

ADVANCE FIBEROPTICS TRAINER**Specifications:**

- Full duplex Analog & Digital Trans-receiver
- On board Function Generator
- Noise Generator with variable gain
- Four digits Bit Error Counter
- 1 nos Transmitter of Fiber Optic LED having peak wavelength of emission 660 nm/950nm and Receiver of Fiber Optic Photo detector,
- Analog Tx & RX
- Digital Tx & Rx
- Digital Eye Pattern
- PC to PC Communication
- Clock: Crystal controlled Clock 4.096 MHz,
- PLL detector : 1 no., Comparator : 1 nos., Filters : 1nos. 4th order Butterworth,
- 3.4 KHz cut-off frequency, Analog Band Width : 350 KHz, Digital Band Width : 2.5 MHz, Function Generator : 1 KHz Sine wave (Amplitude adjustable),
- Voice Link : Fiber Optic voice link using microphone & speaker.(Optional),
- connector type standard sms,
- cable type : step indexed multimode PMMA plastic,
- Core Refractive : 1.492, clad Refractive Index :1.406
- Dimension:10.8(L) x 24(W) x 6.5(H)cm

Experiments Covered:

- Fiber optic analog & digital link,
- AM system using analog & digital input signals,
- Characteristics of fiber optic communication link, voice link
- Measurement of bit error rate, study of eye pattern, PC To PC Communication

FREQUENCY MODULATION AND DEMODULATION

A Trainer for the demonstration of VCO based Frequency Modulation and PLL based Demodulator. This kit enables you to know the concepts of FM waveforms and to calculate frequency deviation. This kit consists of

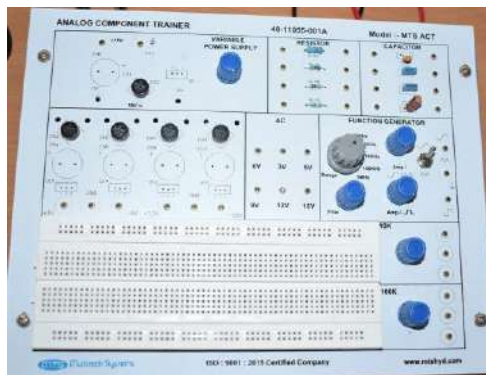
Specifications:

- On-board audio oscillator,
- 2 types of FM modulators, 5 different types of demodulator amplitude limiter & filter,
- Effect of noise in FM on same board,
- Test Points for wave form observation & analysis,
- Effect of Noise on The Detection of FM Signal can be Investigated.,
- Modulating signal range : 300Hz to 3.4KHz,
- Suitable Carrier frequency Range
- FM Modulator Type : Reactance Modulator, Varactor Modulator,
- VCO Based Modulator,
- FM Demodulator type : Detuned Resonant Detector, Quadrature Detector, Foster-Seeley Detector, Ratio Detector, PLL Detector,
- Low Pass Filter : 3.4 KHz cut off frequency amplifier with adjustable Gain
- Dimension:8.8(L) x 24(W) x 6.5(H)cm

Experiments Covered:**FM Modulators : 3 nos.**

1. Reactance Modulator,
2. Varactor Modulator
3. VCO Based Modulator

FM Demodulator : 1. Detuned Resonant Detector 2. Quadrature Detector 3. Foster-Seeley Detector 4. Ratio Detector 5. Phase-Locked Loop Detector 5. Phase-Locked Loop Detector

ANALOG COMPONENT TRAINER**Specifications:**

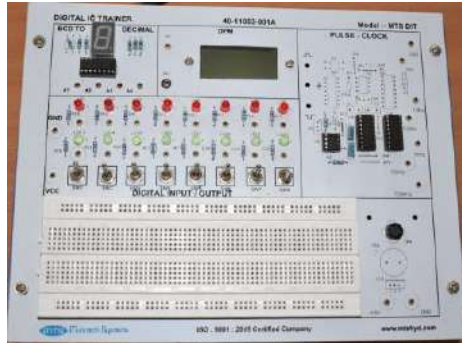
- To study of ohms law, Kirchoff's law, filters & rectifiers, voltage regulator TRANSISTOR, FET, MOSFET, UJT, etc,
- Potentiometer: 10K,100K
- Solder less Bread Board
- Fixed Power Supply: $\pm 5V, \pm 12V$
- Fixed Power Supply (AC): 0V,3V,6V,9V,12V,15V
- Function Generator: Sine/Square/TTL Generator (10 Hz to 1 MHz)
- All passive and active components with the help of banana socket and patch cords,
- Built in variable power supply of range 0-15V DC
- Dimension:8.8(L) x 24(W) x 6.5(H)cm

