VERITAS Engineering

Catalog
Of

DC Servo Motor Trainer with PID Control Module

Brand: VERITAS

Model: VDSMT-02

Picture : **DC Servo Motor Trainer**

Specification:

Features:

- Analog Feedback Loop & DC servo system
- Modularized by the function of servo circuits
- Overload protection for the Servo Amp and power supply output
- Servo Motor with Tacho Generator and Speed Reduction Gear PID Control Exercise

Experiments:

- Transient Characteristics of Servo Motor
- Response Characteristics
- Speed Detection and Closed Circuit's Composition Steady Speed Control
- Load Characteristics
- Position Detection and Operational Amplification Error Signal Detection and Closed Circuit's Composition Position Control
- Closed Circuit's Gain and Response Speed
- Servo Circuit Applications
- PID Control

Servo System Method: Analog Feed-back Loop.
DC Servo Circuit Composition: Modular System (10 Modules and Motor, Electronic Brake)
Speed Control Range: 0.01 RPM-60RPM
Reduction Ratio: 60:1
Position Resolution: less than + 3 degree
Dimension: Modules (Min: 109(W) x 50(H) x 109(D)mm
System case (Min): 610(W) x 170(H) x 465(D) mm

Accessories:

- Aluminum Brake Disk: 1 ea
- Inertia Flywheel Disc: 2 ea
- Patch Cord (04 Plug); 1 set
- AC Power Cord: 1 ea
- Experimental Manual: 1 ea

Attenuator:

The dual rotary type attenuator consists of 10 steps and each step reduces by 10%.
Input Resistance :10 KΩX 10-100kΩ
Summing Amp: Performs add-up operations for the current of three circuits and experiments on the gain and transfer characteristics.
Input Circuit: 3-input analog summing
Delay: Int/Ext Pre-Amp
Designed to control DC offset voltage and can control DC zero offset coming from the DC Amplifier.
Offset Range: Approx +5V
Gain: 20dB Motor
Drive-Amp
Min 10W DC differential amplifier has overload protection circuits and drives
the Servo Motor
Output Power: 15V 700mA Max.
Gain: 34dB Current Amp.
Tacho Detector
Input: AC 1-1200Hz, 0-3V
Output: DC40-15V
Polarity Sensitivity: Less than 0.IV

Power Supply

Supplies power to the Servo Motor and other systems with overprotected DC outputs. The mounted ammeter shows current status of the motor's load.
Output: + 15V 0.2A (For modules) +15V 0.5 (for motor)
Protection: Overload and short circuit protection
Input Voltage: AC 220V, 50/60Hz
Potentiometer
The 360-degree rotary scales should be mounted on this precision potentiometer for position setup and detection.
Input Resistance: 1/10 K ohm
Input Voltage: 30W Max.
Resolution: Less than 1/1000 Division
Power Dissipation: 2W at 25 de
RPM Meter
RPM Meter should be used together with Tacho Detector, and it indicates the Servo Motor's RPM along the output of Tacho Detector.
Max. Indication: 4000 RPM
Input Impedance: approx 150kohm
PID Control Module
Consist of proportional integral derivation control element
Proportional gain: 0.1-1 and 1-10
Input Power: +5
Integral Action Time :0.1-1.0 sec
Dimension (Min): 109Wx50(Hx108(D) mm

Function Generator

Generate Square Wave for experiments on the motor's response speed and transient characteristics.
it should provide Ramp outputs for timing axis.
Frequency Range: 0.1hz-1 hz, 1-10hz
Output: DC 15Vp-p

Magnetic Brake

The Magnet Brake should have rotational load by eddy currents presented to the aluminum rotational disk which should mounted on the motor's high- speed axis.
Magnet Power: 5-500AT variable
Magnet Air-gap: 4mm
Input Voltage: AC 220V, 50/60Hz