PROFILE

We take the privilege in introducing ourselves as leading manufacturers and exporters of scientific and technical education equipments. Since inception **PM Enterprise** has set out to deliver the best quality technical training equipment with a distinct focus on immaculate perfection. It has since traversed a glorious journey - from scratch literally to be reckoned India's most vibrant scientific instruments and equipments supplier.

Through our team of highly erudite, motivated and more than three decades of experienced work force, we have grown from manufacturing a few training equipment to developing a plethora of technical education equipment through our platter of specialized verticals dealing in every sphere scientific & technical education. The vital verticals are listed below:

- Electronics
- Physics
- Electrical Drives
- Electrical Engineering
- Power Electronics & Engineering
- Telecommunication
- Control & Instrumentation
- Test & Measurement
- Mechanical Engineering
- Mechatronics
- Fluid Mechanics
- IC Engine
- Chemical Engineering
- Refrigeration
- Thermodynamics
- Theory of Machines

The growth trajectory attained by our organization can be verified from the fact that today we at Acumen Labware are supplying technical education equipment all around the world. After having a modest start of supplying equipment in our domestic market now we are installing our equipment in every corner of the globe, be it Far West or Far East. This exposure of international markets has helped us to develop products of international standards so as to keep up with our reputation.

For After Sales Support our technical support team is available around the clock to respond to email queries and even guiding the operations for optimum performance via video conferencing / calling.

QUALITY ASSURANCE

Since inception our motto behind creating the products has been "Better than the Best". Today we are proud to say that the quality of our products vindicates our primary motto. In order to develop up to the mark quality products we have introduced multi level quality checks in our production line. Before getting the final approval every product has to go through a series of quality checks so that our reputation and customer trust both stand high, hand in hand. Few of our certifications are shown here to support our motto.

ICV

Certificate of Registration

This Certificate certifies that the Quality Management System of

P M ENTERPRISE

D-34, Hariom Flat, Jay Ambe Nagar Road, Thaltej, Ahmedabad-380054, Gujarat, India.

has been audited by ICV and found to be
in compliance with the requirements of the standard

ISO 9001 : 2015

This certificate is valid for
the following scope

Manufacturer of Educational Equipment for Electronics Lab Trainer, Communication Lab, Physics Lab, Iot Smart City Lab, Solar Lab, Power Electronics Lab, Basic Electronics Lab, Digital Lab, Bridge Trainer, Electrical Lab Trainer And Instrument For Power Supply, Cro, Function Generator, Multimeter.

Certificate No.	: IN/5831267/6273
Certificate Issue Date	: 03/02/2021
1st Surveillance Due	: 03/01/2022
2nd Surveillance Due	: 03/01/2023
Date of Expiry	: 02/02/2024

IAF

EGAC
QMS Certification
CAB # 119007

CEO
ICV ASSESSMENTS PVT. LTD.
25, First Floor, Prabhu Complex, Shiva Market, Pitampura New Delhi - 110034
+91 - 11-41548315, info@icvassessments.com, www.icvassessments.com

• Validity of this Certificate is subject to completion of surveillance audit on or before of due date. In case Surveillance audit not allowed to be conducted this Certificate shall be suspended / withdrawal.
• This Certificate is intellectual Property of ICV and Certificate should be returned to ICV in case of non compliance of certification procedure. Authenticity of this certificate can be verified at www.icvassessments.com

Certificate of Compliance

We hereby declare that the technical file of product complied with the requirement of directives
Medical Device Directive

Manufacture

Name : **P M ENTERPRISE**

Address : D-34, HARIOM FLAT, JAY AMBE NAGAR ROAD, THALTEJ, AHMEDABAD-380054, GUJARAT, INDIA

Product : EDUCATIONAL EQUIPMENT FOR ELECTRONICS LAB TRAINER, COMMUNICATION LAB, PHYSICS LAB, IOT SMART CITY LAB, SOLAR LAB, POWER ELECTRONICS LAB, BASIC ELECTRONICS LAB, DIGITAL LAB, BRIDGE TRAINER, ELECTRICAL LAB TRAINER AND INSTRUMENT FOR POWER SUPPLY, CRO, FUNCTION GENERATOR, MULTIMETER

Complies with the requirements applicable to it

The Certification body has performed an audit of the above product quality system covering the design, manufacture and final inspection of the certified product. The quality system has been assessed, approved and is subject to continuous surveillance according to the directives Medical Device Directive

This certificate is issued under the following conditions:
It applies only to the quality system maintained in the manufacture of above referenced models and it does not substitute the design or type-examination procedures, if requested.
The certificate remains valid until the manufacturing conditions or the quality systems are changed.
The certificate validity is conditioned by positive results or surveillance audits.
After fulfilling the relevant EU legislation, the manufacturer shall affix to each device, of the above referenced models.
The CE mark as shown above can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of conformity and compliance with all relevant EC Directives. The statement is based on a single evaluation of one sample of above mentioned product. It does not imply an assessment of the whole production.

Certificate No. : - QVA-2020-PMES-1231

Certificate can be verified at www.gaafs.us

Date of Certification	**27 August 2020**
1st Surveillance Due	**26 August 2021**
2nd Surveillance Due	**26 August 2022**
Certificate Expiry (Subject to the company maintaining its system To the required standard)	**26 August 2023**

Registered

Authorized Signatory

CERTIFIED Certification

CE

QVA Certification
CAB Address : Maryland Avenue, SW Washington, D.C. 20202

भारत सरकार
Govt. of India
सूक्ष्म,लघु और मध्यम उद्यम मंत्रालय
MINISTRY OF MICRO, SMALL & MEDIUM ENTERPRISES

सूक्ष्म,लघु और मध्यम उद्यम
MICRO, SMALL & MEDIUM ENTERPRISES

उद्योग आधार Udyog Aadhaar

A

Type of Enterprise	Micro	Small	Medium
Manufacturing	A	B	C
Services	D	E	F
UAM No.	GJ01A0201985		

Udyog Aadhaar Registration Certificate

Udyog Aadhaar Number: GJ01A0201985

Name of Enterprise: PM ENTERPRISE

Location of Plant Details

SN	Flat/Door/Block No.	Name of Premises/Building Village	Road/Street/ Lane	Area/Locality	City	Pin	State	District
1	D-34 HARIOM PARK	NEAR GHOSA SOCIETY HARIOM PARK	JAY AMBE NAGAR ROAD	THALTEJ	AHMEDABAD	380054	GUJARAT	AHMADABAD

Official Address of Enterprise: D-34 HARIOM PARK NEAR GHOSA SOCIETY , HARIOM PARK, JAY AMBE NAGAR ROAD, THALTEJ, AHMEDABAD

District: AHMADABAD State: GUJARAT PIN: 380054

Mobile No: 9825568628 Email: pmenterprise79@gmail.com

Date of commencement: 16/10/2017

Major Activity: MANUFACTURING

Enterprise Type: Micro

Previous Registration details-if any: ::

National Industry Classification Code

SN	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit Code	Activity Type
1	32 - Other manufacturing	3290 - Other manufacturing n.e.c.	32909 - Manufacture of other articles n.e.c.	Manufacturing

Acknowledgement Date of Filing 27/05/2020 Date of Printing 27/05/2020

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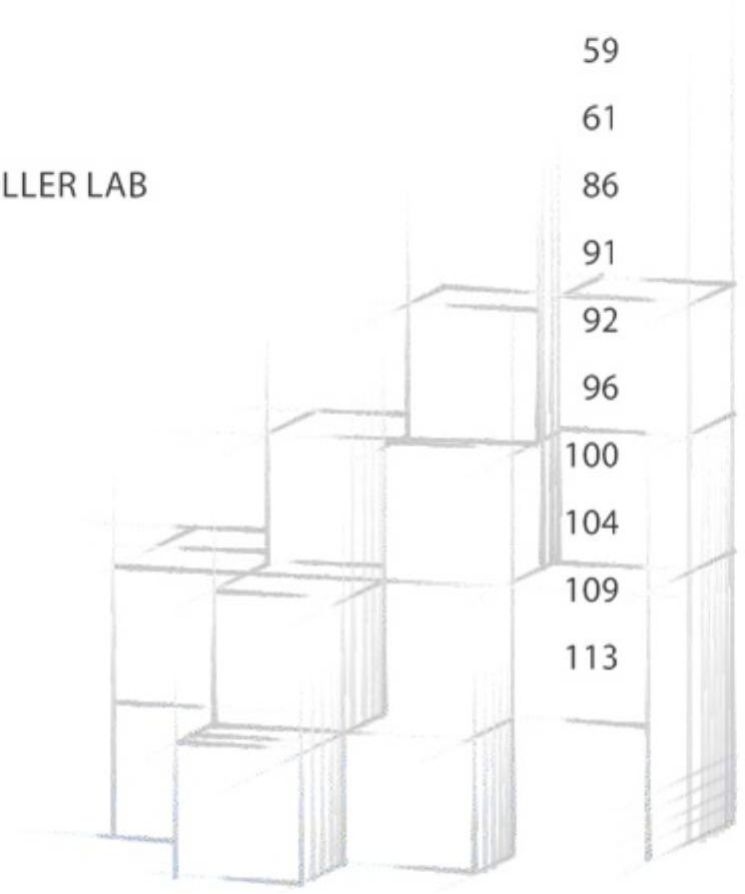
PRINT

CONTENT



IOT. Lab

Audio Video Lab

Computer Lab

24 Mobile Lab

BASIC ELECTRONICS

PM-E001C PN Junction Diode Characteristics

SCOPE OF LEARNING:

- Study of V-I Characteristics of PN Junction in Forward and Reverse Bias.

TECHNICAL SPECIFICATIONS:

Digital Meters: Ammeter 10mA/100uA DC, Voltmeter 3V/30V DC.
DC Supply IC Regulated 0-3/30V DC, 150mA.

Key components mounted on the trainer are:

- Silicon Diode (1N4007), Germanium Diode (OA79)
- Voltage Control through Potentiometer.

PM-E001E PN Junction Diode Characteristics(4Meters)

PM-E002F Transistor Characteristics (CB & CE)

SCOPE OF LEARNING:

- Study of Common Base and Common Emitter
- Input/ Output Characteristics of NPN Transistor
- Input/ Output Characteristics of PNP Transistor

TECHNICAL SPECIFICATIONS:

Digital Meters:

- Ammeter 50mA DC, 250uA/50mA DC., Voltmeter 10V DC, 1V DC.
- 2 No- IC Regulated DC Supply 0-1V DC, 150mA, 0-10V DC, 150mA.

Key components mounted on the trainer are:

- NPN Transistor SL100, PNP Transistor Sk100
- Voltage Control through Potentiometer.

PM-E003 PN Junction & Zener Diode Characteristics

PM-E004 FET Characteristics

SCOPE OF LEARNING:

- Study of V-I Characteristics of FET

TECHNICAL SPECIFICATIONS:

Digital Meters:

- Volt meter 20V DC, Ammeter 20mA DC.
- DC Supply IC Regulated 0-3V /0-15V DC, 150mA.

Key components mounted on the trainer are:

- FET BFW10, Voltage Control through Potentiometer.

PM-E005 ZENER DIODE Characteristic

SCOPE OF LEARNING:

- Study of V-I Characteristics of Zener Diode in Forward and Reverse Bias.

TECHNICAL SPECIFICATIONS:

Meters: Ammeter 15mA/150uA DC, Voltmeter 15V DC.

- DC Supply IC Regulated 0-15V DC, 150mA.

Key components mounted on the trainer are:

- Zener Diode 5.1V, 6.2V, 8.2V
- Voltage Control through Potentiometer.

PM-E013 SCR Characteristics (Digital Meters)

SCOPE OF LEARNING:

- Study of V-I Characteristics of SCR

TECHNICAL SPECIFICATIONS:

Digital Meters:

- Ammeter 20mA DC, Ammeter 200mA DC, Voltmeter 20V/200V DC.

Power Supplies:

- DC Supply IC Regulated 0-5V DC, 150mA, 0-30V DC, 150mA.

Key components mounted on the trainer are:

- SCR TYN604, Voltage Control through Potentiometer.

PM-E014 TRIAC Characteristics (Digital Meters)

PM-E015 UJT Characteristics (Digital Meters)

SCOPE OF LEARNING:

- Study of V-I Characteristics of UJT

TECHNICAL SPECIFICATIONS:

Digital Meters:

- Volt meter 20V DC, 200V DC.
- Ammeter 200mA DC.
- 2Nos. DC Supply IC Regulated 0-15V DC, 0-30V DC, 150mA.

Key components mounted on the trainer are:

- UJT 2N2546, Voltage Control through Potentiometer.

PM-E020 DIAC Characteristics (Digital Meters)

SCOPE OF LEARNING:

- Study of V-I Characteristics of DIAC

TECHNICAL SPECIFICATIONS:

Digital Meters:

- Ammeter 20mA/200mA, Voltmeter 200V DC.
- DC Supply IC Regulated 0-50V DC, 150mA.

Key components mounted on the trainer are:

- DIAC DB3, Voltage Control through Potentiometer.

PM-E025 Three Terminal Voltage Regulator

SCOPE OF LEARNING:

Trainer is used to study Voltage Regulation of

- FIXED VOLATAGE Positive & Negative.
- Adjustable VOLATAGE Positive & Negative.

TECHNICAL SPECIFICATIONS:

Analog Meters: Voltmeter 30V, Ammeter 250mA

- 12-0-12 AC Isolated Power Supply.

Key components mounted on the trainer are:

- LM7812, LM7912, LM317, LM337, Load Resistor using Band switch, Variable Resistor

PM-E031 Half Wave, Full Wave & Bridge Rectifier

SCOPE OF LEARNING:

Study of

- Half Wave Rectifier Circuit, Full Wave Rectifier Circuit
- Bridge Rectifier Circuit, Filter Circuit, Ripple Factor of an Ac Circuit

TECHNICAL SPECIFICATIONS:

Digital Meters: Voltmeter 30V AC, Ammeter 250mA DC, Voltmeter 30V DC.

- AC Isolated Power Supply 12-0-12 VAC, 150mA.

Key components mounted on the trainer are:

- Diode 1N4007, Capacitors 1000uF and 100uF Controlled By Switches.
- Inductor 200mH, Load Resistor through Rotary Switch

PM-E049A Analog Component Trainer

SCOPE OF LEARNING:

- Study and Construction of Various Analog Electronics Lab Experiment

TECHNICAL SPECIFICATIONS:

- DC Power Supply IC Regulated 0 to 30V, 0-15V, +5V, ±12V @ 250mA.
- AC Power Supply 9-0-0 VAC,15-0-15VAC
- Voltmeter 20VDC, Ammeter 200mA DC.

Key components mounted on the trainer are:

- 4 Different Variable Resistors are given on Board, One Low Frequency
- Speaker, One Audio Transformer, One 12V
- Relay, One 20Pin Zif Socket, Various Transistors, Diode, Led, Capacitors, Zener, Inductors and Resistor are given on Board.
- Thyristors such as SCR, DIAC, TRIAC, UJT, FET, Mosfet, LDR given on Board.

PM-E051 Photo Diode Characteristics (Analog Meters)

SCOPE OF LEARNING:

- Study of V-I Characteristics of Photo Diode

TECHNICAL SPECIFICATIONS:

Analog Meters: Volt meter 10V DC, Ammeter 10Ma/100uA DC.

- DC Supply IC Regulated 0-10V DC, 150mA.

Key components mounted on the trainer are:

- Photo Diode, Light Source (100W Bulb), Voltage Control through Potentiometer.

PM-E052 BJT Biasing Characteristics (Digital Meters)

SCOPE OF LEARNING:

- Fixed Biasing Without Emitter Resistor, Collector To Base Bias, Fixed Biasing With Emitter Resistor, Potential Divider
- Biasing/ Self Biasing

TECHNICAL SPECIFICATIONS:

Digital Meters:

- Voltmeter 20V/2V DC.
- Ammeter 200mA/20mA DC, 200uA/2mA DC.
- DC Supply IC Regulated +12V DC, 250mA.

