Ball & Beam Control System

GOOGOL TECHNOLOGY The Ball & Beam control system is a classic control teaching aid especially designed for courses in automatic control principle, modern control engineering, and electrical motor control. The control system designed with this experiment equipment is capable of controlling the position of a stainless steel ball on the track by adjusting the rotating angle of a beam.

The Ball & Beam control system consists of a v-grooved steel bar and a free rolling ball. The linear sensor measures the position of the ball on the track by measuring the output voltage from the stainless steel bar. A DC motor is connected to a gear reducer, which controls the angle of beam, accordingly realize the position
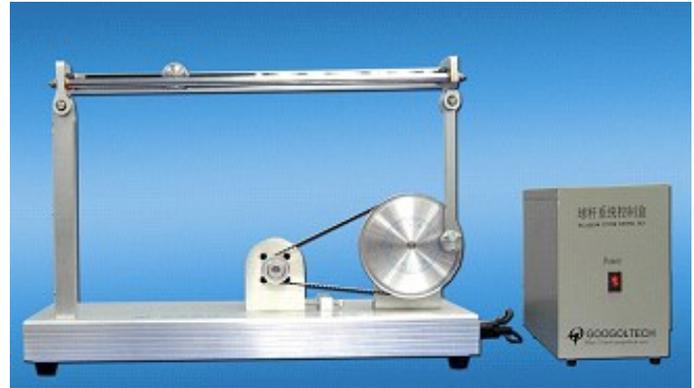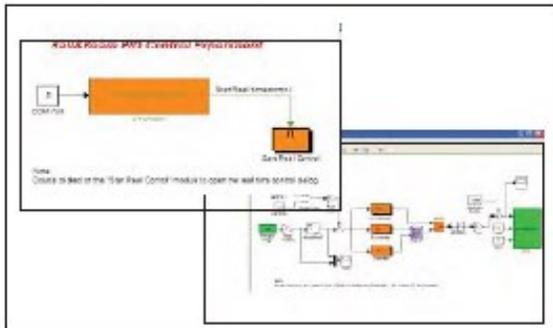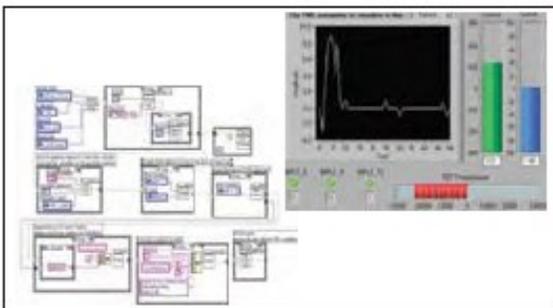

Control Interface

Three type of software interfaces are
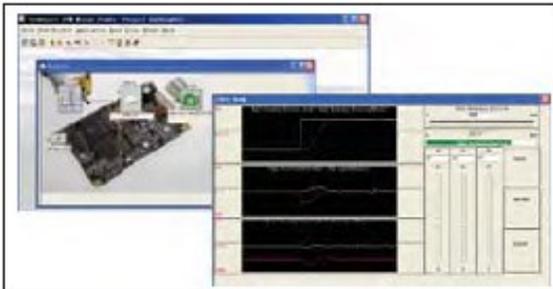
Control interface in IPM Motion

Control interface in MATLAB, Simulink

Control interface in LabView

Main Features

The digital control system consists of an intelligent control module, which is a high precision, fully digital servo drive, with embedded intelligence and built-in 100W power amplifier. The drive is used for brushless motors with sinusoidal or trapezoidal commutation, or DC brush motors. Programmable with the high level Motion Language, the intelligent control module embeds on one board advanced motion control and PLC-specific functionality. Combined with a high-level Motion Language, a graphical platform for quick configuration, tuning and motion programming, the Intelligent Control module represents a flexible and easy way to implement solution for a wide range of applications. A user-friendly graphical control interface can visually shows the results of the controller and all of the operating data.

Real-Time control interface are provided in Matlab, Simulink and LabView—making it

Suggested Experiments

1. System modeling
2. Design of feedback controller
3. P, PD and PID control system design
4. Design controllers using root locus methods
5. Design controllers using frequency response methods

Technical Specification

Moving Range	400mm	Ball Diameter	30mm
Control Accuracy	±1mm	Motor	DC Servo Brush 35W
Reducer Ratio	4	Power Supply	AC220V 50HZ 1A（0r AC110V）
Weight (overall)	<10Kg	Dimension	$600mm \times 300mm \times 400mm$

Ordering Guide

Model Code	Model Name	Description
GBB-1004	Ball & Beam digital control system	• Ball & Beam mechanical body equipped with DC servo motor and drive • Electric control box with motion controller and DC power supply inside • Intelligent motion control platform • Googol Simulink software experiment platform • User Guide and Experiment Manual

Distributed by:

Solutions 4U