

Part 3. Specifications

Item #	Z806	Z812 and Z812B	Z825B
Travel Range	6 mm	12 mm	25 mm
Gear reduction		67:1	
Lead screw pitch		1.0 mm	
Feedback		Motor mounted rotary encoder 512 counts/rev of the motor 34,304 counts/rev of leadscrew	ie
Limit switches		Electromechanical	
Motor type		12 VDC Servo	
Backlash		<8 μ m	
Axial load capacity		9 kg	
Speed range		50 μ m/sec to 3.0 mm/sec	
Calculated Resolution*		29 nm	
Operating Temperature		-22 to 185 $^{\circ}$ F (-30 to 85 $^{\circ}$ C)	
Cable Length		1.6 ft (0.5 m)	
Connector		HDDB15	
Compatible Controller		TDC001 T-Cube DC Servo Controller	

units purchased
S. Kelly
10/9
34304 steps
mm
Steve
made adapters
for HDDB15
to
DB25

How to Calculate the Linear Displacement per Encoder Count

For the Z806, there are 512 encoder counts per revolution of the motor. The output shaft of the motor goes into a 67:1 planetary gear head. This requires the motor to rotate 67 times to rotate the 1.0 mm pitch lead screw one revolution. The end result is the lead screw advances by 1.0 mm.

To calculate the linear displacement of the actuator per encoder count:
 $512 \times 67 = 34,304$ encoder counts per revolution of the lead screw

Linear displacement of the lead screw per encoder count is:
 $1.0 \text{ mm} / 34,304 \text{ counts} = 2.9 \times 10^{-5} \text{ mm} (29 \text{ nm})$

Part 4. Wiring Diagrams

4.1. Connector Pin Assignments

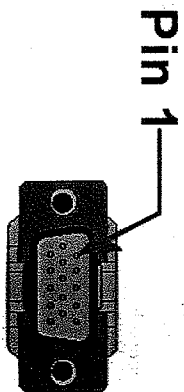


Figure 1: Output connector

Pin	Description	Pin	Description
1	Ground (Limit and V_{cc})	9	Ident Resistor
2	Forward Limit	10	Vcc (+5 V DC)
3	Reverse Limit	11	Encoder Channel A
4	Reserved For Future Use	12	Reserved For Future Use
5	Motor (-)	13	Encoder Channel B
6	Reserved For Future Use	14	Reserved For Future Use
7	Motor (+)	15	Reserved For Future Use
8	Reserved For Future Use		

4.2. Description of connections

Motor (+)

This supplies a +12 VDC supply to the motor of the actuator. The maximum current is 80 mA.

Vcc

A connection should be made to a +5 VDC supply to power both channels A and B on the encoder.

Channels A and B

The Z800 series actuators use a Hall Effect encoder. Both channels A and B are supplied by the 5 V DC connection.

GND

This is the ground connection for the encoder.

Motor (-)

This supplies a -12 VDC supply to the motor of the actuator. The maximum current is 80 mA.

Limit Ground

This is a common ground for both the forward and reverse limit switches.

Reverse Limit

The reverse limit prevents over driving of the actuator at its minimum extension.

Forward Limit

The forward limit prevents over driving of the actuator at its full extension.

Part 5. Compatible Drivers

The Thorlabs compatible controller for this product is the T-Cube Single Channel DC Servo Controller TDC001. The use of these controllers ensures optimal performance. All above performance specifications are guaranteed only with use of Thorlabs controllers and drivers.

Furthermore, the control PC used to operate the driver must be running APT Software version 2.8 or higher. Earlier versions of software do not support this product.

Part 6. Maintenance

Periodic greasing of the lead screw is advised, particularly in applications with a high duty cycle. Grease the lead screw thread as follows whenever the thread appears dry or the motor is noisy:

1. Drive the motor to extend the leadscrew to its full extent.
2. Apply a thin bead of high load, silicon free lubricant (e.g. Apiezon 100) as shown below.



3. Drive the motor to retract the lead screw and distribute the grease.
4. Remove access grease using a lint free cloth.