Key components mounted on the trainer are:

- Transistor SL100, Required Resistors

PM-E054 Switching Action of BJT

PM-E055A OPTO Coupler Characteristics (Digital Meters)

SCOPE OF LEARNING:

- Study of V-I Characteristics of OPTO COUPLER OR MCT

TECHNICAL SPECIFICATIONS:

Analog Meters: Ammeter 10mA DC, Voltmeter 10V DC.

Power Supplies:

- 2 Nos. - DC Supply IC Regulated 0-10V DC, 150mA.

Key components mounted on the trainer are:

- OPTO COUPLER MCT-2E, Voltage Control through Potentiometer

PM-E063 MOSFET Characteristics (Digital Meters)

SCOPE OF LEARNING:

- Study of V-I Characteristics of MOSFET

TECHNICAL SPECIFICATIONS:

Digital Meters: Voltmeter 20V DC, Ammeter 200mA DC, Voltmeter 200V DC.

Power Supplies:

- DC Supply IC Regulated 0-5V DC, 0-30V DC 150mA.

Key components mounted on the trainer are:

- MOSFET IRF540, Voltage Control through Potentiometer.

PM-E064 IGBT Characteristics (Digital Meters)

SCOPE OF LEARNING:

- Study of V-I Characteristics of IGBT

TECHNICAL SPECIFICATIONS:

Digital Meters: Voltmeter 20VDC, 200V DC, Ammeter 200mA DC.

Power Supplies:

- 2 Nos - DC Supply IC Regulated 0-6V DC, 0-30V DC, 150mA.

Key components mounted on the trainer are:

- GBT 25N120, Voltage Control through Potentiometer.

PM-E068 Power Transistor Characteristics (Digital Meters)

SCOPE OF LEARNING:

- Study of V-I Characteristics of Power Transistor

TECHNICAL SPECIFICATIONS:

Digital Meters:

- Voltmeter 20V DC, 200V DC. Ammeter 200mA DC.
- 2 Nos- DC Supply IC Regulated 0-5V DC, 0-30V DC 150mA.

Key components mounted on the trainer are:

- Power Transistor 2N3055, Voltage Control through Potentiometer.

PM-E074 Thermistor Characteristics (Digital Meters)

SCOPE OF LEARNING:

- Study of Characteristics of Thermistor

TECHNICAL SPECIFICATIONS:

Digital Meters: Ammeter 200mA DC.

Power Supplies: DC Supply IC Regulated 0-6V DC, 150mA.

Key components mounted on the trainer are:

- Thermistor, Voltage Control through Potentiometer, Thermometer

PM-E076 Energy Band Gap of PN Junction Diode

SCOPE OF LEARNING:

- Study of Energy Band Gap in PN Junction.

TECHNICAL SPECIFICATIONS:

Digital Meters: Ammeter 200uA DC, Voltmeter 20V DC

Power Supplies: DC Supply IC Regulated 0-6V DC, 150mA.

Key components mounted on the trainer are:

- IN60, Voltage Control through Potentiometer, Thermometer

PM-E084 Varactor Diode Characteristics

SCOPE OF LEARNING:

- Study of V-I Characteristics of Varactor Diode

TECHNICAL SPECIFICATIONS:

Digital Meters: Ammeter 10mA/100uA DC, 2-Voltmeter 15V DC.

Power Supplies: DC Supply IC Regulated 15V DC, 150mA.

Key components mounted on the trainer are:

- Varactor Diode,Voltage Control through Potentiometer

PM-E090F RLC Resonance Trainer

(Inbuilt Function Generator, Frequency Counter, Digital Display)

SCOPE OF LEARNING:

- Study of RLC Resonance In Series & Parallel

TECHNICAL SPECIFICATIONS:

Digital Meters: Ammeter 20mA AC, Frequency Counter Up to 40MHz.

Sine Wave Generator: 0-100KHz Sine Wave Generator

Key components mounted on the trainer are:

- 3 Nos. of Resistors, Capacitors and Inductors each selected by Rotary Switch.

PM-E098 LDR Characteristics

SCOPE OF LEARNING:

- Study of V-I Characteristics of LDR

TECHNICAL SPECIFICATIONS:

Digital Meters: Volt meter 10V DC. Ammeter 10Ma/100uA DC.
Power Supplies: DC Supply IC Regulated 0-10V DC, 150mA.

Key components mounted on the trainer are:

- LDR mounted on Separate Unit, Light Source (100W Bulb)
- Wooden Optical Bench, Scale Printed on Board.
- Voltage Control through Potentiometer.

PM-E142 Zener Diode as Voltage Regulator

SCOPE OF LEARNING:

- Study of Zener Diode As Voltage Regulator

TECHNICAL SPECIFICATIONS:

Digital Meters: Ammeter 50mA DC, Voltmeter 15V DC.
Power Supplies: DC Supply IC Regulated 0-15V DC, 150mA.

Key components mounted on the trainer are:

- Zener Diode 5.1V, 6.2V, 8.2V
- Voltage Control through Potentiometer.
- Load Through Rotary Switch

PM-E184 LCR Impedance Trainer

SCOPE OF LEARNING:

- Study of LCR Impedance.

TECHNICAL SPECIFICATIONS:

Analog Meters: Ammeter 20mA AC, Voltmeter 20V AC.
Power Supply: 9-0-9 Isolated Power Supply at 150mA.

Key components mounted on the trainer are:

- 2 Nos. of Resistors, 3 Nos. of Capacitors, 2 Nos. of Inductors selectable

PM-E0194 LED Characteristics

PM-E195 Photo Transistor Characteristics

PM-E197 Semiconductor & Thyristor Characteristics

SCOPE OF LEARNING:

- Forward Bias Characteristics of PN Junction Diode & Zener Diode.
- LED, DIAC, TRIAC, SCR, UJT, FET, MOSFET, IGBT, NPN/PNP Transistor Characteristics.

TECHNICAL SPECIFICATIONS:

Power Supplies:

- 2 No's-DC Power Supply 5V/15V, 15V/30V @ 150mA Switch Selectable

Analog Meters:

1. Dual Range Voltmeters-5V/15V, 25V/50V
2. Dual Range Ammeters 250uA/25mA, 5mA/50mA

Meter ranges are selectable with toggle switches

Key components mounted on the trainer are:

- PN Junction Diode Germanium OA81, Zener Diode 6.2V, LED, DIAC-DB3, IGBT0-IRGBC20S, TRANSISTR-CL100
- TRANSISTR-SK100, SCR-TYN604, TRIAC-BT136, UJT-2N2646, Voltage Control through Potentiometer.

PM-E201 OPTO Electronics Devices Characteristics

PM-E203 Choke Coil as an Inductor Characteristics

PM-E204 SCR,TRIAC & DIAC Characteristics

PM-E205 FET, MOSFET & IGBT Characteristics

PM-E206 UJT, PUT and OPTO COUPLER Characteristics

PM-E207 Switching Action of FET

PM-E216 Study of FET as Volt Meter

PM-E336 Semiconductor Devices Characteristics

SCOPE OF LEARNING:

- Study V-I Characteristics of
- PN Junction Diode (Forward and Reverse Bias)
- Zener Diode (Forward and Reverse Bias), LED & DIAC

TECHNICAL SPECIFICATIONS:

Power Supplies: DC Supply IC Regulated 0-3V/45V DC, 150mA.

Digital Meters: Voltmeter 20V/200V DC, Ammeter 20mA/200uA DC.

Key components mounted on the trainer are:

- Led (Red and Green), Diode 1N4007 and OA79, Zener Diode 6.2V and 8.2V, DIAC DB3, Voltage Control through Potentiometer.

PM-E432 SELF Biasing of Transistor Trainer

PM-E512 H Parameters of a Transistor

PM-E0582 PUT Characteristics

PM-E646 DIODE LASER Characteristics

PM-E092 Stefan's Constant Apparatus

SCOPE OF LEARNING:

- Study of V-I Characteristics of Filament Lamp

TECHNICAL SPECIFICATIONS:

Analog Meters: Volt meter 12V DC. Ammeter 250mA DC.

Power Supplies: DC Supply IC Regulated 0-12V DC, 250mA.

Key components mounted on the trainer are:

- Bulb 12V, 250mA, Voltage Control through Potentiometer.

PM-E156 Laurent's Half Shade Polarimeter Setup

PM-E215 Verification of Malus Law

PM-E157 To Compare The EMF of Two Primary Cells Using DC Potentiometer

PM-E192 Hall Effect Experimental Setup

E158 Measurement of Thermo EMF Across Two Junctions of A Thermocouple with Temperature

PM-E222 Verification of Brewster's Law

PM-E244 Planck's Constant By Solarcell

PM -E231 To Find the Wavelength of Sodium Light using Diffraction Grating

PM -E228A Michealson Interferometer with He-Ne Laser

PM E232 To Determine of Resolving Power of A Diffraction Grating by Spectrometer with the help of Mercury Light Source

PM -E230 To Find the Air Gap Between Parallel Plate using Febry Perot Etalon

PM -E234 To Determine the Dispessive Power of the material of the Prism for Violet & Yellow Colours of Mercury Light with the help of Spectrometer (Hartmann's Formula)

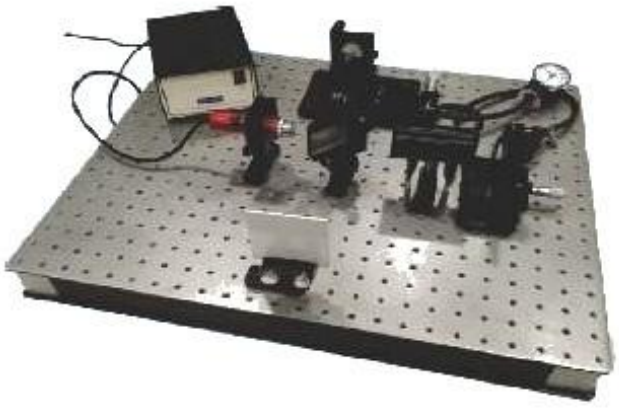
PM-E822 Verification of Faraday's Law & Induced E.M.F.

PM-E258 To Study the EMF induced as a Function of the Velocity of the Magnet (Faraday's Law)

PM-E396 Biot Savrat Law Experiment

PM -E440 E/M Thomson Experment Setup (Bar Magent Setup)

PM-E602A Fresnel's Bi-Prism Experiment



PM-E228C Michealson Interferometer (With Optical Bread Board)

PM-E325 To study Hydrogen Spectrum and Determination of Rydberg's Constant with the help of Spectrometer Diffraction Grating and Hydrogen Discharge Tube

PM-E246 The Measurement of the Time of Fall of a Steel Ball to Determine the Value of 'G' (G By Free Ball)

Dielectric Constant Experimental Setup

PM-E256 Study of Transformer (Analog Meters)

To Determine of Resolving Power of A Prism for Prominent Lines of Mercury by Spectrometer

PM-E257 Stewart and Gee's Tangent Galvanometer Trainer

PM-E257A Magnetic Field in Helmoltz Coil Experiment Setup

PM-E337 Hysterisis Loop Tracer

PM -E262 Figure of Merit of a Ballastic Galvanometer Trainer

PM-E383 Digital Gauss Meter

PM-E311 To find the Resistance of Given Wire using Meter Bridge Experiment

PM-E388 Planck's Constant by Photocell

PM-E388B Spectral Characteristics of Photocell

PM-E414 Gouy's Balance Method Experimental Setup

PM-E394 Temperature Coefficient Resistance of Platinum Resistance Thermometer using Carey Foster Bidge Method

PM-E419 Calibration of Voltmeter by Using DC Slide Wire Potentiometer

PM-E413 Quinck's Tube Experimental Setup

PM-E439 Energy Band Gap of Semiconductor using Four Probe Method

PM-E513 E/M By Magnetic Focusing Method (Short Solenoid)

PM -E603 E/M Helical Method (Long Solenoid)

PM-E592 To Determine the Wavelength of Diode Laser using Diffraction Grating

PM-E605 E/M Magnetron Valve Method

PM-E597 Millikan's Oil Drop Experiment Setup

PM-E415 Planck Constant by Black Body Radiation Apparatus

PM -E629 Study of Absorption Spectrum of Iodine Vapor.

PM -E643 To find the Coefficient of Self Inductance by Rayleigh's Bridge

PM-E633A To Determine the Mechanical Equivalent of Heat by Callender & Barne's Constant Flow Method

PM -E622 Study of Lloyd's Mirror Experiment

PM-E634 Measurement of Field Strength B and its variation in a Solenoid (DBDX)

PM -E664 Photo Conductivity of Salenium Cell/Ldr Experiment Set

PM-E670 Determine the Charge Sensitivity of The Capacitor/ Capacity of Capacitor/ Absolute Value of Capacitor using Ballistic Galvanometer

PM-E696 Heat Capacity of Solid Experiment

PM-E675 To Compare the Capacitances of Two Capacitors by De-Sauty's Method using Ballistic Galvanometer

PM-E717 Magnetic Field in Along the Axis Experiment Setup

PM-E679 Linear Air Track Experiment

PM-E1004 Thermal and Electrical Conductivity of Metal Rod

AMPLIFIER

PM-E029 Transistor Amplifier Trainer (CC, CB, CE Mode and Multistage)

SCOPE OF LEARNING:

- Study of Transistor Amplifier in Different Modes:
- Common Base, Common Collector, Common Emitter, Multistage
- Transistor Amplifier

TECHNICAL SPECIFICATIONS:

- DC Power Supply IC Regulated +15V DC, 150mA.

Key components mounted on the trainer are:

- Transistors, Resistors, Capacitors

PM-E036 RC Coupled Multistage Amplifier

PM-E038 Transformer Coupled Push-Pull Amplifier

PM-E039 FET Common Source Amplifier with Sine Wave Oscillator

PM-E119 RC Coupled Amplifier (Single Stage) / CE Amplifier

PM-E122 Class B Amplifier Trainer

PM-E123 Class C Amplifier Trainer

PM-E127A Operational Amplifier Trainer

PM-E144 Darlington Pair Amplifier Trainer

PM- E390 Direct Coupled Amplifier Trainer

PM-E433 Negative Feedback Amplifier Trainer

PM-E455 Power Amplifier Trainer

PM-E457 Class AB Amplifier Trainer

PM-E468 Audio Power Amplifier Trainer

OSCILLATOR

PM-E006 Hartley and Colpitts Oscillator Trainer

SCOPE OF LEARNING:

- Study and Construction of Hartley & Colpitts Oscillator.

TECHNICAL SPECIFICATIONS:

- DC Power Supply IC Regulated +15V DC, 150mA.

Key components mounted on the panel are:

- Transistor 2N2222, Resistors, Capacitors, Inductors
- HARTLEY: 1MHZ, 304KHZ, COLPITTS: 850KHZ, 1.3MHZ

PM-E012 555 Timer Circuit Trainer

SCOPE OF LEARNING:

- To study the IC 555 as a Monostable (One-shot)/ Astable (Free-Running) Mutivibrator
- To Study the IC 555 as an Bistable Mutivibrator

TECHNICAL SPECIFICATIONS:

- DC Power Supply IC Regulated +15V DC, 150mA.

