

UIT-03

SENSOR TRAINER

MAKE : KITEK

The **UIT-03 Sensor Trainer** is a comprehensive sensor/transducer/Switch control training system that incorporates industrial-grade components with various control circuits and load units. Its modular and closed loop control circuits allow implementation of open-ended, individual control loops used in industrial applications. UIT-03 uses only Standard sensors/ transducers/ Switch and is equipped with USB/Serial interfaces for computer communication.



ALUMINIUM PROFILE



MS ENCLOSURE

FEATURES

- ~ Trainer having control panel should be provided in 30X30mm Aluminum profile rack or MS Enclosure with sturdy table top flat panel.
- ~ Should use Plated-through Hole (PTH) Bare Board Tested Printed Circuit Board
- ~ Should have ABS plastic panel mounted experimental Modules
- ~ All input & output are terminated in 2mm banana connector; Provide 2mm banana cable for experiments.

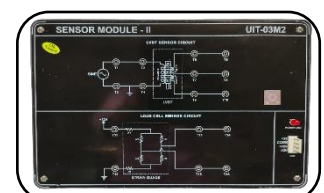
TECHNICAL SPECIFICATION

- Sensor Trainer (Main Unit)
 - ~ Instrumentation Amplifier, Differential Amplifier, Amplifier with Gain & Offset, X100 Amplifier, Power Amplifier, Current Amplifier, AC Amplifier, Summing Amplifier
 - ~ 1 to 10KHz Sine Wave Generator, Max 7.5Vpp Amplitude
 - ~ 10KΩ Multiturn Pot, 10KΩ Wire Wound Pot, 10KΩ Linear Variable Slide Pot
 - ~ 40KHz Oscillator, 40KHz Filter, Buffer, Inverter, Electronic Switch, Comparator, Full wave Rectifier, Low Pass filter.
 - ~ On Board Fixed DC Power Supply of $\pm 5V/1A$, $\pm 12V/1A$
 - ~ Glass Epoxy (PTH) Bare Board Tested Printed Circuit Board Panel
 - ~ Enclosed in a Metal Powder Coated Enclosure

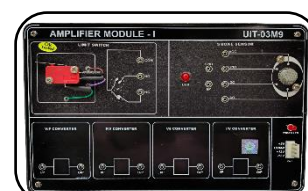
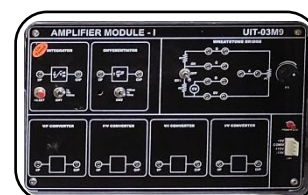
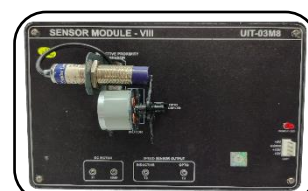
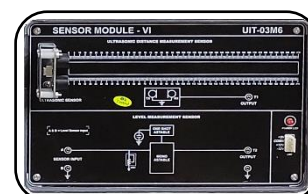
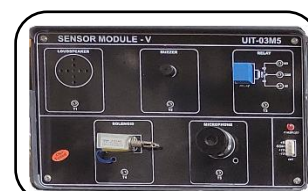
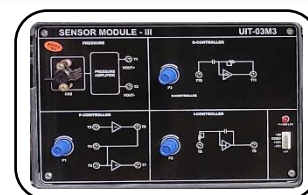


Supported Sensor Module: (At least 1 Module Must for Experiments).

- Sensor Module-I (UIT-03-M1)
 - ~ Temperature Sensor Circuit like LM335, AD590, PT100, K Type Thermocouple, NTC Thermistor.
 - ~ Temperature range upto 60 degree C
 - ~ Insulated Heater for safety precaution
 - ~ Glass Epoxy (PTH) Bare Board Tested Printed Circuit Board panel
 - ~ Enclosed in a ABS Plastic enclosure
- Sensor Module-II (UIT-03-M2)
 - ~ Load Cell sensor Circuit to measure weight up to 3kgs
 - ~ LVDT Sensor Circuit to measure displacement upto $\pm 5mm$
 - ~ Glass Epoxy (PTH) Bare Board Tested Printed Circuit Board panel
 - ~ Enclosed in a ABS Plastic enclosure



