

# THETA-4

Rotary Stage

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The THETA-4 direct drive rotary stage is designed to have a low-profile envelope to produce superior angular positioning. Equipped with a 1.095 arc sec rotary encoder, this stage ensures high accuracy and outstanding trajectory control. Its preloaded hub design provides stability for high load capacity and excellent running characteristics.

## Protective Design

The THETA-4 is also designed for having a minimally sized envelope to achieve maximum torque values. The THETA-4 is suitable for harsh work environments, due to its water resistant sealed design, making it ideal for either dry or wet cutting. Its extreme stiffness offers outstanding dynamic characteristics with low axial and radial run out, even at maximum loads.

## Superior Mechanical Design

The stage hub, which is a monolithic core design suspended by two preloaded bearings, allows for high load capacities with excellent running conditions. The hub has a diameter of 110 mm and an aperture diameter of 39 mm. Reducing the mechanical components allows for long service life with minimal maintenance.

- High Precision Performance.
- Direct-drive, brushless servomotor.
- Expectational Concentricity and Coaxially.
- Minimal cogging motor for outstanding velocity stability.
- Low Profile, Small Envelope.
- Optional Ultra-Precision Clamping Collets.

## Direct-Drive Servomotor

To maximize positioning performance, the THETA-4 utilizes a brushless direct drive servomotor with a variable air gap for minimal cogging effects. THETA-4 can produce a continuous stall torque of 4.96 Nm and a peak torque of 15 Nm.

## Precision Positioning

THETA-4 provides a closed loop position and velocity feedback, enabling outstanding motion control. With NUTEC MM9 controller, the THETA-4 can achieve accurate movement increments of high acceleration with rapid starts and stops.

## Custom Options

The THETA-4 can be equipped with either a collet system or 3-jaw chuck. The large diameter aperture allows for a wide selection of collets, ranging from stock sizes of 0.2 mm to 32 mm. Standard, it is configured for a HARDINGE 5C or 3C collet. The collet system is equipped with a pneumatic clamping module, having a closing force of 600 N at 80 PSI.

## THETA-4 Specifications

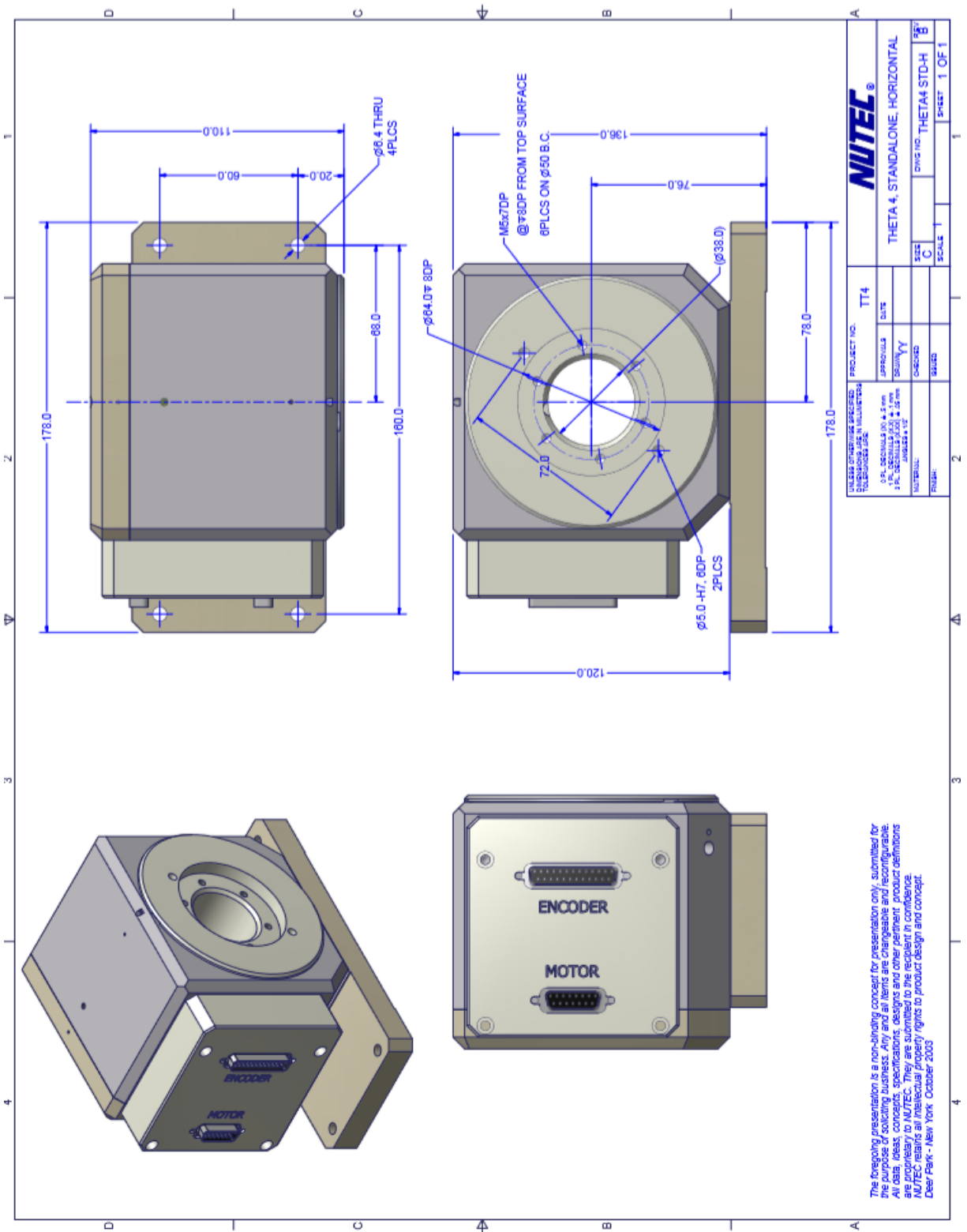
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Specifications	THETA-4
Length	120 mm
Width	120 mm
Height	110 mm
Hub Diameter	107 mm
Assembly Weight	7 kg
Aperture Diameter	39 mm
Payload Axial	25 kg
Payload Radial	17 kg
Travel	± 360° Continuous
Resolution	1.095 arc sec HP 0.5 arc sec
Accuracy	≤ 20 arc sec LIBEC ≤ 5 arc sec
Repeatability	≤ ± 3 arc sec
Maximum Speed	300 RPM
Maximum Acceleration	≥ 6000 rad/sec <sup>2</sup>
Peak Torque	15 Nm
Continuous Torque	4.96 Nm
Torque sensitivity	0.95 Nm/A
Back EMF	57 V/krpm
Rotational Inertia	0.001 kg-m <sup>2</sup>
Collet Option	
Pin / Collet Runout	≤ 10 μm
Concentricity Spindle Nose TIR	≤ 2 μm
Minimum Stock Size	0.2 mm
Maximum Stock Size	32 mm
Collet Selection	3C/5C/D/W/F/ER

**THETA-4 Rotary Stage**

THETA-4 Dimensions (Horizontal)



THETA-4 Dimensions (Vertical)