Key components mounted on the panel are:

- Resistance, Capacitors, IC Ne555, Variable Resistor 10k, Pulsar Switch
- Astable Mulltivibrator : 600 Hz to 3.2 KHz, Bistable Mulltivibrator : 350 Hz to 1 Khz

PM-E016A Wein's Bridge Oscillator Trainer

PM-E021 UJT As Relaxation Oscillator Trainer

PM-E045B Monostable Multivibrator Trainer (741 IC)

PM-E046B Astable Multivibrator Trainer (741 IC)

PM-E047 Bistable Multivibrator Trainer

PM-E091 Audio Oscillator 1/2 KHz

OP-AMP & APPLICATIONS

PM-E078 OP-AMP as Summing, Difference, Average and Scaling Amplifier

SCOPE OF LEARNING:

- Study of Summing Amplifier using Op-amp
- Study of Difference Amplifier using Op-amp
- Study of Average Amplifier using Op-amp
- Study of Scaling Amplifier using Op-amp

TECHNICAL SPECIFICATIONS:

- Dual DC Power Supply IC Regulated ±15V DC, 150mA.
- Fixed IC Regulated +5V DC, 150mA.
- DC Power Supply IC Regulated 0-12V DC, 150mA.
- DC Power Supply IC Regulated 0-12V DC, 150mA.

Digital Meter: Voltmeter 20V

Key components mounted on the trainer are:

- 741 IC (Op-amp), Resistors, Capacitors

PM-E102 OP-AMP as Differential Amplifier Training Kit

PM-E105 OP-AMP as Comparator Trainer

PM-E106 OP-AMP as Integrator & Differentiator

PM-E177 OP-AMP as Inverting & Non Inverting Amplifier

PM-E276 OP-AMP as Instrumentation Amplifier

PM-E387 BJT Amplifier & Emittter Follower

PM-E613 OP-AMP as Window Detector Trainer

PM-E626 OP-AMP as Zero Crossing Detector & Comparator

PM-E636 RC Coupled Amplifier with Voltage Feedba

BREAD BOARD TRAINER

PM-E048 Analog and Digital Bread Board Trainer (ADT)

SCOPE OF LEARNING:

- Study and Construction of Various Analog and Digital Electronics Lab Experiment

TECHNICAL SPECIFICATIONS:

Power Supplies:

- DC Power Supply IC Regulated ±5V, ±12V @ 500mA, 0 to 30V @ 250mA (3Nos.), AC Power Supply 9-0-0VAC,12-0-12VAC

Digital Meters: Voltmeter 20VDC,Ammeter 200mA DC.

Solder-less, breadboard (Easy to Remove), Logic Inputs & Outputs 16 Bit, Trainer Contains 4 Bit BCD To 7 Segment Indicators With Inputs A, B, C, D Inputs 2Nos, Logic Low Frequency Mono Pulsar With Rising And Falling Edge, Frequency Generator 1Hz to 100 KHz (Variable Frequency and Amplitude), 2 Variable Resistors are given on Board, One Low Frequency Speaker, Buzzer as Continuity Tester, 2 BNC to Socket Adapter on Board.

PM-E048 D Analog and Digital Bread Board Trainer (ADT)

Scope Of Learning:

- Study And Construction Of Various Analog And Digital Electronics Lab Experiment

Technical Specifications:

Power Supplies : Dc Power Supply Ic Regulated +5v, ±12v @ 250ma, 0 To 15v @ 250ma, Ac Power Supply 15-0-15vac

Solder-Less, Breadboard (Easy To Remove):

Interconnected With Tie Points Nickel Plated Contact, Fitted With All Dip Sizes And All Components With Lead And Solid Wire. It Can Be Changed And Replaced For Different Purposes And Can Be Connected With Demonstration Panel, Logic Inputs & Outputs 4 Bit, One Clock Generator 10hz Variable, One Mono Pulsar, One Logic Probe, One Variable Resistors Are Given On Board.

PM-E057C Linear IC Trainer (LIT)

SCOPE OF LEARNING:

- Study and Construction of Various Analog IC Experiment

TECHNICAL SPECIFICATIONS:

Power Supplies: Dc Power Supply IC Regulated ±12V DC, 250mA, 0-±10V DC, 250mA.

Linear IC's On Board: Voltage Comparator Using LM324,Phase Locked Loop Using NE565, Voltage Regulator Using LM723, Function Generator Using NE566,Opto Coupler MCT-2E, Three Terminals Voltage Regulator: 7805, 7905, 7812, 7912. 20 Pin Zip Socket. Variable Resistor 100E, 1K, 10K, 100K Ohm. Adequate Number of Resistors and Capacitors On Board. NPN Transistors and Zener are on Board. Breadboards: Unique solder - less large size, spring loaded breadboard consisting of one Terminal Strips with 640 tie points each and 2 Distribution Strips with 100 tie points each, totaling to 840 tie points

PM-E058B Digital IC Logic Trainer (DILT)

SCOPE OF LEARNING:

- Study And Construction of Various Digital Electronics Lab Experiment

TECHNICAL SPECIFICATIONS:

Power Supplies: Dc Power Supply Ic Regulated +5v Dc, 250ma.

Logic Gates (4 Nos. Each): Or Gate, And Gate, Not Gate , Nand Gate, Nor Gate, Ex-Or Gwate, 20 Pin Zip Socket, Logic Inputs & Outputs 8 Bit, Trainer Contains 4 Bit Bcd To 7 Segment Indicators With Inputs A, B, C, D Inputs. Low Frequency Mono Pulsar. Low Frequency Clock Generator. Logic Probe.

PM-E058C Digital IC Trainer

SCOPE OF LEARNING:

- Study and Construction of Various Digital Electronics Lab Experiment

TECHNICAL SPECIFICATIONS:

Power Supplies: Dc Power Supply IC Regulated +5V DC, 1A.

- 20 Pin Zip Socket (3Nos.), 40 Pin Zip Socket (1Nos.)
- Logic Inputs & Outputs 12 Bit, 4 Bit BCD To 7 Segment Indicators (3Nos.)
- Logic Low Frequency Mono Pulsar. Low Frequency Clock Generator.
- Buzzer as Continuity Tester. Variable Resistors (2Nos.)
- Resistors and Capacitors.

PM-E058D Digital IC Trainer (DIT)

SCOPE OF LEARNING:

- Study and Construction of Various Digital Electronics Lab Experiment

TECHNICAL SPECIFICATIONS:

Power Supplies: Dc Power Supply IC Regulated +5v Dc, 1a.

Logic Gates: Or Gate, And Gate, Not Gate, Nand Gate, Nor Gate, Ex-Or Gates.

Half/ Full Adder And Subtractor Using Gates.

Flip Flops on board: JK Flip-Flop Using 7476, D Latches Using 7474, Rs Flip-Flop Using Gates, 20 Pin Zip Socket.

The Following IC Are Provided On The Trainer Set

De-Multiplexer/Decoder 74138, Multiplexer/ Encoder 74153, BCD To Excess-3 Converter, Excess-3 To BCD Converter, Binary to Grey Converter, Grey to Binary Converter, Shift Register74194, Decade Counter, Binary Counter 7493, Magnitude Comparator 7485, Parity Checker 74280, BCD To Decimal Converter

PM-E058E Digital IC Trainer (DIT)

SCOPE OF LEARNING:

- Study and Construction of Various Digital Electronics Lab Experiment

TECHNICAL SPECIFICATIONS:

Power Supplies: DC Power Supply IC Regulated +5V DC, 1A. -5V DC (500mA). 0-±15V DC (250mA.)

- 20 Pin Zip Socket (3Nos.), 40 Pin Zip Socket (1Nos.)
- Logic Inputs & Outputs 12 Bit,4 Bit BCD To 7 Segment Indicators (2Nos.), Logic Low Frequency Mono Pulsar.
- Low Frequency Clock Generator. Buzzer as Continuity Tester.
- Logic Probes, Bread Board (1Nos.)

PM-E107 Combinational Logic Trainer

SCOPE OF LEARNING:

- Study and Construction of Various Digital Electronics Lab Experiment

TECHNICAL SPECIFICATIONS:

Power Supplies:

- Dc Power Supply IC Regulated +5V Dc, 1A.

  Logic Gates: AND(2,3-input), NAND(2,4-input), NAND TRIGGER(4-input), OR, NOR (2-input), NOR (4-input), EX-OR (2-input), Inverters, AOI (2 and 3 input)

PM-E070C Discrete Component Trainer (3 Digital Meters)

SCOPE OF LEARNING:

- Study and Construction of Various Analog Electronics Lab Experiment

TECHNICAL SPECIFICATIONS:

Power Supplies: DC Power Supply IC Regulated +5V, ±12V @ 250mA.0 to 30V @ 250mA and 0-15V @250mA. AC Power Supply 9-0-0 VAC,15-0-15VAC

Digital Meters: Voltmeter-Ammeter 20mA/20VDC.

- Ammeter 2/200mA DC. Voltmeter 2V/200VDC.
- 4 Different Variable Resistors are given on Board.
- One Low Frequency Speaker. One Audio Transformer
- One 12V Relay. One 20Pin Zif Socket
- Various Transistors, Diode, Led, Capacitors, Zener, Inductors and Resistor are given on Board. Thyristors such as SCR, DIAC, TRIAC, UJT, FET, Mosfet, LDR given on Board.

PM-E083 Analog Lab Trainer (ALT)

SCOPE OF LEARNING:

- Study and Construction of Various Analog Electronics Lab Experiment

TECHNICAL SPECIFICATIONS:

Digital Meters: Ammeter 2Ma/200mA DC.

- Voltmeter/ Ammeter 20V/20mA. Voltmeter 2V/200V DC.

Power Supplies:

- DC Power Supplies IC Regulated 0-15V, 500mA, 0-30V, 500mA
- DC Power Supplies Fixed ±12V, 500mA, Fixed ±5V, 500mA
- AC Power Supplies Isolated 15-0-15V, 500mA, 9-0-9V, 500mA

Function Generator and Oscillators:

- 0-100KHz, 0-10KHz Function Generator (Sine, Square, Triangle)

Components mounted on the panels are:

- Variable Resistor (1K, 10K, 100K), Buzzer as Continuity Tester
- Low Frequency Speaker. SPDT Switched. 2 Nos. Bread Board provided with module box easily demountable and mountable.

PM-E129 Basic Electronics Trainer

SCOPE OF LEARNING:

- Study and Construction of Various Analog Electronics Lab Experiment

TECHNICAL SPECIFICATIONS:

Power Supplies: AC Power Supply 12-0-12VAC

- DC Power Supply IC Regulated +5V, ±12V @ 500mA. 0 to 30V @ 250mA
- DC Power Supply IC Regulated 0 to 15V @ 250mA

Digital Meters: Ammeter/Voltmeter 20mA/20VDC.

- Ammeter 2/200mA DC. Voltmeter 2/200VDC.

Analog Meters: Ammeter 1A AC, Voltmeter 15V AC

Solder-less, breadboard (Easy to Remove)

- Logic Inputs & Outputs 16 Bit. Logic Low Frequency Mono Pulsar 2Nos.
- Frequency Generator 1Hz to 1MHz (Variable Frequency and Amplitude)
- Pulse Generator 1MHz Fixed. Modulating Frequency: Amplitude and Frequency
- 2 Variable Resistors are given on Board. One Low Frequency Speaker.
- Buzzer as Continuity Tester. 2 BNC to Socket Adapter on Board.

PM-E139 Digital Lab Trainer (DLT)

SCOPE OF LEARNING:

- Study and Construction of Various Digital Electronics Lab Experiment

TECHNICAL SPECIFICATIONS:

- **Power Supplies:** DC Power Supplies IC Regulated 3V-30V, 500mA
- Operated on Mains power 230V, 50Hz ±10%. 3V-15V, 500mA
- DC Power Supplies Fixed +5V, 1A. -5V,500mA

Function Generator: 0-100KHz Pulse Generator (TTL/CMOS)

Components mounted on the panel are:

Logic Inputs & Outputs 12 Bit, Buzzer as Continuity Tester, Logic Probe Inbuilt, 7 Bit 2mm to 4mm Conversion Sockets, Low Frequency Clock Generator 1Hz-10Hz, Logic Low Frequency Mono Pulsar, 2 Bit BCD To 7 Segment Indicators With Inputs A, B, C, D Inputs, Breadboards: Unique solder - less large size, spring loaded breadboard consisting of one Terminal Strips with 640 tie points each and 2 Distribution Strips with 100 tie points each, totaling to 840 tie points. (Size: 55mm X 170mm approx).

PM-E359 Electricity Trainer (ET)

SCOPE OF LEARNING:

1. Series Combination of Bulbs.
2. Parallel Combination of Bulbs.
3. Operation of Relay.
4. Operation of DPDT Switch.
5. Operation of Magnetic Compass.
6. Study of Bar Magnet.
7. Study of Transistor.
8. Study of Resistor.
9. Study of Capacitor.
10. Study of Diode.
11. Study Electromagnetism through Electromagnetic Coils and Cores.

Key Components on Board

MES 10 Bulbs 3 (6v, 0.3a). DPDT Switch. Continuity Tester. 12VDC/250VAC Relay. Galvanometer (30-0-30), 20ua Per Division. Potentiometers (25 Ohm, 1k, 10k) 1w Each. Bread Board (850 Pins). Power Supplies +12vdc And +5vdc (200ma Each). AC Power Supply 6vac, 1a.

Accessories:

1. One Number of Electromagnetic Core (U-I Type) With Main Supply 230vac, 50hz And Two Coils (6vac and 12vac).
2. One Number of Electromagnetic Core (E-I Type) With Main Supply 230v, 50hz, And Six Coils having Number of Turns and Current (200 (Swg: 21), 1a) (One Number), (400 (Swg: 23), 0.5a) (Two Number), (800 (Swg: 27), 0.25a)(One Number), (1600 (Swg: 31), 0.125a)(One Mumber), (3200 (Swg: 36), 0.05a)(One Mumber).
3. Accessories Component Box (Capacitor: 40, Transistor: 02, Diodes: 02, Mains Lead: 01, Magnetic Compass: 01, Bar Magnet: 01, Multimeter: 01, Screw Driver: 01, Connection Patch Cords: 25)

PM-E040 Amplitude Modulation & Demodulation Trainer

SCOPE OF LEARNING:

- Amplitude Modulation, Amplitude Demodulation

TECHNICAL SPECIFICATIONS:

- On Board Carrier Generator 100KHz
- On Board Modulating Signal Oscillator 0-1KHz
- Fixed DC Power Supplies +15V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode

PM-E065 Transmission Line Trainer

SCOPE OF LEARNING:

- Measurement with 1) Matched, 2) Short, 3) Open end of the line
- Measurement of various line characteristics, properties & attenuation

TECHNICAL SPECIFICATIONS:

- Sine Wave Generator, Provides Synchronized Sine waveform output ranging from 4 KHz to 4MHz.
- Square Wave Generator 40 KHz to 4 MHZ,

Components mounted on the panel are:

- Transmission Lines 4 set of 25 meter each RG174 Coaxial cable.
- Two 100E pot for Impedance Matching

PM-E082 Frequency Modulation & Demodulation Trainer

SCOPE OF LEARNING:

- Frequency Modulation & Demodulation

TECHNICAL SPECIFICATIONS:

- A.F. Generator 100KHz Variable Amplitude of 5Vp-p
- On Board Modulating Signal Oscillator 0-1KHz
- Carrier generator 100 Khz
- Fixed DC Power Supplies +12V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode

PM-E165 PSK Modulation & Demodulation Trainer

SCOPE OF LEARNING:

- Phase Shift Keying Modulation & Demodulatio

TECHNICAL SPECIFICATIONS:

- Sine waveform : 10KHz.-20KHz. With Variable Amplitude of 5Vp-p using Ic2206
- Fixed DC Power Supplies +12V,+5V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode, PSK Modulator : Using IC 4051 and ICTL084, PSK Demodulator : using IC 7486, Data Clock : Four Nos. of using IC 7490

PM-E163 Delta Modulation & Demodulation

SCOPE OF LEARNING:

- Delta Modulation & Demodulation

TECHNICAL SPECIFICATIONS:

- Sampling Frequency : 20KHz. Square wave using IC 555
- Modulating Signal : 250Hz Sine wave using IC TL084 with variable amplitude up to 3 Vpp
- Fixed DC Power Supplies +12V,+5V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode, Delta Modulator: Using IC 74193 & DAC 0800. Delta Demodulator: Using IC TI084.