- Sensor Module-III (UIT-03-M3)
 - ~ P, I, D controller amplifier
 - ~ Air Pressure sensor to measure pressure up to 6PSI.
 - ~ Glass epoxy (PTH) Bare Board Tested Printed Circuit Board panel
 - ~ Enclosed in a ABS Plastic enclosure
- Sensor Module-IV (UIT-03-M4)
 - ~ Photo Sensors circuit like Photoconductive cell, Photovoltaic cell, Phototransistor, PIN Photodiode.
 - ~ Glass Epoxy (PTH) Bare Board Tested Printed Circuit Board panel
 - ~ Enclosed in a ABS Plastic enclosure
- Sensor Module-V (UIT-03-M5)
 - ~ 12V Solenoid Valve with shaft
 - ~ Relay with circuit, Buzzer with circuit, Speaker with circuit, MIC with circuit
 - ~ Glass epoxy (PTH) Bare Board Tested Printed Circuit Board panel
 - ~ Enclosed in a ABS Plastic enclosure
- Sensor Module-VI (UIT-03-M6)
 - ~ Ultrasonic sensor Circuit to measure distance upto 150mm
 - ~ Capacitive Level Sensor Circuit to measure 10cm Level
 - ~ Water Level measurement Unit having Acrylic Tank for water Level measurement with 10cm scale
 - ~ Glass epoxy (PTH) Bare Board Tested Printed Circuit Board panel
 - ~ Enclosed in a ABS Plastic enclosure
- Sensor Module-VII (UIT-03-M7)
 - ~ Servo Pot measuring circuit for Angular displacement & Error detection.
 - ~ Glass epoxy (PTH) Bare Board Tested Printed Circuit Board panel
 - ~ Enclosed in a ABS Plastic enclosure
- Sensor Module-VIII (UIT-03-M8)
 - ~ Speed Measurement using Photo Pickup (Optocoupler) Sensor, Inductive Proximity Sensor & Photo Proximity Sensor.
 - ~ Object Detection using Capacitive Proximity Sensor
 - ~ Glass Epoxy (PTH) Bare Board Tested Printed Circuit Board panel
 - ~ Enclosed in a ABS Plastic enclosure
- Amplifier Module-I (UIT-03-M9)
 - ~ Wheatstone bridge with 10K Ω 10 turn potentiometer
 - ~ Differentiator, Integrator, F/V, V/F, V/I, I/V Circuit.
 - ~ Glass Epoxy (PTH) Bare Board Tested Printed Circuit Board panel
 - ~ Enclosed in a ABS Plastic enclosure
- Amplifier Module-I (UIT-03-M9A)
 - ~ Smoke Detector Sensor
 - ~ Limit Switch
 - ~ F/V, V/F, V/I, I/V Circuit.
 - ~ Glass Epoxy (PTH) Bare Board Tested Printed Circuit Board panel
 - ~ Enclosed in a ABS Plastic enclosure
- Sensor Module-X (UIT-03-M10)
 - ~ I2C based Accelerometer, Digital Temperature and Humidity Sensor Module
 - ~ +5V, COMM, +12V, -12V power supply connector with Power LED Indication.
 - ~ Glass epoxy (PTH) Bare Board Tested Printed Circuit Board panel
 - ~ Enclosed in a ABS Plastic enclosure



- Sensor Module-X (UIT-03-M11)
 - ~ PH Sensor Module
 - ~ Anemometer Type Wind Speed Sensor Module
 - ~ +5V, COMM, +12V, -12V power supply connector with Power LED Indication.
 - ~ Glass epoxy (PTH) Bare Board Tested Printed Circuit Board panel
 - ~ Enclosed in a ABS Plastic enclosure



- Data Acquisition System (UIT-DAQ)
 - ~ Analog Input: ADC 4 Channel (Single Ended) / 2 Channel (Differential), 16-bit Resolution
 - ~ Analog Output: DAC 2 channel, 16-bit Resolution
 - ~ Digital Input: 4 Channel
 - ~ Digital Output: 4 Channel
 - ~ Measurement: 32 bit Frequency / RPM counter (1 Channel)
 - ~ 7 Inch IOT Based Graphical Touchscreen HMI Display
 - ~ Connectivity: HDMI, USB & RJ45 (Ethernet)
 - ~ Glass epoxy (PTH) Bare Board Tested Printed Circuit Board Panel
 - ~ Sensor Measurement Data Acquisition Software: Windows 10, displays X-T, Digital values & Saves data
 - ~ Enclosed in a Powder coated MS enclosure



- Sensor Accessories for Measurement
 - ~ Load Cell Unit with Maximum load : <3Kg with 4 different value Weight
 - ~ Temperature Heater Unit with Thermistor, LM335, AD590, PT-100, Thermocouples, Bimetallic
 - ~ Pressure generator Unit with Pressure gauge to generate pressure up to 6PSI.
 - ~ LVDT Unit with Screw gauge to measure scale Range: $\pm 5\text{mm}$
 - ~ Light Source Unit with LDR, Photovoltaic, Photo Diode, Photo transistor sensors & Light bulb Luminous intensity adjustable
 - ~ Angle/Error Measurement Unit having 2 no's of Servo potentiometer with adjustable Angular angle: 0~360°
 - ~ Speed Measurement Unit for +5V DC Motor with slotted disc having sensor like Photo Pickup, Proximity Sensors
 - ~ Water Level measurement Unit having Acrylic Tank for water Level measurement with 10cm Water level scale
 - ~ Ultrasonic transmitter/receiver: nominal frequency= 40 KHz with Platform moving range 200mm

OPTIONAL SUPPLY

- Meter Panel
 - ~ 20V DC Voltmeter
 - ~ 4 Digit Digital RPM Meter



- SMPS & PLC Panel
 - ~ Siemens LOGO PLC
 - ~ 8 Digital Input & 4 Digital output
 - ~ 24V/2A SMPS with PNP & NPN simulation
 - ~ Input & Output terminated at 2mm socket



- Working Table
 - ~ Work Table Size 1200x750x800 (L x W x H), with four castor wheels including two lockable wheels with Drawer size of L450mm x W500mm x H200mm.

