SCIENTICO INDIA
Manufacturer & Exporter · Ambala, Haryana, India

PRODUCT DATA SHEET
Catalogue reference for product evaluation

Phone: +91 7015865225 **Email:** info@scienticoindia.com **Web:** scienticoindia.com **Address:** #71, Industrial Area, Ambala Cantt, Haryana, India

Ball & Beam Control Trainer | NexuMation 05

Category: Instrumentation Lab Equipment · **Order Code:** NEXUMATION 05 · **Country of Origin:** India

Product Overview

The Ball & Beam Control Trainer NexuMation 05 controls a stainless-steel ball position on a 400mm track using a DC motor and adjustable beam angle. This ball and beam control trainer features a 1000 lines per revolution optical encoder, 1:4 gear ratio, and linear potentiometer position measurement. On-board sensors, control circuits, drivers, and protection circuits are installed. MATLAB control interface includes PID control, digital encoder, and DC power supply modules for automatic control principle and modern control engineering courses.

View this product online: https://scienticoindia.com/product/ball-beam-control-trainer-nexumation-05/



Request a model-specific quotation
Include quantity and delivery country.

Technical Specifications

Ball & Beam Control Trainer NexuMation 05: Technical Specifications

Parameter	Value
Motor Type	DC
Optical Encoder	1000 lines/revolution
Gear Ratio	1:4
Moving Range	400mm
Position Measurement	Linear Potentiometer
Controller	Intelligent Motion Controller
Sensors	Installed on-board
Control Circuits	Installed
Drivers	Installed
Protection Circuits	Installed
Software Interface	MATLAB Control Interface

Technical Data

Parameter	Value
Motor	DC

Parameter	Value
Optical Encoder	1000 lines/revolution
Gear Ratio	1:4
Moving Range	400mm, Linear Potentiometer

Key Features

Key Features

- **Motor:** DC
- **Application:** ball and beam control trainer for automatic control principle and modern control engineering courses
- **Sensors:** installed on-board
- **Control Circuits:** installed
- **Drivers:** installed
- **Protection Circuits:** installed
- **Optical Encoder:** 1000 lines per revolution
- **Gear Ratio:** 1:4
- **Moving Range:** 400mm with linear potentiometer measurement
- **Controller:** intelligent motion controller
- **Software Interface:** MATLAB control interface

Experiments Included

- Ball & Beam Features & Benefits
- Ball & Beam Functional Components
- Mechanical Model of Ball & Beam
- Modeling The Ball and Beam Experiment in Simulink
- Electrical Model
- Open-Loop Model of Ball & Beam System
- Ball & Beam Control Using PID
- Root Locus Method
- Frequency Response Method

Control Modules

- PID control module
- Digital Encoder module
- DC power supply module

Construction and Design

The Ball & Beam Control Trainer NexuMation 05 is a two-part system comprising the Ball & Beam body and the control system. The stainless-steel ball moves on a track. A DC motor drives a beam. The rotating angle of the beam is adjusted to control the ball position.

The ball and beam control trainer has a moving range of 400mm. Position is measured using a linear potentiometer. The DC motor is coupled to the beam via a gear ratio of 1:4. An optical encoder with 1000 lines per revolution measures motor rotation.

All sensors are installed on-board. Control circuits, drivers, and protection circuits are installed on the system. An intelligent motion controller manages operations. This ball and beam control trainer allows real-time feedback and control.

Software

- MATLAB Control Interface
- PID control module
- Digital Encoder module
- DC power supply module

Ordering & Delivery

- Send the product name, quantity, delivery country and destination with your enquiry.
- Production schedule, freight, payment terms and export documents are confirmed in the written quotation.

Frequently Asked Questions

Q1. What does the Ball & Beam Control Trainer NexuMation 05 control?
It controls the position of a stainless-steel ball on the track by adjusting the rotating angle of a beam.

Q2. How is the ball position measured?
Position is measured using a linear potentiometer. The moving range is 400mm.

Q3. How is the beam driven?
A DC motor drives the beam. The motor is coupled via a gear ratio of 1:4. An optical encoder with 1000 lines per revolution measures motor rotation.

Q4. Which control methods are taught?
PID control, root locus method, and frequency response method are included.

Q5. What is included in the ball and beam control trainer?
Sensors installed on-board, control circuits, drivers, protection circuits, an intelligent motion controller, and MATLAB control interface with PID control, digital encoder, and DC power supply modules.

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