PM-E164 Pulse Code Modulation & Demodulation

SCOPE OF LEARNING:

- Pulse Code Modulation & Demodulation

TECHNICAL SPECIFICATIONS:

- AC Source: Sine Wave Variable frequency of Approx 50Hz. With Variable Amplitude of 5Vp-p, Fixed DC Power Supplies +5V,+5V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode, Data Display: 8 bit ADC & DAC Data Display on 8 LEDs,PCM Modulator : using 74163 & ADC0800, PCM Demodulator : using 74165 & DAC0800, Filter: Low pass having cut off Frequency 3.4 KHz.

PM-E166 Pulse Position Modulation & Demodulation

SCOPE OF LEARNING:

- Pulse Width Modulation&Demodulation

TECHNICAL SPECIFICATIONS:

- A.F. Generator 1KHz Variable Amplitude of 5Vp-p
- Carrier generator 8KHZ-64KHZ
- Fixed DC Power Supplies +12V,+5V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode

PM-E168 ASK Modulation & Demodulation

SCOPE OF LEARNING:

- Amplitude Shift Keying Modulation
- Amplitude Shift Keying Demodulation

TECHNICAL SPECIFICATIONS:

- Carrier Frequency : 30KHz. Variable Sine wave using IC 8038
- Carrier Amplitude : : Variable up to 5Vp-p
- Fixed DC Power Supplies +12V,+5V DC, 250mA

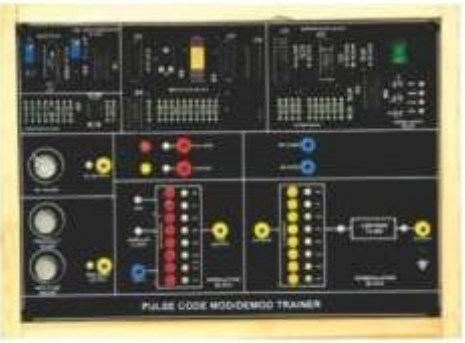
Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode, Data Signal Generator using 555 & 74165, ASK -modulation using IC 4066, ASK -Demodulation using IC TI08

PM-E202 Analog Sampling & Reconstruction of Signal

SCOPE OF LEARNING:

- Study the Sample signal and Sample/Hold signal and its reconstruction; Study the effects of different Types of Sampling.
- Study the effects of 2nd and 4th Order low pass filters for the reconstruction of the signal frequencies on the reconstructed signal, effects of Varying duty cycle of Sampling frequencies on the amplitude of the reconstructed signal



TECHNICAL SPECIFICATIONS:

- Crystal controlled pulse generator.
- Sine Wave Generator - Provides Synchronized Sine waveform output of Frequency 1 KHz & 2KHz.
- Pulse Generator-Switch selectable sampling frequency of 2, 4, 8, 16, 32 Khz,
- Internal/ External sampling signal selectable.
- Fixed DC Power Supplies +12V,+5V DC, 250mA

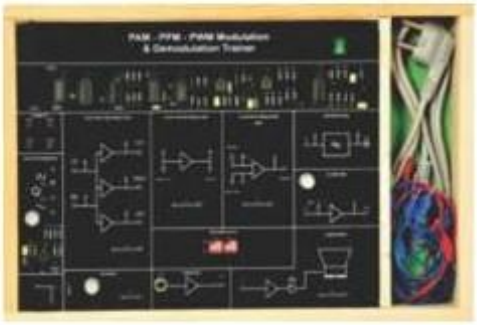
Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode

PM-E334 PAM, PPM, PWM Modulation & Demodulation

SCOPE OF LEARNING:

- Pulse Amplitude Modulation, Pulse Width Modulation
- Pulse Position Demodulation, Sampling and Reconstruction



TECHNICAL SPECIFICATIONS:

- Sampling Frequency 1KHz and 2KHzVariable Amplitude of 5Vp-p (Square Wave)
- Carrier generator 8KHZ, 16KHz, 32KHz, 64KHZ.
- Fixed DC Power Supplies +12V,+5V DC, 250mA

Low Pass Filter: For Sampling Voice Communication,

- Voice Link Using Microphone and Speaker

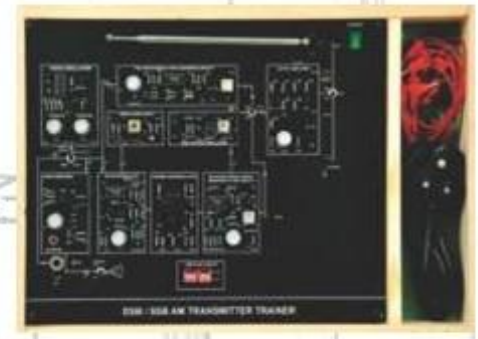
Components mounted on the panel are:

- IC, Diodes, Resistors and Capacitors
- Microphone, Speaker

PM-E350 DSB, SSB Transmitter Trainer

SCOPE OF LEARNING:

- Study of carrier frequency generation.
- Study of DSB & SSB AM generation & Transmission.
- Study of Transmitter circuits.
- Study of Modulation index.



TECHNICAL SPECIFICATIONS:

- 8 Switched Faults, Crystal Controlled Carrier Frequency.
- On-board Audio Modulator, Carrier Frequency Generation, Antenna & Speaker.
- Fixed DC Power Supplies +15V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode

PM-E351 DSB SSB Receiver Trainer

SCOPE OF LEARNING:

- Study of DSB & SSB AM reception & detection by diode /product detectors Study of AGC
- Study of Receiver tuned circuits Study of Sensitivity, Selectivity & Fidelity of Receiver

TECHNICAL SPECIFICATIONS:

Frequency Range: 980 KHz to 2.060 MHz, 455 KHz

Input Circuits : RF amplifier, Mixer, Local oscillator, Beat frequency oscillator, IF amplifier Tuning: With variable capacitor (ganged) dial marking on board

Fixed DC Power Supplies +15V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode

PM-E474 FSK Modulation & Demodulation

SCOPE OF LEARNING:

- Frequency Shift Keying Modulation & Demodulation

TECHNICAL SPECIFICATIONS:

- Carrier Signal, Modulating Signal
- Fixed DC Power Supplies +12V,+5V DC, 250mA

Components mounted on the panels are:

- IC, Capacitors, Resistors, Diode, 4 Nos. Of Data Clock Using IC 7490, FSK Modulator : Using IC 74163 & 7400, FSK Demodulator : Using IC TI084

PM-E487 AM-FM Radio Receiver

SCOPE OF LEARNING:

- Study and Fault Finding of AM-FM Radio

TECHNICAL SPECIFICATIONS:

- DC Power Supply +5V, 150mA, Audio power output: 450mw maximum, Frequency range: MW - 520 - 1620 KHz. Intermediate Frequency : 455 KHz, Input Circuits: RF Amplifier, Mixer, Local Oscillator, IF Amplifier, Tuning : With Variable Capacitor (ganged), Detector with AGC control

Components mounted on the panel are:

- Speaker Inbuilt, Volume Control, Fault Switches, Band Selection Using Slide Switch, Antenna, Potentiometer for Tuning.

PM-E520 FM Transmitter & Receiver

SCOPE OF LEARNING:

- Study of Frequency Modulation using Varactor modulator, Reactance Modulator. Operation of Detuned Resonant Circuit, Quadrature Detector, Phase-Locked Loop Detector, Foster - Seeley Detector, Ratio Detector

TECHNICAL SPECIFICATIONS:

- 8 switched faults, Variable Audio Oscillator: (300 Hz - 3.4 KHz), 2 Types of FM Modulator: Reactance, Varactor, Mixer / Amplifier, Transmitter: 455 KHz, 5 Types of FM Demodulator:
- Low Pass Filter Amplifier.
- Fixed DC Power Supplies +15V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode

PM-E521 FDM Mux & De Mux

SCOPE OF LEARNING:

- Study of Frequency Division Modulation & Demodulation

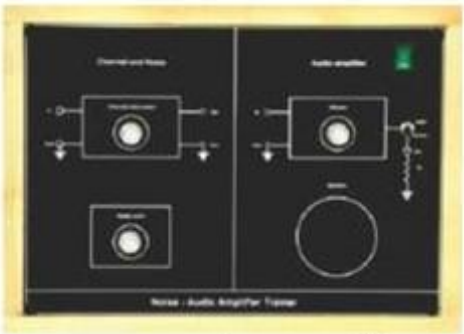
TECHNICAL SPECIFICATIONS:

- Modulating Input Frequency : Sine wave 200 Hz - 10 KHz(variable)
- Modulator / Demodulator : DSBSC Modulator/Demodulator
- Low Pass Filters : Cut off frequency of 10 Khz
- Fixed DC Power Supplies +15V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode

PM-E523 Noise & Audio Amplifier Trainer



SCOPE OF LEARNING:

- Study of Noise Generator, Audio Amplifier

TECHNICAL SPECIFICATIONS:

- A.F. Generator 1KHz Variable Amplitude of 5Vp-p
- Fixed DC Power Supplies +12V,+5V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode, Speaker

PM-E524 Differential PSK Modulation & Demodulation

SCOPE OF LEARNING:

- Differential Phase Shift Keying Modulation & Demodulation

TECHNICAL SPECIFICATIONS:

- **Sine waveform:** 10KHz.-20KHz. With Variable Amplitude of 5Vp-p using Ic2206 , **Data Clock:** Four Nos. of using IC 7490
- Fixed DC Power Supplies +12V,+5V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode, DPSK Modulator : using IC 4051 AND TL084, DPSK Demodulator : using IC 7486

PM-E525 QPSK Modulation & Demodulation

SCOPE OF LEARNING:

- Quadrature Phase Shift Keying Modulation, Demodulation

TECHNICAL SPECIFICATIONS:

- Synchronous Clock Generator: IC 555, Frequency of square wave is 200 Khz.
- Carrier Generator : Provides Four quadric-phase carrier output
- Synchronous data generator using IC 74165,
- Fixed DC Power Supplies +12V,+5V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode, IC 7400, IC 7474 , TL084, 7486

PM-E526 TDM Modulation & Demodulation

SCOPE OF LEARNING:

- Time Division Modulation, Demodulation

TECHNICAL SPECIFICATIONS:

- Modulating Input Frequency : Sine wave 200 Hz - 10 KHz(variable)
- Sampling Clock Generator
- Fixed DC Power Supplies +12V,+5V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode, IC 4066, 4066, Lm324

PM-E530 Data Formatting & Carrier Modulation Trainer

SCOPE OF LEARNING:

- Study of Coversion of NRZ data to other data formats NRZ(L), NRZ(M) RZ, AMI, RB, Biphase (Manchester), Biphase (Mark), Differentially encoded dibit pair, ASK, FSK,PSK & QPSK : Mod & Demodulation.

TECHNICAL SPECIFICATIONS:

- QPSK modulation. Different data conditioning formats NRZ (L), NRZ (M), RZ, Biphasic. (Manchester), Biphasic (Mark), AMI, RB, differentially encoded debit pair.FSK, PSK, ASK ,DPSK & QPSK carrier modulation. Variable carrier and modulation. Variable carrier gain. Unipolar to Bipolar conversion. Data inverter.

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode

PM-E539 CDMA Trainer

SCOPE OF LEARNING:

- Generate & study theory of CDMA DSSS Modulation & Demodulation using BPSK and pseudo random bit sequence generation.

TECHNICAL SPECIFICATIONS:

- Direct Sequence Spread Spectrum (DSSS) generator and decoder
- BPSK)Modulator/ Demodulator,Pulse Width Modulator / Demodulator
- Fixed DC Power Supplies +12V,+5V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode

PM-E540 Delta Adaptive & Delta Sigma Modulation

SCOPE OF LEARNING:

- Study of Adaptive/ Sigma / Delta Modulation & Demodulation, slope overload and increased integrator gain,
- and amplitude overload in Delta Sigma Modulation

TECHNICAL SPECIFICATIONS:

- Selectable clock generation from Crystal.
- 4 On board generators at 4 different frequencies (synchronized). Selectable integrator gain setting (by switch or control circuit) On board
- Unipolar to bipolar conversion on board.
- Fixed DC Power Supplies +12V,+5V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode

PM-E541 QAM - DQAM Modulation & Demodulation Trainer

SCOPE OF LEARNING:

- To study the elements of 8-QAM / DQAM system, Orbit coding technique of NRZ-L data format.
- Differential Encoding of Data, 8-QAM Modulation technique.
- DQAM Modulation technique, Constellation Diagram of QAM

TECHNICAL SPECIFICATIONS:

- On-board Sine-wave generator, Clock And Data Generator Clock Frequency, Data Format (Coding), On-board Four Carrier Sine waves of 500Khz, On board three nos. of 8-bit NRZ-L. Data Simulator. Clock frequency of 250 Hz, Data Format (Coding) is NRZ-L.
- Fixed DC Power Supplies +12V,+5V DC, 250mA

Components mounted on the panel are:

- IC, Capacitors, Resistors, Diode

PM-E 701 Pulse Code Modulation & Demodulation (DPCM)

SCOPE OF LEARNING:

To study DPCM modulation and Demodulation. To study Quantization Error, To study voice communication for DPCM (Optional), To study Effect of Switch faults

SPECIFICATIONS:

Data Clock Generator -Jumper selectable clock with amplitude of 5V, Clock of frequencies 64 KHz, 128 KHz, 256 KHz and 512KHz, Sampling Clock---- Sampling Clock is generated using IC 4016, Sampling Clock Frequency of 16 KHz and Amplitude of 5V, DPCM modulation using sampler, quantizer and linear predictor, Onboard Buffer is provided using LF353, DPCM demodulation using linear predictor, Integrator and Low pass Filter, On-board Low pass filter using TI084.

Components mounted on the panel are:

IC, Capacitors, Resistors, Diode, Filter: Low pass having cut off Frequency 3.4 KHz

PM-E507 Radar Trainer

SCOPE OF LEARNING:

Doppler Radar Training System is a versatile & useful training system for understanding Doppler principle with the help of detailed instruction manual and experiment guide provided with the setup.

TECHNICAL SPECIFICATIONS:

- Microwave X Band Operation
- Microwave Transceiver in one unit
- Demonstrates the principle of Doppler Shift of Reflected Electromagnetic Wave from a moving object
- High Gain Parabolic Antenna provided for focused Narrow Beam width & Clutter reduction
- Facility to observe on CRO / DSO
- Software provided for direct Frequency readout with both Frequency & Time Domain
- Separate DC Power Supply for the main unit
- Flexibility for adjustment of Direction, Height, Angle for better Focus
- Specially designed experiments showing different applications for better understanding
- Detailed Instruction Manual

PM-E500 Antenna Trainer

SCOPE OF LEARNING:

Table-top training system. It is very useful to study & understand the principle & working of various antennas and to polar plots by teachers and students. The antennas are designed for use at higher frequencies making them handy and smaller in size for ease of use and better understanding of the subject. RF generator, Tone generator Directional coupler, Matching stub, Forward/Reverse meter, Goniometer & various antennas are provided for experimentation. Necessary DC regulated power supplies are built-in. Functional blocks are indicated on the mimic panel.

Areas of Experiments

- Polar plots & polarization.
- Wave modulation & demodulation.
- Antenna Gain & Beam width. Antenna Matching.
- Study of Element Current. Study of Front-Back Ratio.
- Measurement of SWR & forward / reverse power.
- Antenna radiation with distance.