DIGITAL AND ANALOG BREAD BOARD TRAINER**Specifications:**

- High level, high quality digital-analog Bread Board trainer
- Solder less breadboard
- DC power supply
- Fixed DC Output: $\pm 5V, \pm 12V @ 500mA$
- Variable DC Output: 15V
- AC power supply: 15,18 VAC
- Function generator Frequency range: 10Hz – 1MHz
- Digital Input/ Output: 8 I/O s
- Dimension:8.8(L) x 24(W) x 6.5(H)cm

DIGITAL IC TRAINER

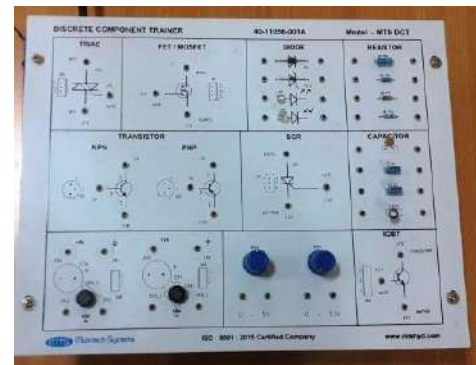
Digital IC Trainer is an effective and extremely powerful lab trainer, for constructing any desired circuit with different components.



Specifications:

- Fixed Power supply : +5V
- BCD to Decimal Conversion segment, LCD DPM
- TTL clock at 1 HZ/ 10 HZ/ 100HZ/1K/10K/100KHz With Pulser switch
- With multicolor LED logic indicators for both input & output status.
- Having 2 mm terminals & suitable patch cords
- Breadboard
- Logic Gates, Flip Flops, Counters, Multiplexer, De Multiplexer etc can be Performed
- Dimension:8.8(L) x 24(W) x 6.5(H)cm

DISCRETE COMPONENT TRAINER



Specifications:

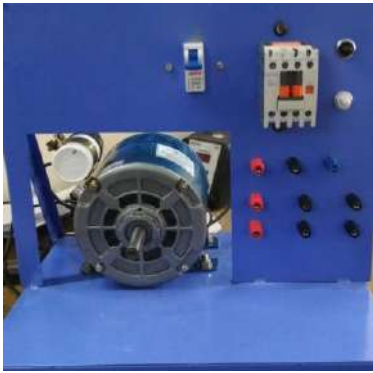
- Inbuilt DC voltage +5volts, 1amp, +12Volts 1amp,
- Variable power supply of 0-5V, 0-15V
- AC voltages :15V,18V
- Resistor(ohms, kilo ohms, mega ohms values)
- Capacitors standard values
- Components:-diodes, transistors(NPN,PNP),FET/MOSFET, SCR,TRIAC,IGBT
- Operating voltage 230 volts AC
- Dimension:8.8(L) x 24(W) x 6.5(H)cm

FUNCTION GENERATOR WITH DDS TECHNOLOGY**Specifications:**

- Frequency range: 1 MHz -10 MHz
- Waveforms: sine, square, Triangle, saw tooth and pulse
- Waveform Types - 32 pre-stored waveforms and 8 user defined
- Arbitrary waveforms including
- Display 20 character x 4 row alphanumeric LCD
- Data entry Keyboard selection of mode, waveform etc.; value entry direct by numeric keys or by rotary control.
- Function Pulse – Modulation
- Generator with Built in 40MHz
- Frequency Counter
- Input attenuation:20db
- Measurement error:<0.003%±digit
- Standard Accessories - Power cord
Operation manual, software CD, RS232 cable, BNC-BNC cable, test lead
- Dimension:310 x 230 x 90mm

DUAL DC REGULATED POWER SUPPLY**Specifications:**

- LED display for Voltage and Current
- Current limit: 100 mA - 2 A continuously adjustable.
- Resolution : Voltage:100mV , current:10mA,
- Stability : 2.5mV at 30V/2A
- Temperature coefficient : 0 to 40° C
- automatic overload current protection
- Constant voltage & constant current operation Digital Display for Voltage and Current indicate overload
Excellent Line & Load Regulation
- Dimension:22(L) x 30(W) x 12.5(H)cm

ELECTRICAL MOTOR TRAINER**Specifications:**

- 1) Single phase motor 0.5 HP, 230 V/50Hz
AC and
- 2) Control Panel consists of suitable contactor
 - ON/OFF push buttons,
 - Indicator,
 - Rotary Switch,
 - Volt Meters (Optional)
 - Ammeter (Optional)
 - MCB
- 3) The terminals of panel operate to be terminated using 4 mm terminal on the panel board with required number of 4mm Patch cards.

