

KCL - 10 STEPPER MOTOR STUDY TRAINER



With the rapid advancement in digital electronics, the stepper motor by virtue of its being a direct digital actuator, has become an important element of a control system. Well known applications include watches, floppy and hard disk drives, printers etc. This experimental set-up aims at providing an exposure to the basic operation of a stepper motor, its drive and logic, and limitations as far as the internal dynamics is concerned. Experiments have been designed to demonstrate the effect of external load – inertial and frictional, on the motor performance. Provisions are available for free running operation as well as single stepping mode with LED indication for the active phase. The unit may also be operated by a microprocessor kit for which a built-in interfacing and automatic changeover has been provided.

An exhaustive manual is supplied with the unit explaining in details the theory of stepper motors, procedure for conducting the experiments and interpretation of the results. The details of application software are also included.

Features

- Single stepping and free running modes of operating with speed variation and direction reversal – internal TTL circuit.
- 360° motion Servo-Potentiometer position-pickup for motor dynamics.
- Operation through microprocessor kit-sample control programs provided.

- Stepper motor specification
 Torque : 3 Kg-cm.
 Step angle : 1.8°.
 Power : 12V, 1A/ phase
- **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

- Manual stepping through push button switch. Measurement of step angle.
- Speed and direction control logic by recording the pulse sequence.
- Study of response effect at various speeds.
- Display and measurement of the dynamic characteristics of the motor in the wobble mode.
- Calculation of 'signal stepping' and 'slew' regions.
- Programming the microprocessor kit to implement feature like direction, speed, angle of rotation, number of steps or an arbitrary motion.
- Study of the effect of inertial and frictional loading on the dynamic performance.

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