TECHNICAL SPECIFICATIONS:

- RF Generator : 750 MHz Approx (output Adjustable).
- Tone Generator : 1KHz Approx (output Adjustable).
- Directional Coupler : Forward & Reverse (Selectable).
- Matching Stub : Slider Type.
- Antenna Rotation : 0 – 360Degree; Resolution 1Degree.
- Receiving Antenna : Folded dipole with reflector and Digital Meter.
- Forw. / Rev. Meter : Digital Meter, provided on main Panel.
- Goniometer : Provided on main panel
- Power Supply : 230V + 10% VAC, 50 Hertz, Single phase.
- Interconnections : 4mm Banana Sockets

PM-E507 Satellite Communication Trainer

SCOPE OF LEARNING:

The Satellite Communication Lab provides an in-depth look at Satellite Communication Techniques and Concepts. It consists of Satellite Uplink Transmitter, Satellite Transponder Link and Satellite Downlink Receiver, which can be conveniently placed in the laboratory for experimentation. The uplink frequencies are selectable and can carry three signals video/data, audio/voice/tone (A1) and audio/voice/tone (A2) simultaneously. Any broadband signal or digital / analog data or square wave from function generator can be transmitted through this satellite link. A large number of experiments can easily be conducted. PC to PC Communication Link can also be established & studied.

FEATURES:

- High frequency S – band microwave operation in 'License Free' ISM Band
- High RF Output Power and Low Noise / Leakage
- PLL synthesized Frequency in Transmitter, Receiver and Satellite Emulator
- Choice of different selectable Transmitting & Receiving Frequencies with LED Indication
- Simultaneous Communication upto three different Signals possible
- Communicates Audio, Video, Digital / Analog Data, Tone, Voice, Function Generator Signals & PC (via Rs232)
- Inbuilt Variable Audio Tone Generator (100 Hz to 1KHz)
- Study of S/N (Signal to Noise) & C/N (Carrier to Noise) ratios
- Emulation of Path Loss, Noise and Fading
- Signal Propagation Delay & Link Fail Operation
- Microphone and speaker provided for audio link
- CCD Camera and Video Monitor provided for Video Link
- 4 Detachable Dish Antennas with Shielded Cables for RF Signal
- Facility to attach Analog / Digital Communication Kits
- Detailed Instruction Manual with complete experiments

TECHNICAL SPECIFICATIONS:

Satellite Transmitter (Uplink)

2.411, 2.431, 2.451 & 2.471 GHz (Selectable & PLL Controlled) with Indicator

Satellite Emulator (Transponder Link)

Transponder with Selectable frequency Conversion Emulation of Path Loss, Noise and Fading

Signal Propagation Delay & Link Fail Operation

Transponder Receiver (Uplink)

Frequency : 2.411, 2.431, 2.451 & 2.471 GHz (Selectable & PLL Controlled) with Indicator

Transponder Transmitter (Downlink)

Frequency : 2.411, 2.431, 2.451 & 2.471 GHz (Selectable & PLL Controlled) with Indicator

Satellite Receiver (Downlink)

Frequency : 2.411, 2.431, 2.451 & 2.471 GHz (Selectable & PLL Controlled) with Indicator

Antennas

Parabolic detachable dish antenna with Teflon Cables for RF Signal & mount - 4 Nos

ACCESSORIES

1. Microphone
2. CCD Camera
3. LCD Monitor
4. BNC to RCA plug (for A/V connection) cables - 6 Nos.
5. BNC to BNC Cable – 2 nos.
6. RS-232 Cable – 2 nos.

PM-E671 LAN Trainer

DISCRIPTION:

Provides the understanding of all the fundamentals of networking. It helps the user to gain knowledge regarding all network layers, cable designing and building of complete network of computers. Understanding the protocols, topologies used in networking, measurement of error rate, throughout and effect of errors on protocols.

SCOPE OF LEARNING:

Study & implementation of cable designs in networking, Implementation of PC to PC with IEEE 802.3, Implementation of Star topology using 100BaseTx, Implementation of Bus topology using 10Base2, Implementation of Ring topology using DB9, Study of protocols, Study of flow control , Stop-N-wait, Go back to N, Selective repeat

TECHNICAL SPECIFICATIONS:

- PC to PC using RJ-45 Connector, Star topology using RJ45 Connector
- Bus topology using BNC Connector,Ring topology using DB9 Connector
- Data transmission speed: 10/100 Mbps, 4 Nodes

PM-E693 FI Application Board

DISCRIPTION:

This is designed for students / Researchers to understand the Basics / Advancements of WI-FI Communication system

SCOPE OF LEARNING:

How to Configures wireless router, How to assign IP address to Wi-Fi Device modem,Configuring Wi-Fi device through serial port, How to send data between Wi-Fi device server and processor unit in wired and wireless network, Program to control switches to ON / OFF applications like light, FAN

TECHNICAL SPECIFICATIONS:

ESP8266 Wi-Fi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. Ultra-low-power operation with all kinds of power-save modes. 16x2 LCD, buzzer, 4x4 hex keypad. 2 relays for application home automation to control fan and light, Reset switch, Programming facility through USB

PM-E697 BLUETOOTH Application Board

DISCRIPTION:

This is designed for students / Researchers to understand the Basics / Advancements of Bluetooth Communication system.

SCOPE OF LEARNING:

- To study the basic concept of Bluetooth, Study of BLUETOOTH Modem & its component, Program to ON/OFF the device using Bluetooth and pc.
- Program to ON/OFF the device using Bluetooth mobile application,
  To study and control the movement of cursor or/on LCD through pc.
- BT test utility used on windows 7, 32 bit for command set study.
- To study how to configure Bluetooth as master to slave , To Study how to transfer data from master to slave through (GLCD 128x64), Facility of RS 232, USB, Ps2.

PM-E699 GSM Trainer

DISCRIPTION:

This is designed for students / Researchers to understand the Basics / Advancements of GSM / Mobile Communication System

SCOPE OF LEARNING:

Study of GSM Modem & its component, AT GSM Command using GSM Hardware & PC, Program to attend a call using GSM AT commands, Program to make a call on any mobile number using 4 x 4 keypad, Program to display the status of Incoming call or SMS on LCD display.

TECHNICAL SPECIFICATIONS:

On Board IN System Programming, Based on Microcontroller (AVR or ARM), LCD 16x2, Hex Keypad 4x4, Relay Output 2Bit, Power Supply, GSM modem :- SIM 900 / SIM 800, Study of at commands through USB / SERIAL on virtual terminal, Quad Band 850/900/1800/1900MHz, Test points in each section.

PM-E700 GSM Mobile Base Station Trainer

SPECIFICATIONS:

This System is designed to explain, teach and experiment Real time 2G Mobile system in the laboratory with Mobile Tower and Endusers – Mobile phones. Software Defined Radio performs the function of BTS which facilitates wireless communication between GSM cellular phones. It allows to connect a standard GSM mobile phone directly with VOIP networks as SIP endpoint to other mobile phone usinga software based GSM BTS. The Trainer is designed based on MBS Technology with RF and Spartan 6 FPGA Hardware. USB 3.0 High Speed USB Interface to Mobile Workstation. Due to Real System students can test their new algorithms

Hardware Supplied

- BTS (Base Transceiver Station Hardware based on MBS Technology)
- Mobile Station : 2 Nos of Mobile Phones
- SIM Cards : 2 Nos
- GSM Antennas : 2Nos
- Configured software : 1 No on Laptop

PM-E659 EPABX Trainer

DISCRIPTION:

This EPABX Trainer has the provision to use 1, 2 or 3 trunk lines & 4, 6 or 8 extension lines respectively. Locking & other facilities are provided. Can perform functions such as use the password to protect the call extension to extension call, hold, call transfer, call pickup, call parking, call forwarding, redial, call control, conference, do not disturb etc.

Specifications:

Based on 89c51 CPU Provision for up to 1 trunk line & 3 extension lines, IBM PC compatible keyboard for using command, 20 x 2 LCD display, Complete circuitry of EPABX is on board, Working in 2 Modes: Trainer mode/EPABX mode, Explanation, Observation, Alignment and adjustment of Internal & external controls is possible, Programmed for different section can be written in RAM, Programs written by user are executable, Standard EPABX specification, 79dbm Cross Talk Attenuator, Telephone Instruments (Optional)

GREEN ENERGY

PM-E191 Photo Cell Characteristics (Digital Meters)

SCOPE OF LEARNING:

- Study of V-I Characteristics of Photo Cell
- Inverse Square Law

TECHNICAL SPECIFICATIONS:

Digital Meters:

- IC Regulated power supply

SALIENT FEATURES:

- Front panel built with high class insulated Printed Circuit Board sheet with well printed circuits and symbols.

PM-E369 Solar Cell Characteristics (Digital Meters)

SCOPE OF LEARNING:

- Study of V-I Characteristics of Solar Cell

TECHNICAL SPECIFICATIONS:

Digital Meters:

Power Supplies regulated :

SALIENT FEATURES:

- Front panel built with high class insulated Printed Circuit Board sheet with well printed circuits and symbols.

PM-E369B V-I Char, Load Response, Areal Characteristics and Spectral Response of Photo Volatiac Cell

SCOPE OF LEARNING:

- V-I Char, Load Response, Areal Characteristics And Spectral Response Of Photo Volatiac Cell

TECHNICAL SPECIFICATIONS:

Digital Meters:

Power Supplies regulated :

SALIENT FEATURES:

- Front panel built with high class insulated Printed Circuit Board sheet with well printed circuits and symbols.

AE-370 Solar Energy System Trainer (Portable)

SOLAR ENERGY TRAINER

Solar Panel:

Consists of 6 Solar Cells Maximum Voltage of each cell:1.5V
Maximum Current of each cell:150mA

Experiments:

- Energy storage.
- Working of Led
- Working Bulb
- Working of Motor as a Fan
- Working of Buzzer
- V-I Characteristics of Solar Cell in series and parallel
- Buzzer for Sound energy
- Fan for electromechanical energy.
- Voltmeter for voltage measurement.
- Current meter for Current Measurement.

SALIENT FEATURES:

- Front Panel Built With High Class Insulated Printed Circuit Board Sheet With Well Printed Circuits And Symbols.

PM-E411 Wind Energy System Trainer (Portable)

WIND ENERGY TRAINER
Wind Mill: 15
Experiments:

- Energy storage.
- Working of Led
- Working Bulb
- Working of Motor as a Fan
- Working of Buzzer
- V-I Characteristics of Solar Cell in series and parallel
- Buzzer for Sound energy

SALIENT FEATURES:

- Front Panel Built With High Class Insulated Printed Circuit Board Sheet With Well Printed Circuits and Symbols.

PM-E412 HYBRID Energy System Trainer (Solar and Wind) (Portable)

WIND AND SOLAR ENERGY TRAINER
Wind Mill: 15V
Solar Panel:

- Consists of 6 Solar Cells Maximum Voltage of each cell: 1.5V Maximum Current of each cell: 150mA

Experiments:

- Energy storage.
- Working of Led
- Working Bulb
- Working of Motor as a Fan
- Working of Buzzer
- V-I Characteristics of Solar Cell in series and parallel
- Buzzer for Sound energy

SALIENT FEATURES:

- Front Panel Built With High Class Insulated Printed Circuit Board Sheet With Well Printed Circuits And Symbols.

PM-E496A Solar Power Generation and Training System

SCOPE OF LEARNING:

- Measurement and Analysis of Different parameters of Solar PV Module : open circuit and short circuit,parameter measurement with series and parallel PV modules , I-V characteristic and Power curve of PV module and PV array , efficiency and fill factor
- Load Estimation and calculation
- Study of Charge controller
- Study of different parameter of inverter efficiency , PWM switching , charging of batteries , over load and over battery protection

TECHNICAL SPECIFICATIONS:
Power Supplies:

- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:
SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- Instruction manual.
- Patch Cords 4mm (Heavy Duty)
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Short Circuit protection with the MCB.
- Size of the trainer set 48"x24"

PM-E497A Wind Power Generation and Training System

SCOPE OF LEARNING:

- Study of Wind Power and Wind Energy.
- Load Estimation and calculation
- Study of Charge controller
- Study of different parameter of inverter efficiency , PWM switching , charging of batteries , over load and over battery protection

TECHNICAL SPECIFICATIONS:

Power Supplies:

Digital/Analog Meters:

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.

PM-E498A Solar and Wind Power Generation and Training System

SCOPE OF LEARNING:

- Measurement and Analysis of Different parameters of Solar PV Module : open circuit and short circuit,parameter measurement with series and parallel PV modules , I-V characteristic and Power curve of PV module and PV array efficiency and fill factor
- Study of Wind Power and Wind Energy.
- Load Estimation and calculation
- Study of Charge controller
- Study of different parameter of inverter efficiency , PWM switching , charging of batteries , over load and over battery protection

TECHNICAL SPECIFICATIONS:

Power Supplies:

- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.

PM-E694 Study of Solar Photo Voltaic Panel in Series and Parallel Combination

SCOPE OF LEARNING:

- Study of V-I Characteristics of Solar Cell
- Study of V-I Characteristics of Solar Cell(In Series Connection)
- Study of V-I Characteristics of Solar Cell (Parallel Connection)

TECHNICAL SPECIFICATIONS:

Digital Meters:

Power Supplies:

- Operated on Mains power 230V, 50Hz +10%

SALIENT FEATURES:

- Front panel built with high class insulated Printed Circuit Board sheet with well printed circuits and symbols.

PM-E694B Effect of Tilt Angle on the Efficiency of Solar Photovoltaic Panel

SCOPE OF LEARNING:

- Study of V-I Characteristics of Solar Cell
- Study of V-I Characteristics of Solar Cell(In Series Connection)
- Study of V-I Characteristics of Solar Cell (Parallel Connection)

TECHNICAL SPECIFICATIONS:

Digital Meters:

Power Supplies:

SALIENT FEATURES:

- Front panel built with high class insulated Printed Circuit Board sheet with well printed circuits and symbols.

ACCESSORIES PROVIDED:

- Lux Meter
- Lamp With Intensity Control
- Solar Panel Unit Mounted on Stand

PM-E575 Fuel Cell Energy System Trainer

FUEL CELL ENERGY TRAINER

Solar Panel:

- Consists of 1 Solar Cells Maximum Voltage: 1.5V
- Maximum Current: 150mA

Fuel Cell:

- Consists of 1 Fuel Cells Maximum Voltage: 0.6V
- Maximum Current: 100mA

Experiments:

- Energy storage.
- Working Bulb
- Working of Motor as a Fan
- Working of Buzzer
- V-I Characteristics of Solar Cell in series and parallel
- Buzzer for Sound energy

SALIENT FEATURES:

- Front Panel Built With High Class Insulated Printed Circuit Board Sheet With Well Printed Circuits And Symbols.

DC POWER SUPPLY

PM-E010 DC Power Supply 0-30V (2A,3A,5A,10A)

TECHNICAL SPECIFICATIONS:

- Dc Power Supply 0-30v Dc, 2a
- **Digital Meters:** Voltmeter 30v Dc ,Ammeter 2a Dc
- **Output Voltage:** 0-30+1% Continuously Adjustable
- **Output Current:** 0-2a+1% Continuously Adjustable

DC Power Supply 15V DC, 3A

DC Power Supply +5V DC, 1A

TECHNICAL SPECIFICATIONS:

- DC Power Supply +5V DC, 1A
- **Output voltage:,** +5V+1% Fixed Voltage, -5V+1% Fixed Voltage
- **Output current:** 0-1A+1% Fixed Current

Dual DC Power Supply, 30-0-30V DC, (2A,3A,5A,10A)

TECHNICAL SPECIFICATIONS:

Power Supplies: Dc Dual Power Supply 30-0-30v Dc, 2a
Digital Meters: Voltmeter 200v Dc (2nos.), Ammeter 20a Dc (2nos.)

