Thorlabs Inc.

Technical Support

Thorlabs provide a comprehensive after sales service. Contact us through your local representative, or at the address below:

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email: techsupport.uk@thorlabs.com

Product Warranty

Opto-Electronics, Control Electronics, Optics, and Nano-Positioning Product Lines.

Thorlabs offers a two year warranty on the above mentioned product lines, provided normal use and maintenance of the products and when properly handled and correctly installed.

Thorlabs shall repair or replace any defective or nonconforming product as detailed above. We ask that buyer contact Thorlabs for a Return Material Authorization number (RMA #) from our Customer Service>Returns department in order to most efficiently process the return and/or repair.

Products returned for repair that are not covered under warranty, a Thorlabs standard repair charge shall be applicable in addition to all shipping expenses. This repair charge will be quoted to the customer before the work is performed.

Customer Feedback

It is always helpful to have detailed and accurate information about any problems encountered by customers

We welcome comments or suggestions about any aspect of the equipment and instruction handbooks.

The logo for Thorlabs, featuring the word "THORLABS" in a bold, red, sans-serif font. The letters are outlined in white, giving it a 3D or embossed appearance.

DRV414

DC Servo Motor Actuator

1.1 Introduction

Designed for a combination of high speed and high load capacity, these DC motor actuators are ideally suited for applications that require precision motion control. The design incorporates a 1024 line (4096 count) rotary encoder for accurate and repeatable positioning, especially when combined with one of Thorlabs high stability nanopositioning stages. It is directly compatible with any stage product that uses a standard 1/2" (12.7mm) mounting bush. The motor is supplied complete with a 3m (9ft) extension cable.

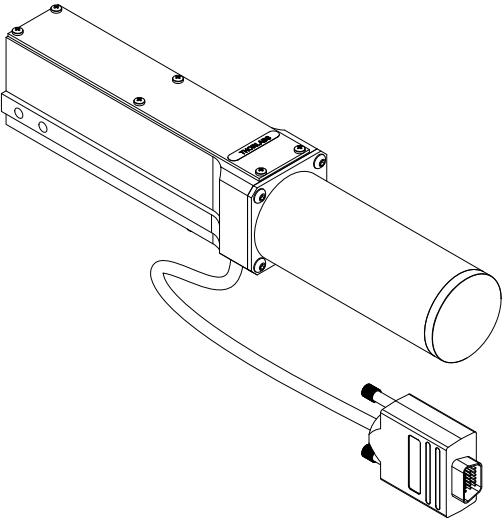


Fig. 1.1 DRV414 DC Motor Actuator

1.2 Specification

Total Travel:	50 mm
Resolution:	0.3 microns
Max Speed:	Up to 50mm/s
Load Capacity:	25 kg (55 lbs)
Home Switch Accuracy:	< 1 μm
Temperature Range:	5° to 40°C,
Humidity:	20% to 80% RH.

1.3 Dimensions

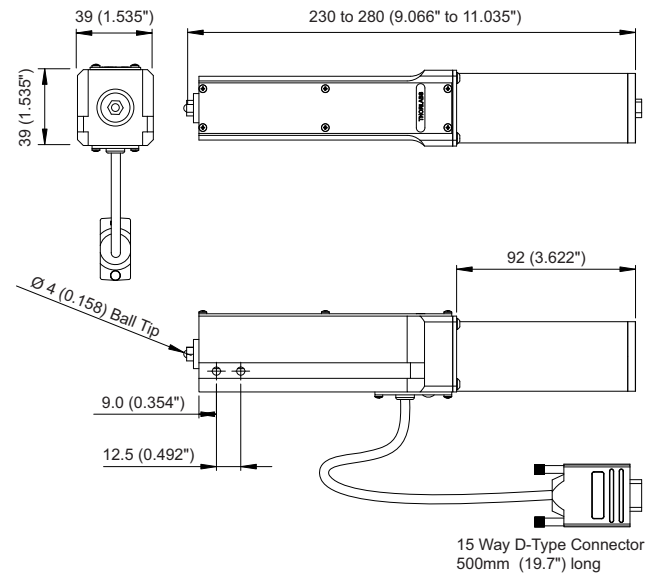
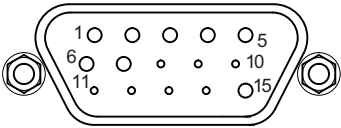


Fig. 1.2 Dimensions

1.4 Motor Connector Pin Out



The 'Motor' connector provides connection to the DC motor controller. The pin functions are detailed in Fig. 1.3.



Pin	Description	Pin	Description
1	Ground/Return	9	Encoder A +
2	CCW Limit Switch	10	Encoder A -
3	CW Limit Switch	11	Encoder B +
4		12	Encoder B -
5		13	+5V
6	Motor +	14	
7	Motor -	15	Braid/Screen
8			

Fig. 1.3 Motor Connector Pin Descriptions

1.5 Using The DRV414 DC Motor Drives

**Warning**


When power is removed or the actuator is disabled, it will move freely under its own weight. In vertically mounted applications this will cause the load to fall sharply and could result in personal injury. For such applications, we strongly recommend that a user applied brake is used - see the manual supplied with your controller for more details.

When used together with the Thorlabs DC servo motor Controller (BDC103), the DRV414 motor actuator allows fully automatic control of the stage. The default configuration below is set at the factory and stored in the non-volatile memory of the Thorlabs DC Motor Controller.

Parameter	Value
Maximum Velocity	50.0 mm s ⁻¹
Minimum Velocity	0.0 mm s ⁻¹
Acceleration	50.0 mm s ⁻²
Minimum position	0.00 mm
Maximum position	50.00 mm
Backlash control	1
Backlash distance	0.01 mm
Gearbox Ratio	1:1
Lead Screw Pitch	1.25
Home Offset	1.0 mm
Jog Step Size	0.1 mm
Jog Acceleration	0.4 mm
Jog Min Velocity	0.0 mm
Jog Max Velocity	0.3 mm
Encoder Counts/Rev	4096 mm

Note

The DRV414 DC drives have +ve (CCW) and -ve (CW) limit switches. When creating a custom application program to control the DRV414, it is preferable to avoid running into these limits.



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