FM RADIO RECEIVER**Specifications:**

FM Radio Receiver Consists of different sections like

- Antenna
- Local Oscillator
- Mixer
- IF
- Detector
- AF
- Speaker
- Test Points provided for each section
- Dimension: 8.8(L) x 24(W) x 6.5(H)cm

LCD TV(TRAINER KIT)**FEATURES:**

1. The block diagram should be printed on single PCB.
2. Fault creation facilities should be provided by switches.
3. Section wise different colored screen printed circuit should be on the PCB for easy understanding of functions of different sections.
4. Typical ICs should be provided on sockets.
5. Explanation, Observation, Alignment and adjustment of internal and External controls should be possible at a glance .
6. Having the facility of easy measurement of Voltages and observation of waveforms at any point. Also typical voltages and waveforms should be printed on the kit and conforming to following
 - 21-inch full HD LCD Color
 - Television supports PAL/ NTSC video formats.
 - Minimum 10 faults identification are provided.
 - LCD TV kit with the trainer is the with remote control
 - LCD TV kit Mounted in all open fashion on a PVC board, firmly supported on compact table top aluminium profile demo rack for easy viewing through transparent acrylic cover provided.
 - Facility to connect Computer, DVD, set-top box of DTH services, USB, HDMI.
 - 2 Nos of good sound quality speaker to be provided at sides of TV Trainer.
 - IR sensor & manual keyboard is provided on front panel to use remote control.
 - Necessary standard Accessories are provided.

LED TV(TRAINER KIT)**FEATURES:**

1. The block diagram should be printed on single PCB.
2. Fault creation facilities should be provided by switches.
3. Section wise different colored screen printed circuit should be on the PCB for easy understanding of functions of different sections.
4. Typical ICs should be provided on sockets.
5. Explanation, Observation, Alignment and adjustment of internal and External controls should be possible at a glance .
6. Having the facility of easy measurement of Voltages and observation of waveforms at any point. Also typical voltages and waveforms should be printed on the kit and conforming to following
 - 20-inch full HD LCD Color
 - Television supports PAL/ NTSC video formats.
 - Minimum 10 faults identification are provided.
 - LCD TV kit with the trainer is the with remote control
 - LCD TV kit Mounted in all open fashion on a PVC board, firmly supported on compact table top aluminium profile demo rack for easy viewing through transparent acrylic cover provided.
 - Facility to connect Computer, DVD, set-top box of DTH services, USB, HDMI.
 - 2 Nos of good sound quality speaker to be provided at sides of TV Trainer.
 - IR sensor & manual keyboard is provided on front panel to use remote control.
 - Necessary standard Accessories are provided.

OP-AMP TRAINER**Specifications:**

- Built-in power supply : +5V (DC)
- All Test Points and connecting Points are brought on 2mm socket.
- Variable $\pm 5V$
- Dimension: 8.8(L) x 24(W) x 6.5(H)cm

Experiments Covered:

1. Voltage Follower/Inverting/Non Inverting
2. Integrator
3. Differentiator
4. Summing Amplifier/Comparator
5. Advanced Op Amp

PAM,PPM,PWM TRAINER**1. Pulse Amplitude Modulation & Demodulation**

- **Specifications:**

- Regulated Power Supply +12V
- Wired Circuitry for PAM
- Onboard AF generator
- Onboard Pulse Generator
- Onboard reconstructing network

2. Pulse Position Modulation & Demodulation

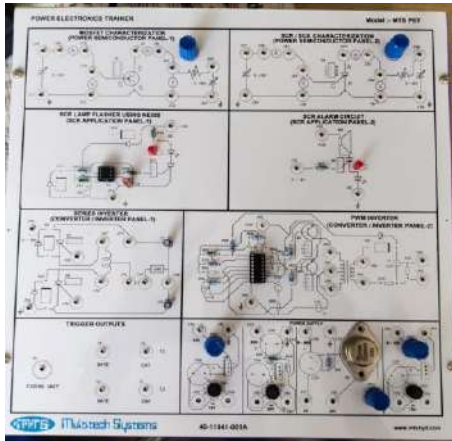
- **Specifications:**

- Control Signal generator
- AF Signal Generator using RAMP signal
- DC Source
- PWM Modulator
- PWM Demodulator
- Regulated Power Supply +5V

3. Pulse Width Modulation & Demodulation

- **Specifications:**

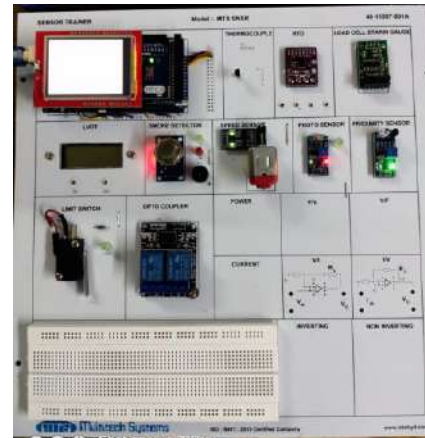
- Control Signal generator
- AF Signal Generator using RAMP signal
- DC Source
- PWM Modulator, PWM to PPM Mod
- PPM to PWM Demodulation , PWM Demodulator
- Regulated Power Supply +5V
- Carrier signal frequency for Square: 8KHz, 16KHz, 32KHz, 64KHz
- Carrier signal frequency for Triangle: 8KHz, 16KHz, 32KHz, 64KHz
- Voice communication
- Interconnection with 2mm patch cords