- **Output Voltage:** 0-30v And 0-(-30v)+1% Continuously Adjustable
- **Output Current:** 0-2a And 0-2a+1% Continuously Adjustable

PM-E0115A High Voltage Power Supply (0-100V, 100MA)

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-300V, 100mA
- **Digital Meters:** Voltmeter 300V DC, Ammeter 100mA DC
- **Output voltage:**0-300V +1% continuously adjustable
- **Output current:**0-100mA+1% continuously adjustable

PM-E115A High Voltage Power Supply 0-300V,1A (SCR Controlled)

TECHNICAL SPECIFICATIONS:

- DC Power Supply300V DC, 1A
- **Digital Meters:** Voltmeter 300V, Ammeter 2A
- **Output voltage:** 0-230VDC (ISOLATED)
- **Output current:** 0-1A
- Control through SCR AC Phase Method

PM-E116 Multi Output DC Power Supply 0-30V2A ±5V2A, ±15V2A

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-30V DC, 2ADC Power Supply +15V DC, 2A
- DC Power Supply +5V DC, 5A

Digital Meters: Voltmeter 200V DC (2Nos), Ammeter 20A DC (2Nos.)

Output voltages:

1. 0-30V +1% continuously adjustable
2. +5V+1% Fixed
3. +15V+1% Fixed

Output currents:

1. 0-2A +1% continuously adjustable
2. 2A +1% Fixed
3. 2A +1% Fixed

PM-E416 AC-DC Low Tension Power Supply 0-20V, 3A

TECHNICAL SPECIFICATIONS:

- AC / DC Power Supply 0-20V DC, 3A (ISOLATED)

Digital Meters: Voltmeter AC/DC, Ammeter DC

Output voltage: 0-20VDC and 0-20VAC (ISOLATED)

Output current: 0-3A

- Variac: 2A (For Voltage Control)
- Copper Wound Isolation Transformer for AC/DC

PM-E420 AC-DC Power Supply (5A, 10A, 15A)

TECHNICAL SPECIFICATIONS:

- AC / DC Power Supply230V DC, 5A

Analog Meters:

- Voltmeter 300V (2Nos)
- Ammeter 5A (2Nos.)

Output voltage: 0-230VDC and 0-230VAC (ISOLATED)

Output current: 0-5A

PM-E586F Battery Charger 48V, 30A

TECHNICAL SPECIFICATIONS:

- DC Power Supply48V DC, 30A

Digital Meters:

- Voltmeter 200V, Ammeter 60A (With Shunt)

Output voltage: 0-48VDC (ISOLATED)

Output current: 0-30A

- **Voltage Selection through Rotary Switch 40A:** 0-6-9-12-18-24-48V
- **Charging Indication:** Through LED.
- **DC Rectifier:** DC rectified through 40A Diodes (4Nos.) in Bridge Configuration.

FUNCTION GENERATORS

PM-E170 Audio Frequency Function Generator (0-100KHz / 20-200KHz)

ABOUT FUNCTION GENERATOR:

- Seven Segment Frequency Display, Separate control for frequency for fine and coarse adjustments.
- 4 digit frequency counter for frequency, Rotary switches for selections for parameters frequency, amplitude and waves.

TECHNICAL SPECIFICATIONS:

Frequency Range	1Hz/10Hz/10Hz/1KHz/10KHz/100KHz
Amplitude	(2Vp-p~20Vp-p)±20%
Output signal impedance	50 ohm
Attenuation	20dB/40dB
Duty cycle	20%~80% (±10%)
Sine wave	Distortion<2%
Triangle wave	Linearity>99%
Square wave	Rise edge times/ fall edge times<100nS
frequency stability:	±5x10
Signal frequency stability	<0.1%/Minute
Measurement error	0.5%
Dimension	270*215*100mm
Weight	Approx. 2.5kgs
Power	220V/110V±10%, 50Hz/60Hz±5%

PM-E170A Function Generator 0-1MHz

ABOUT FUNCTION GENERATOR:

- Multi Signal O/P i.e. Sine, Triangle and Square with Amplitude Control.
- Dual Display for Frequency as well as Amplitude, Separate control for frequency for fine and coarse adjustments, 8 digit frequency counter 5 digits for frequency and 3 digit for amplitude individually.

TECHNICAL SPECIFICATIONS:

Frequency Range	10Hz/10Hz/1KHz/10KHz/100KHz/1MHz
Amplitude	(2Vp-p~20Vp-p)±20%
Output signal impedance	50 ohm
Attenuation	20dB/40dB
Duty cycle	20%~80% (±10%)
Displaying	5 digits LED frequency display and 3 digits LED amplitude display synchronously
Sine wave	Distortion<2%
Triangle wave	Linearity>99%
Square wave	Rise edge times/ fall edge times<100nS
Time base	Symmetry frequency: 12MHz,
frequency stability:	±5x10
Signal frequency stability	<0.1%/Minute
Measurement error	0.5%
Dimension	245*215*100mm
Weight	Approx. 2.5kgs
Power	220V/110V±10%, 50Hz/60Hz±5%

PM-E170E Function Generator (0-3/5/10 MHz)

ABOUT FUNCTION GENERATOR:

Multi Signal O/P i.e. Sine, Triangle and Square with Amplitude Control. Dual Display for Frequency as well as Amplitude, Separate control for frequency for fine and coarse adjustments, 8 digit frequency counter 5 digits for frequency and 3 digit for amplitude individually.

TECHNICAL SPECIFICATIONS:

- Frequency Range 10Hz/10Hz/1KHz/10KHz/100KHz/1MHz/5MHz
- Amplitude (2Vp-p~20Vp-p)±20%
- Output signal impedance 50 ohm
- Attenuation 20dB/40dB
- Duty cycle 20%~80% (±10%)
- Displaying 5 digits LED frequency display and 3 digits LED amplitude display synchronously
- Sine wave Distortion<2%
- Triangle wave Linearity>99%
- Square wave Rise edge times/ fall edge times<100nS
- Time base Symmetry frequency: 12MHz,
- frequency stability: ±5x10
- Signal frequency stability <0.1%/Minute
- Measurement error 0.5%
- Dimension 245*215*100mm
- Weight Approx. 2.5kgs
- Power 220V/110V±10%, 50Hz/60Hz±5%

PM-E171 Pulse Generator 0-1MHz

ABOUT PULSE GENERATOR

Frequency & Amplitude Control of Square Pulse Wave. Dual Display for Frequency as well as Amplitude, Separate control for frequency for fine and coarse adjustments. 8 digit frequencies counter 5 digits for frequency and 3 digits for amplitude individually. On DC offset control.

TECHNICAL SPECIFICATIONS:

- Frequency Range 10Hz/10Hz/1KHz/10KHz/100KHz/1MHz
- Amplitude (2Vp-p~20Vp-p)±20%
- Output signal impedance 50 ohm
- Attenuation 20dB/40dB
- Duty cycle 20%~80% (±10%)
- Displaying 5 digits LED frequency display and 3 digits LED amplitude display synchronously
- Sine wave Distortion<2%
- Triangle wave Linearity>99%
- Square wave Rise edge times/ fall edge times<100nS
- Time base Symmetry frequency: 12MHz,
- frequency stability: ±5x10
- Signal frequency stability <0.1%/Minute
- Measurement error 0.5%
- Dimension 245*215*100mm

PM-E572 DDS Function Generator (10/25/60/100 MHz)

MAIN FEATURES:

- Advanced DDS technology, 10MHz frequency output
- 125MSa/s sample rate, and 32 bits frequency resolution
- Vertical Resolution : 14 bits, 8K arb waveform length
- Comprehensive waveform output: 5 basic waveforms, and 26built-in a
- Comprehensive modulation functions: AM, FM, PM, FSK, PWM, Sweep,
- Newly supported SCPI and frequency counter function
- 4 inch high resolution (480 × 320 pixels) TFT LCD

PM-E263 Function Generator Trainer

FEATURES:

A low cost trainer demonstrating all basic concepts of circuit designing and operation of a Function Generator

TECHNICAL SPECIFICATIONS:

Frequency Ranges : Selectable

(a) 1 Hz to 10 Hz
(b) 10 Hz to 100 Hz
(c) 100 Hz to 1 Khz
(d) 1 KHz to 10 Khz
(e) 10 KHz to 100 Khz

Amplitude Control Output

Sine Wave : 6V VPP
Square Wave : 6V VPP
Triangular Wave : 6V VPP
TTL Output : 5V

Sine Wave Generation : By Wave Shaping Circuit

Switched Faults : 4 Nos.
Fuse : 500 mA, slow blow
Power Supply : 220VAC, 50 Hz ±10%

PM-E170 Audio Frequency Function Generator 0-100KHz/200KHz

ABOUT FUNCTION GENERATOR:

- The Instrument has Display for Frequency
- Separate control for frequency for fine and coarse adjustments.
- 4 digit frequency counter for frequency
- Rotary Switches for selections for parameters frequency, amplitude and waves.

TECHNICAL SPECIFICATIONS:

Frequency Range	1Hz/10Hz/10Hz/1KHz/10KHz/100KHz
Amplitude	(2Vp-p~20Vp-p)±20%
Output signal impedance	50 ohm
Attenuation	20dB/40dB
Duty cycle	20%~80% (±10%)
Sine wave	Distortion<2%
Triangle wave	Linearity>99%
Square wave	Rise edge times/ fall edge times<100nS
Frequency stability:	±5x10
Signal frequency stability	<0.1%/Minute
Measurement error	0.5%
Dimension	270*215*100mm
Weight	Approx. 2.5kgs
Power	220V/110V±10%, 50Hz/60Hz±5%

PM-E037 Single Phase AC Phase Control by TRIAC-DIAC

SCOPE OF LEARNING:

- Single Phase AC Phase Control By Triac-Diac

TECHNICAL SPECIFICATIONS:

- Isolated Supply 0-220V AT 2A.

Components mounted on the panel are:

- TRIAC BT136, DIAC DB3, AC Phase Control by RC Firing Circuit, Snubber Circuit.

PM-E061 SCR Single Phase Half Controlled Bridge Converter

SCOPE OF LEARNING:

- SCR Single Phase Half Controlled Bridge Converter Using Firing Techniques With R and RL Load.

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA, Isolated Supply 0-220V/110V/24V AT 1A.
- Voltmeter 2000V AC/DC. Ammeter 2A DC

Components mounted on the panel are:

- SCR TYN604 (2 Nos.), DIODE 1N5408 (2Nos.), Diode BA159, AC Phase Control by Gate Control Firing Circuit, Snubber Circuit.

PM-E066 UJT Firing of SCR Technique

SCOPE OF LEARNING:

- UJT Firing of Scr Technique

TECHNICAL SPECIFICATIONS:

- Isolated AC Power Supply 0-12, 500mA, 250mA

Components mounted on the panel are:

- SCR TYN604 Assembly (2Bit), Resistive Load (12V Lamp), UJT 2N2646, Pulse Transformer:1:1:1, Firing Angle Control through Potentiometer, Diodes, Capacitors and Resistors

PM-E088 Single Phase MOSFET Bridge Inverter using PWM Technique

SCOPE OF LEARNING:

- Single Phase Mosfet Bridge Inverter Using PWM Technique.

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA, Isolated Supply 0-12V AT 2A.

Components mounted on the panel are:

- Mosfet IRF540 (4 Nos.), PWM Pulse Generator Circuit, Frequency Control Through Potentiometer.

PM-E096 SCR Firing Techniques (RC,UJT and Digital Firing)

SCOPE OF LEARNING:

Experiment: Characteristics of SCR and Firing Techniques of SCR

SPECIFICATIONS

- DC Supply IC Regulated 0-5V DC, 250mA.,0-30V DC, 250mA., Rectified DC Source: +30V,250mA, Isolated AC Power Supply: 12-0-12V, 250mA

Components mounted on the panel are:

- SCR TYN604, Resistive Load (Resistor of 5W Using Rotary Switch), Inductive Load (12V DC Motor with Fan, 2 Bit SCR Assembly

Firing Techniques: RC Firing, UJT Firing, 555 IC PWM Firing

PM-E196 Cosine Firing Technique Circuit Trainer

SCOPE OF LEARNING:

- Cosine Firing Technique

TECHNICAL SPECIFICATIONS:

- Isolated AC Power Supply6-0-6, 250Ma/ 12-0-12, 500mA

Components mounted on the panel are:

- SCR TYN604 Assembly (2Bit), Resistive Load (Resistor), Pulse Transformer:1:1:1 (2Nos.), Firing Angle Control through Potentiometer, Diodes, Capacitors, IC's and Resistors

PM-E208 SCR Single and Three Phase Half-Full Controlled Bridge Converter

SCOPE OF LEARNING:

- SCR Single and Three Phase Half-Full Controlled Bridge Converters Using Firing Techniques with R Load.

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA
  Isolated Supply 0-110V or 24V AT 1A.

Components mounted on the panel are:

- SCR TYN604, Diode 1N5408 and BA159, AC Phase Control by Gate Control Firing Circuit R, Y and B Phases, Separate Circuits for Three Phase and Single Phase, Resistive Load (Lamp and Resistor 20W), Inductive Load (Inductor)

PM-E306 Single Phase Half Wave Uncontrolled Rectifier Trainer

SCOPE OF LEARNING:

- Single Phase Half Wave Uncontrolled Rectifier Trainer

TECHNICAL SPECIFICATIONS:

- Isolated Supply 0-220V/110V/24V AT 1A.
- Voltmeter 2000V AC/ DC. Ammeter 2A DC

Components mounted on the panel are:

- POWER DIODE (2Nos.)

PM-E393A Power Electronics Trainer (PET)

SCOPE OF LEARNING:

To study the characteristics of SCR and plot it's V-I Characteristics, Gate control characteristics of SCR and It's graph, characteristics of UJT, characteristics of MOSFET, characteristics of IGBT, DIAC and plot it's V-I Characteristics curve, V-I characteristics of TRIAC, characteristics of PUT, Resistor Triggering circuit, Resistor-Capacitor Triggering Circuit (Half wave), Resistor-Capacitor, Triggering Circuit (Full wave), triggering of SCR using UJT.

PM-E400 Step Down Chopper

SCOPE OF LEARNING:

- Step Down Chopper Using PWM Techniques.

TECHNICAL SPECIFICATIONS:

- Voltmeter 200V DC, Ammeter 20A DC
- Power Supply +15Vat 150mA
- Isolated Supply 0- 26V AT 2A.

Components mounted on the panel are:

- Mosfet IRF540, PWM Pulse Generator Circuit., Frequency Control Through Potentiometer, Load (Rheostat)

PM-E401A Step Up Chopper (IGBT Based)

SCOPE OF LEARNING:

- Step Up Chopper IGBT Based Using PWM Techniques.

TECHNICAL SPECIFICATIONS:

- Voltmeter 200V DC, Ammeter 20A DC
- Power Supply +15Vat 150mA
- Isolated Supply 0- 26V AT 2A.

Components mounted on the panel are:

- IGBT 25N120, PWM Pulse Generator Circuit, Frequency Control Through Potentiometer, Load (Rheostat)

PM-E462 SCR Single Phase Half Controlled Rectifier

SCOPE OF LEARNING:

- SCR Single Phase Half Controlled Rectifier Using Firing Techniques With R and RL Load.

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA, Isolated Supply 0-12V AT 500mA.

Components mounted on the panel are:

- SCR TYN604, AC Phase Control by Gate Control Firing Circuit, Inductive Load (Using Motor With Fan 12V DC, Resistive Load (Variable Resistor 5W Using Rotary)

PM-E475 Single Phase MOSFET Inverter Using PWM Technique

SCOPE OF LEARNING:

- Single Phase Mosfet Inverter using PWM Technique.

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA
- Isolated Supply 0-12V AT 2A.

Components mounted on the panel are:

- Mosfet IRF540, PWM Pulse Generator Circuit, Frequency Control Through Potentiometer

PM-E479 Static and Dynamic Characteristics of IGBT and MOSFET

SCOPE OF LEARNING:

- Study of V-I Characteristics of IGBT, MOSFET, IGBT.

TECHNICAL SPECIFICATIONS:

- Voltmeter 20VDC, Ammeter 200mA DC, Voltmeter 200V DC.
- DC Supply IC Regulated 0-10V DC, 150mA, 0-30V DC, 150mA.

