

**KCL - 17****DC SERVO MOTOR**

DC Servomotor is commonly used as an actuator in many industrial control applications because of its features - large torque and ease of speed variation. The dynamic characteristics of such a system therefore depends on the motor parameters viz., moment of inertia, coefficient of friction, time constant and also the resistance and inductance of the control winding. It is therefore important to experimentally determine the mechanical and electrical parameters of the DC Servomotor and also to evaluate its transfer function.

The present unit is designed to study a permanent magnet DC Servomotor. This motor is coupled with a load using 2Kgs Spring balance which is transparent & provided for mechanical loading. The shaft speed in rpm is displayed automatically on a 4-digit panel meter.

An important feature of the unit is the built-in absolute speed measurement through optical pick-up from a slotted disk followed by a frequency counter. The 4-digit speed display is therefore completely independent of the tachogenerator characteristics. The high accuracy of speed reading is due to a built-in crystal oscillator. Another interesting design feature is the use of an 'electronic tachogenerator' - a frequency to voltage converter, for the generation of speed feedback signal. This highly linear, non-contact transducer is ideally suited for the small DC motor being used in the unit.

The motor unit is housed in a cabinet with transparent panels, providing a good view of the mechanical system.

**Features**

- Speed control of a 30V/2A, permanent magnet d.c. motor.
- Speed range: 0 to 2000 rpm (typical).
- Opto-interrupter based speed sensing.
- 4-digit speed display in rpm.
- Electronic tachogenerator for feedback.
- Separate unit for motor in a see-through cabinet.
- 2Kg Spring Balance provided for loading.
- Built-in 3 ½ digit DVM for signal measurements.
- Built-in 3 ½ digit Current Meter.
- Interconnections
  - - All interconnections are made using 2mm banana Patch cords.
- Test points are provided to analyze signals at various points.
- All ICS are mounted on IC Sockets.
- Bare board Tested Glass Epoxy SMOBC PCB is used.
- In-Built Power Supply with Power ON indication
- Attractive ABS Plastic enclosures.
- Set of 2mm Patch cords for interconnections
- User's Manual.

**List of Experiments**

- Effect of loading on the speed of motor in the open loop.
- Determination of the motor transfer function and tachometer characteristics.

*Note : Specifications can be altered without notice in our constant efforts for improvement.*