POWER ELECTRONIC TRAINER**Specifications:**

- Trigger Outputs
- Fixed Power Supply: 12V,30V
- Variable Power Supply: 0-15V , 0-30V
- Replaceable Bread board, Resistor Bank, Capacitor Bank, Inductor Bank
- Dimension:30(L) x 30(W) x 7(H)cm

Experiments Covered:

1. Series Inverter Module: On board test points to observe signals, On board schematic diagram, Flexibility of making circuit connections,
2. SCR Characteristics Module: On board test points to observe signal, On board schematic diagram, Flexibility of making circuit connections.
3. PWM Inverter: Features: On board test points to observe signals, On board schematic diagram, Flexibility of making circuit connections,
4. SCR Lamp Flasher Module: On board test points to observe signals, Onboard schematic diagram, Flexibility of making circuit connections.
5. MOSFET testing circuit with minimum load.
6. SCR Alarm Circuit

SENSOR TRAINER KIT**Specifications:**

- On board facility and required block to connect various sensors
- On board Graphical LCD, RPM meter and voltmeter to read the output of various sensors with required patch chords and all necessary accessories.
- Inbuilt processor for viewing the output waveforms, In built DAQ, and standard processing circuits like Inverting , Non – Inverting , Power, Current , Instrumentation Differential Amplifier, F/V,V/F,V/I,I/V Converter
- On board power supply, with user manual.
- Dimension:30(L) x 30(W) x 7(H)cm

Experiments Covered:

1. Speed Sensor
2. Smoke Sensor
3. Thermocouple Sensor
4. RTD Sensor
5. Load Cell
6. LVDT
7. Limit Switch
8. Optocoupler
9. Proximity Sensor
10. Photo Sensor

SIGNAL GENERATOR**Specifications:**

- Operating Modes : 0-100KHz low distortion audio generator .
- Frequency Range : 10 Hz – 100 KHz
- Low signal distortion
- Digital readout for frequency and amplitude .
- Output voltage 30 vpp 50W/600W output
- 11 built in waveforms
- 5 User defined AM,FM,PM,PWM,FSk,Frequency Sweep and Burst function
- Built in 100MHz Frequency Counter
- Dual output with same characteristics

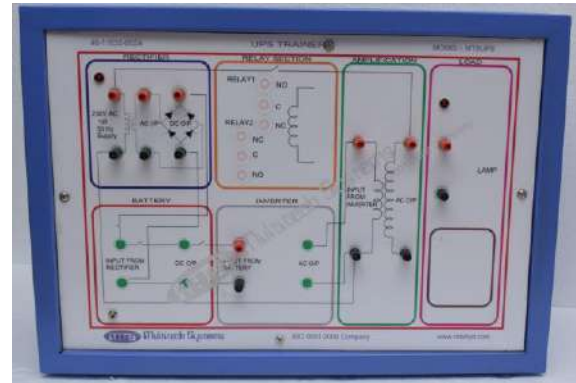
DIGITAL VOLT/AMMETER**Specifications:**

- Power : 230V ,50hz
- Operating temp :0-50°C
- Accuracy : $\pm 5\%$
- Bench top 3 digital volt and ammeter with bright seven segment LED display
- Housed in powder coated metal box with on/off switch and power cord
- Voltmeter ranges from 0-100mv,0-200mv etc.
- Ammeter ranges from 0-10 μ A,0-100 μ A,0-500 μ A,0-10mA,0-100mA,0-500mA,0-1A,0-2A,0-5A

Note : Dual range and multirange ammeter are available

LED LIGHTING SYSTEM TRAINER**Specifications:**

- Power, Voltage, Current, Power Factor and Light output performance of different lighting products like LED, CFL at variable input voltages can be measured
- 0 to 245V variable AC voltage Inbuilt Multi function Meter to measure Current, Voltage, Power and Power Factor, Measuring Electricity consumption of different loads,
- Equipped with automatic dusk to dawn switch external load can be connected for testing should be supplied with different types lights in different wattages and
- Inbuilt VARIAC For voltage variations
- Dimension:30(L) x 30(W) x 7(H)cm

UPS TRAINER**Features:**

- PWM switching technology
- Various test points are provided to measure the voltages of different sections. Designed considering all safety standards. The instrument have following

Specifications:

- Input : 190 to 260 V, 50 Hz,
 - Output : 230 V
- Transformer specifications
- Input : 12 - 0 - 12 V, Outputs: 0, 190, 220, 240, 260 V, Battery charging facility.