Components mounted on the panel are:

- IGBT 25N120 (2Nos.), MOSFET 1RF540 (2Nos.), Voltage Control through Potentiometer, PWM Pulse Generator Circuit, Frequency Control Through Potentiometer, PWM Control Through Potentiometer, Resistors for Load

PM-E481 Constant Voltage (CVT) Trainer

SCOPE OF LEARNING:

- Study of Constant Voltage Transformer at Different Voltages

TECHNICAL SPECIFICATIONS:

Analog Meter:

- 300V AC

Load:

- 100W Bulb

PM-E485 Single Phase AC Phase Control by Triac

SCOPE OF LEARNING:

- Single Phase AC Phase Control By Triac

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA
- Isolated Supply 0-220V AT 2A.

Components mounted on the panel are:

- Triac BT136, MOC 2031, AC Phase Control by Gate Control Firing Circuit.

PM-E606 DC to DC Converter Trainer (BUCK, BOOST and BUCK-BOOST Converters)

SCOPE OF LEARNING:

- Buck Converter Using PWM Techniques, Boost Converter Using PWM Techniques, Buck-Boost Converter Using PWM Techniques.

TECHNICAL SPECIFICATIONS:

- Voltmeter 200V DC, 20A DC, Power Supply +15Vat 150mA, Isolated Supply 0- 26V AT 2A.

Components mounted on the panel are:

- Mosfet IRF540, PWM Pulse Generator Circuit, Frequency Control Through Potentiometer, Load (Rheostat)

PM-E685 SCR Single Phase Dual Converter Trainer

SCOPE OF LEARNING:

- SCR Single Phase Dual Converter ing Firing Techniques with R and RL Load.

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA, Isolated Supply 0-220V/110V/24V AT 1A.

Digital Meters:

- Voltmeter 2000V AC/ DC, Ammeter 2A DC

Components mounted on the panel are:

- SCR TYN604 (8Nos.), Diode BA159, AC Phase Control by Gate Control Firing Circuit, Snubber Circuit.

PM-E686 Three Phase Dual Converter Trainer

SCOPE OF LEARNING:

- Three Phase Dual Converter Trainer

TECHNICAL SPECIFICATIONS:

Digital Meters: Voltmeter 2000V ACV/ DC, Ammeter 2A DC

- Power Supply +15Vat 150mA
- Isolated Supply 0-110V or 24V AT 1A.

Components mounted on the panel are:

- SCR TYN604 12Nos, Diode BA159, AC Phase Control by Gate Control Firing Circuit R, Y and B Phases, Resistive Load (Lamp and Resistor 20W), Inductive Load 1A Inductor

PM-E672 Single Phase Parallel Inverter Using SCR

SCOPE OF LEARNING:

- Single Phase Parallel Inverter Using Scr

TECHNICAL SPECIFICATIONS:

Power Supplies:

- Power Supply +24V at 4A
- Operated on Mains power 230V, 50Hz +10%

Components are mounted on the panels are:

- SCR TYN604 (2Nos.)
- Astable Circuit for Pulse Control

PM-E272 Single Phase Series Inverter Using SCR

SCOPE OF LEARNING:

- Single Phase Series Inverter Using Scr

TECHNICAL SPECIFICATIONS:

Power Supplies:

- Power Supply +24V at 4A
- Operated on Mains power 230V, 50Hz +10%

Components are mounted on the panels are:

- SCR TYN604 (2Nos.)
- UJT Triggering Circuit for Pulse Control
- Pulse Control Through Potentiometer

PM-E138 Angular Displacement Using Capacitive Pickup Trainer

SCOPE OF LEARNING:

- Study of Angular Displacement Using Capacitive Transducer

TECHNICAL SPECIFICATIONS:

Digital Meters: Voltmeter 200mV DC.

Power Supplies: DC Supply IC Regulated +12V, +5V DC, 150mA.

Components mounted on the panel are:

- Variable Gang Capacitor as Transducer, Variable Resistor, 741 IC, Inbuilt Function Generator, Inbuilt F to V Converter

PM-E140 Thermistor Temperature Transducer Trainer

SCOPE OF LEARNING:

- Study of THERMISTOR as Temperature Measuring Transducer

TECHNICAL SPECIFICATIONS:

Digital Meters: Voltmeter 200mV DC.

Power Supplies: DC Supply IC Regulated +12V, +5V DC, 150mA.

Components mounted on the panel are:

- Thermistor, Variable Resistor, 741 IC, Electrical Kettle as Heating Element, Thermometer

PM-E149A Strain Gauge Transducer Trainer

SCOPE OF LEARNING:

- Study of Strain Measurement using Strain Gauge Transducer

TECHNICAL SPECIFICATIONS:

Power Supplies: DC Dual Power Supply IC Regulated +5V DC, 150mA.

Digital Meters: Voltmeter 200mV (Weights in mV)

Components mounted on the panel are:

- Resistors, Capacitors, IC AD620, Variable Resistor, For Gain and Zero Setting, Bridge Circuit on Board, Differential Amplifier With Feedback, Lead Compensation System, O/P Provided On Test Points for Monitoring & Controlling, Weight Box for Weight Measurement, Strain Sensor Mounted on External Base with Output Carrying out through 9 Pin D Connector

PM-E150 RTD Temperature Transducer Trainer

SCOPE OF LEARNING:

- Study of RTD as Temperature Measuring Transducer

TECHNICAL SPECIFICATIONS:

Digital Meters: Voltmeter 200mV DC.

Power Supplies: DC Supply IC Regulated +12V DC, 150mA.

Components mounted on the panel are:

- RTD, Variable Resistor, 741 IC, Electrical Kettle as Heating Element, Thermometer

PM-E153 Thermocouple Temperature Transducer Trainer

SCOPE OF LEARNING:

- Study of THERMOCOUPLE as Temperature Measuring Transducer

TECHNICAL SPECIFICATIONS:

Digital Meters: Voltmeter 200mV DC.

Power Supplies: DC Supply IC Regulated +12V DC, 150mA.

Components mounted on the panel are:

- Thermocouple, Variable Resistor, 741 IC, Electrical Kettle as Heating Element, Thermometer

PM-E276 Instrumentation Amplifier Using Op-Amp Trainer

SCOPE OF LEARNING:

- Study of Instrumentation Amplifier

TECHNICAL SPECIFICATIONS:

Power Supplies: DC Power Supply IC Regulated 0-5V DC, 150mA. (2Nos.)

Digital Meters: Voltmeter 20V

Components mounted on the panels are:

- Resistors, IC LM741, Variable Resistor For Gain Setting

PM-E303 LDR AS Distance Measurement Transducer Trainer

SCOPE OF LEARNING:

- Study of Linear Displacement Measurement Using Resistive Transducer (LDR)

TECHNICAL SPECIFICATIONS:

Power Supplies:

- DC Dual Power Supply IC Regulated +12V DC, 150mA.
- DC Power Supply IC Regulated +5V DC, 150mA.

Digital Meters: Voltmeter 200mV (Distance in mV)

Components mounted on the panel are:

- Resistors, Capacitors, IC 741, Variable Resistor For Gain and Zero Setting, Differential Amplifier With Feedback, Lead Compensation System, O/P Provided On Test Points for Monitoring & Controlling, LDR Sensor Mounted on External Base with Output Carrying out through 2mm Connector.

Similar

PM-E304 Photo Diode As Measurement Transducer Trainer

PM-E304A Photo Transistor As Measurement Transducer Trainer

PM-E304B Photo Voltaic Cell As Measurement Transducer Trainer

PM-E386 Linear Variable Displacement Transducer (LVDT) Trainer

SCOPE OF LEARNING:

- Study of Linear Variable Displacement Transducer

TECHNICAL SPECIFICATIONS:

Power Supplies: DC Dual Power Supply IC Regulated +12V DC, 150mA.

Digital Meters: Voltmeter 200mV (Distance in mV)

Audio Function Generator:

- 4KHz fixed Sine wave Oscillator having amplitude 0–10V (P–P).

Components mounted on the panel are:

- Resistors, Capacitors, IC 741, Variable Resistor For Gain and Zero Setting, Differential Amplifier With Feedback, Lead Compensation System, O/P Provided On Test Points for Monitoring & Controlling, LVDT Sensor Mounted on External Base with Output Carrying out through 9 Pin D Connector

PM-E418C Sensor Trainer (Instrumentation & Transducer)

The Sensor Trainer Kit is a modularly designed complete training kit with all the necessary sensors, sources, electronic instrumentation, necessary jigs & displays. Experimentation is down by 2mm brass terminations & patch cords The trainer is housed in an elegant & sturdy plastic cabinets and consists of mimicked dedicated circuits / blocks with necessary test points. The various sensors covered are :

Specification :

Thermal / Temperature Sensors with heater	:	RTD
Strain Sensors (For Pressure)	:	Pressure measurement by Strain Gauges Load Cell mounted on cantilever beam with weights
Displacement (Linear / Angular)	:	Linear – LVDT mounted on Base with Centre Zero Micrometer Linear – Displacement measurement by LDR Angular – Speed measurement by Optical Transducer Angular – Displacement measurement by Rotary Potentiometer
Special Purpose Sensor	:	Anemometer (For Speed measurement of AIR)
Sound Sensor	:	Speaker and Microphone as Sound Transducer
Digital Meters **Speed Measurement)**	:	Digital Meters are provided on Board For (Temperature, Distance and
Electrical Kettle	:	Electrical Kettle is provided with Thermometer
Weight Box	:	Weight Box with different Weights will be

PM-E454 Water Level Measurement Using Capacitive Transducer Trainer

SCOPE OF LEARNING:

- Study of Water Level Measurement Using Capacitive Transducer Trainer

TECHNICAL SPECIFICATIONS:

Display: LCD 16x2

Power Supplies: DC Supply IC Regulated +12V, +5V DC, 150mA.

Components mounted on the panel are:

- 89C51 Microcontroller, Relay, Buzzer, Water Jar 2Litre with Capacitive Sensor 3Nos.

PM-E454A Water Level and Flow Measurement using Capacitive Transducer Trainer

SCOPE OF LEARNING:

- Study of Water Level and Flow Measurement Using Capacitive Transducer Trainer

TECHNICAL SPECIFICATIONS:

Display:LCD 16x2

Power Supplies:

- DC Supply IC Regulated +12V, +5V DC, 150mA.
- AC Power Supply 0-230V,2A (For Control)

Components mounted on the panel are:

- 89C51 Microcontroller, Relay, Buzzer, Water Jar 5Litre with Capacitive Sensor 3Nos, Tank for Sinking Water, Rotameter

PM-517 Temperature Transducer and Control System Trainer

SCOPE OF LEARNING:

- Thermocouple, Thermistor, RTD as Temperature Transducer, Transducer in PID Temperature System

TECHNICAL SPECIFICATIONS:

Digital Meters:

- Voltmeter 200mV/2V DC.
- Temperature Meter (in Deg Calcius)
- Ammeter (in Ampere)

Power Supplies:

- DC Supply IC Regulated +12V DC, 150mA.

Components mounted on the panel are:

- Thermocouple, RTD (Pt100), Thermistor NTC, Variable Resistor For Zero Setting and Gain Setting, Variable Resistor For P,I,D Setting, Electrical Kettle as Heating Element, Thermometer, Heating Oven Arrangement for PID System

PM-E565 Strain Gauge as Pressure Transducer Trainer

SCOPE OF LEARNING:

- Study of Pressure Measurement using Pressure Transducer

TECHNICAL SPECIFICATIONS:

Digital Meters: Digital Voltmeter : 0 to 10V

Power Supplies:

- DC Regulated Power Supply +5V, 250mA
- Operated on Mains power 230V, 50Hz +10%

Components mounted on the panel are:

- Strain Gauge Transducer With Mechanical Arrangement
- Pressure Gauge : 0 to 150 psi
- Zero Adjust and Adder With Potentiometer Control

PM-E557 Speed Measurement Using Magnetic Pickup Transducer Trainer

SCOPE OF LEARNING:

- Speed Measurment Using Magnetic Pickup Transducer Trainer

TECHNICAL SPECIFICATIONS:

Digital Meters:

- RPM Indicator: 4 digits Digital frequency Counter calibrated in R.P.M.
- Measurement Range : 10000 RPM Max.

Power Supplies:

- DC Supply IC Regulated 0-12V, +5V DC,3.
- Operated on Mains power 230V, 50Hz +10%

Components mounted on the panels are:

- Transducer Type : Magnetic pickup.
- Motor : 12V DC motor with 3000 RMP speed
- Arrangement : Motor mounted with wheel and magnetic pickup
- Motor Speed controller: provided to change the speed of motor.

Similar

PM-E557A Speed Measurment Using Optical Transducer Trainer

PM-E557B Speed Measurment Using Hall Effect Transducer Trainer

PM-E557C Speed Measurement Using Optical and Magnetic Pickup Transducer Trainer

PM-E565A Pressure Transducer Trainer

SCOPE OF LEARNING:

- Study of Pressure Measurement using Pressure Cell

TECHNICAL SPECIFICATIONS:

Digital Meters: Digital Voltmeter : 0 to 10V

Power Supplies: DC Supply : Built in IC regulated power supplies

- Operated on Mains power 230V, 50Hz +10%

Components mounted on the panel are:

- Range :- 0 -10 KG/300mm,Pressure Cell
- Pressure generator with dial display, Pressure Valve -01 no. (manually)

PM-E628 Optical Transducer Trainer

SCOPE OF LEARNING:

- Characteristics of Filament Lamp, Photovoltaic Cell, Photoconductive Cell, Phototransistor, Characteristics of PIN Photodiode, Light Controlled Switching System

TECHNICAL SPECIFICATIONS:

Meters: Voltmeter DC.

Signal Conditioning Circuitry:

- Power Amplifier, Current Amplifier, DC Amplifier, Comparator, Electronic Switch, Buffer

Power Supplies: DC Supply IC Regulated +12V, +5V DC, 150mA.

Input Circuits: Rotary & Slide Potentiometers Output Circuits :

1. Relay, 2. Buffer

Components mounted on the panel are:

- Photoconductive Cell, Photovoltaic Cell, Phototransistor, PIN Photodiode.

PM-E061A Speed Control Using Single Phase Half Bridge Converter Trainer

SCOPE OF LEARNING:

- Speed Control Of Separately Excited Dc Motor Using Single Phase Half Wave Bridge Controlled Bridge Converter Trainer

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA
- Isolated Supply 0-220V AT 5A.

Digital Meters: Voltmeter 2000V AC/DC, Ammeter 2A DC
Components mounted on the panel are:

- SCR TYN604 (2 Nos.), DIODE 1N5408 (2Nos.), Diode Ba159, AC Phase Control by Gate Control Firing Circuit, Snubber Circuit.

PM-E062A Speed Control of Separately Excited DC Motor Using Single Phase Half/Full Bridge Controlled Converter Trainer

SCOPE OF LEARNING:

- Speed Control Of Separately Excited Dc Motor Using Single Phase Half-full Wave Bridge Controlled Bridge Coverter Trainer

TECHNICAL SPECIFICATIONS:

- Voltmeter 2000V AC/DC, Ammeter 2A DC
- Power Supply +15Vat 150mA
- Isolated Supply 0-220V AT 5A.

Components mounted on the panel are:

- SCR TYN604, Diode 1N5408 and BA159, AC Phase Control by Gate Control Firing Circuit, DC Shunt Motor 1/2Hp as Inductive Load, Resistive Load (Lamp and Resistor 20W)

PM-E180 Speed Control of Single Phase Induction Motor Using MOSFET based PWM Bridge Inverter Trainer

SCOPE OF LEARNING:

- Speed Control Of Single Phase Induction Motor Using Mosfet Based PWM Bridge Inverter Trainer

TECHNICAL SPECIFICATIONS:

Power Supplies:

- Power Supply +15Vat 150mA
- Isolated Supply 0-12V AT 2A.
- Operated on Mains power 230V, 50Hz +10%

Components mounted on the panel are:

- Mosfet IRF540 (4 Nos.)
- PWM Pulse Generator Circuit.
- Frequency Control Through Potentiometer

PM-E200B Speed Control of DC Series Motor Using Three Phase Half and Full Controlled Bridge Converter Trainer

SCOPE OF LEARNING:

- Speed Control of Dc Series Motor Using Three Phase Half and Full Controlled Bridge Converter Trainer

TECHNICAL SPECIFICATIONS:

- Voltmeter 2000V AC/DC, Ammeter 2A DC
  Power Supply +15Vat 150mA, Isolated Supply 0-110V or 24V AT 1A.

Components mounted on the panel are:

- SCR TYN604, Diode 1N5408 and BA159, AC Phase Control by Gate Control Firing Circuit R, Y and B Phases, Resistive Load (Lamp and Resistor 20W), DC Series Motor 1/2Hp as Inductive Load

PM-E209 PWM Speed Control of DC Motor (Chopper Motor Controller Trainer)

SCOPE OF LEARNING:

- Speed Control of PMDC Motor Using PWM Techniques

TECHNICAL SPECIFICATIONS:

- Voltmeter 200V DC, RPM Meter 1000 RPM, Power Supply +15Vat 150mA ,Isolated Supply 0- 26V AT 4A.

Components mounted on the panel are:

- Mosfet IRF540, DC Rectifier 3510, PWM Pulse Generator Circuit., Frequency Control Through Potentiometer, PWM Control Through Potentiometer, PMDC Motor as Load With Loading Arrangement

PM-E342 Speed Control of Three Phase Induction Motor by SCR IGBT Based Three Phase PWM Inverter

SCOPE OF LEARNING:

- Speed Control of Three Phase Induction Motor by SCR IGBT Based Three Phase PWM Inverter

TECHNICAL SPECIFICATIONS:

- Digital Voltmeter 2000V AC, Digital Ammeter 20A AC, Digital Frequency Meter, RPM Meter 1000 RPM

Components mounted on the panel are:

- Three Phase SCR IGBT Based Pwm Inverter (Drive), PWM Control Through Potentiometer, 1 HP, 415V,1500RPM Induction Motor as Load

PM-E463B Speed Control of PMDC Motor Using SCR Full Wave Controlled Rectifier Trainer

SCOPE OF LEARNING:

- Speed Control of PMDC Motor Using SCR Full Wave Controlled Rectifier Trainer

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA
- Isolated Supply 0-12V AT 500mA.

Components mounted on the panel are:

- SCR TYN604, AC Phase Control by Gate Control Firing Circuit, Inductive Load (Using Motor With Fan 12V DC), Resistive Load (Variable Resistor 5W Using Rotary Switch

PM-E466A Universal Motor Controller using Antiparallel Thyristor

SCOPE OF LEARNING:

- Speed Control of Universal Motor Using Antiparallel SCR and AC Phase Control Method.

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA
- Isolated Supply 0-220V AT 2A.

Digital Meters:

- Voltmeter 2000V AC, Ammeter 2A AC

Components mounted on the panel are:

- SCR TYN604, AC Phase Control by Gate Control Firing Circuit, Snubber Circuit.

PM-E466B FHP Induction Motor Controller using Antiparallel Thyristor

SCOPE OF LEARNING:

- Speed Control of FHP Induction Motor Using Antiparallel SCR and AC Phase Control Method.

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA, Isolated Supply 0-220V AT 2A, Voltmeter 2000V AC, Ammeter 2A AC.

Components mounted on the panel are:

- SCR TYN604, AC Phase Control by Gate Control Firing Circuit, Snubber Circuit.

PM-E482B Speed Control of Synchronous Three Phase AC Phase Control using Antiparallel Thyristor

SCOPE OF LEARNING:

- 3Phase Synchronous Motor by Three Phase AC Control Using Anti parallel SCR and AC Phase Control Method.

TECHNICAL SPECIFICATIONS:

- Voltmeter 2000V AC, Ammeter 5A AC (2Nos.),Power Supply +15Vat 150mA, Isolated Supply 0-415V AT 1A,DC Power Supply 0-230V,2A DC (For Field Separate Unit)

Components mounted on the panel are:

- SCR TYN604,AC Phase Control by Gate Control Firing Circuit (For 3Phase), Snubber Circuit,3Phase Synchronous Motor As Load (Inductive Load), Bulb As Load, Resistor as Load.

PM-E485A Single Phase Induction Motor Control by Triac

SCOPE OF LEARNING:

- **Single Phase Induction Motor Control by Triac**

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA
- Isolated Supply 0-220V AT 2A.
- Voltmeter 2000V AC, Ammeter 2A AC

Components mounted on the panel are:

- TRIAC BT136,AC Phase Control by Gate Control Firing Circuit, Snu

PM-E534 Speed Control of Single Phase Induction Motor using MOSFET Based PWM Half Bridge Inverter Trainer

SCOPE OF LEARNING:

- Single Phase Mosfet Inverter Using PWM Technique.

TECHNICAL SPECIFICATIONS:

- Power Supply +15Vat 150mA,Isolated Supply 0-12V AT 2A., Step Up Transformer 12V:230VAC
- Voltmeter AC, Ammeter AC, RPM Meter

Components mounted on the panel are:

- Mosfet IRF540,PWM Pulse Generator Circuit.
- Frequency Control Through Potentiometer

PM-E686A Speed Control of PMDC Motor Using Three Phase Dual Converter Trainer

SCOPE OF LEARNING:

- Three Phase Dual Converter Trainer

TECHNICAL SPECIFICATIONS:

- Voltmeter 2000V AC/ DC.Ammeter 2A DC, Power Supply +15Vat 150mA, Isolated Supply 0-110V or 24V AT 1A.

Components mounted on the panel are:

- SCR TYN604 12Nos, Diode BA159, AC Phase Control by Gate Control Firing Circuit R, Y and B Phases, Resistive Load (Lamp and Resistor 20W, Inductive Load as PMDC Motor 4A

PM-E615B Speed Control of FHP Synchronous Motor Motor Using Three Phase Cyclo-Converter Trainer

SCOPE OF LEARNING:

- 3Phase Synchronous Motor by Three Phase Cyclo Converter Method.

TECHNICAL SPECIFICATIONS:

- Digital Meters:
- Voltmeter 2000V AC
- Ammeter 5A AC (2Nos.)

Power Supplies:

- Power Supply +15Vat 150mA
- Isolated Supply 0-415V AT 1A.
- DC Power Supply 0-230V,2A DC (For Field Separate Unit)
- Operated on Mains power 230V, 50Hz +10%

PM-E685A Speed Control of Separately Excited DC Motor Using Single Phase Dual Converter Trainer

SCOPE OF LEARNING:

- SPEED CONTROL OF SEPARATELY EXCITED DC MOTOR USING SINGLE PHASE DUAL CONVERTER TRAINER

TECHNICAL SPECIFICATIONS:

Power Supplies:

- Power Supply +15Vat 150mA
- Isolated Supply 0-220V/110V/24V AT 1A.
- Operated on Mains power 230V, 50Hz +10%

PM-E490 PLC Trainer Simens Logo

SCOPE OF LEARNING:

- Study of I/O Inputs and Outputs , Logic Gates , Counters, On/Off Delay Timer, Study of Applications (Optional)

TECHNICAL SPECIFICATIONS:

- C Power Supply (SMPS Based) +24V DC, 2A.
- DC Power Supply IC Regulated 0-10V, 250mA. (For Analog Input)

PLC USED:

- SIEMENS PLC (LOGO) WITHOUT DISPLAY.
- LOGO 12/24V RCO
- LOGIC MODULE PUI/O
- 12/24V DC/RELAY
- 8DI (4AI) 4DO
- WITHOUT DISPLAY MEMORY BLOCK 200,
- EXPANDABLE WITH EXTRA MODULE
- SOFTWARE: FREE WARE

PM-E490A PLC Trainer Siemens (S7-200)

SCOPE OF LEARNING:

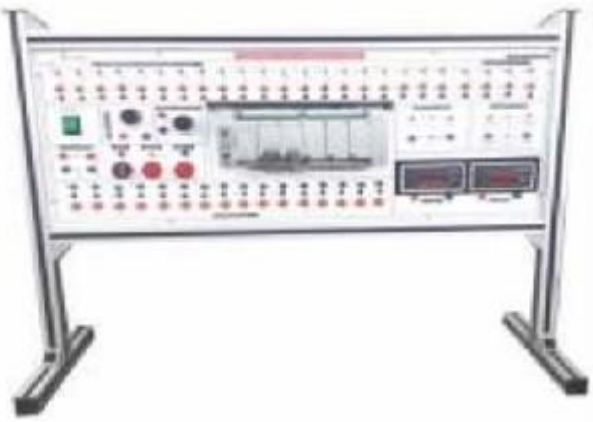
- Study of I/O Inputs and Outputs, Logic Gates, Counters, On/Off Delay Timer, Study of Applications (Optional)

TECHNICAL SPECIFICATIONS:

- C Power Supply (SMPS Based) +24V DC, 2A.
- DC Power Supply IC Regulated 0-10V, 250mA. (For Analog Input)

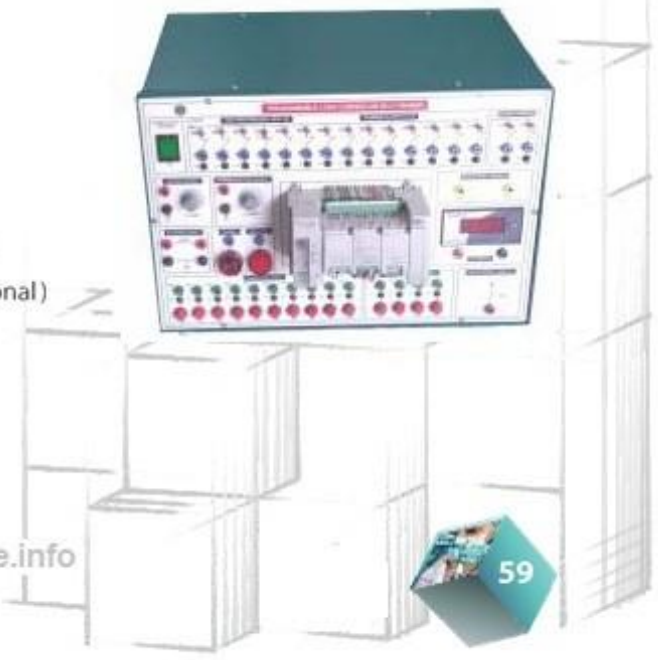
PLC USED:

- SIEMENS PLC 1224
- NO. OF DIGITAL INPUTS 14 OUTPUT 10
- 14 Nos. of Input switch , 10 output indicator
- 12/24V DC/RELAY
  EXPANDABLE WITH EXTRA MODULE
  SOFTWARE: FREE WARE



PM-E492 PLC Trainer (Allen Bradley)

Input/output rating: 24 VDC/220VAC
Number of Discrete Inputs/Outputs: 14 In /10 out
High speed frequency inputs I0 to I7
Output Control Voltage: Relay Out
Relay Maximum Resistive Load Rating: 2 Amps at 24 VDC and 220 VAC
Programming Software: Connected component workbench V9.0 (optional)



PM-E492A.1 PLC Trainer (Allen Bradley 24DI/16DO)

SCOPE OF LEARNING:

- Study of I/O Inputs and Outputs.
- Study of Logic Gates.
- Study of Counters.
- Study of On/Off Delay Timer.
- Study of Applications (Optional)

TECHNICAL SPECIFICATIONS:

- DC Power Supply (SMPS Based) +24V DC, 5A.
- DC Power Supply IC Regulated 0-10V, 250mA. (For Analog Input)
- Current Source 0-20mA, 250mA. (For Analog Input)

SALIENT FEATURES:

- Front panel built with high class insulated Printed Circuit Board sheet with well printed circuits and symbols.

PLC USED:

- ALLAN BRADLY PLC (2080-LC50-24QBB)
- Number of Discrete Inputs/Outputs: 24 In /16 out and 4AI/4AO
- SOFTWARE: Connected component workbench V9.0 (Trial Version)

OPTIONAL(these are not part of trainer set , order separately at extra cost) :

- License software for FBD and ladder programming component connected workbench
- HMI Display interface
- SCADA Software

Interfacing modules traffic light control, water level control, lift control, DOL starter, star delta starter, stepper motor, display interface

PM-E493 PLC Trainer (Allen Bradley)

SCOPE OF LEARNING:

- Study of I/O Inputs and Outputs.
- Study of Logic Gates.
- Study of Counters.
- Study of On/Off Delay Timer.
- Study of Applications (Optional)

TECHNICAL SPECIFICATIONS:

- DC Power Supply (SMPS Based) +24V DC, 5A.
- DC Power Supply IC Regulated 0-10V, 250mA. (For Analog Input)

PLC USED:

- ALLAN BRADLY PLC (2080-LC50-24QBB) WITHOUT DISPLAY.
- Number of Discrete Inputs/Outputs: 14 In /10 out
- Control Voltage: Transistor out
- EXPANDABLE WITH EXTRA MODULE
- SOFTWARE: Connected component workbench V9.0(optional)

PM-E279C Single Phase Capacitor Start And Capacitor Run Induction Motor (Speed Control)

SCOPE OF LEARNING:

- Speed Control Capacitor Start and Capacitor Run AC Ind. Motor

TECHNICAL SPECIFICATIONS:

Power Supplies AC Power Supply 0-230V AT 4A

Digital/Analog Meters:

- DOL Starter
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- Capacitor Start and Capacitor Run AC Induction Motor 1HP, 230V, AC & 1440 RPM.

PM-E280C Single Phase Capacitor Start Induction Motor (Speed Control) same as above only Motor Differ

PM-E279D Single Phase Capacitor Start and Capacitor Run Induction Motor (Load Test)

SCOPE OF LEARNING:

- Speed Control Capacitor Start and Capacitor Run AC Ind. Motor
- Load Test on Capacitor Start and Capacitor Run AC Ind. Motor

TECHNICAL SPECIFICATIONS:

Power Supplies: AC Power Supply 0-230V AT 4A (Internal)

Digital/Analog Meters/Wattmeter

- DOL Starter
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Metal cabinet.
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- Capacitor Start and Capacitor Run AC Induction Motor 1HP, 230V, AC & 1440 RPM.
- Motor Mounted on Belt Pulley Arrangement With Spring Balance

PM-E294D Three Phase AC Pole Changing (Dhalandar) Induction Motor (Load Test)

SCOPE OF LEARNING:

- Load Test AC Pole Changing (Dhalandar) Ind. Motor

TECHNICAL SPECIFICATIONS:

- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters/wattmeters

- Pole Changing Switch
- DOL Starter
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Metal cabinet.
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- AC Pole Changing (Dhalandar) Motor 1HP, 230V, AC & 1440 RPM.
- Motor Mounted on Belt Pulley Arrangement With Spring Balance

PM-E297D Three Phase AC Slip Ring Induction Motor (Load Test)

SCOPE OF LEARNING:

- Speed Control AC Slip Ring Ind. Motor

TECHNICAL SPECIFICATIONS:

- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters: Voltmeter/Ammeter/Wattmeter

- Rotor Resistance Starter
- DOL Starter
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- AC Slip Ring Motor 1HP, 230V, AC & 1440 RPM.
- Motor Mounted on Belt Pulley Arrangement With Spring Balance

PM-E301C Single Phase AC Split Pole Induction Motor (Speed Control)

SCOPE OF LEARNING:

- Speed Control AC Split Pole Ind. Motor

TECHNICAL SPECIFICATIONS:

- AC Power Supply 0-230V AT 4A (Internal)

Digital/Analog Meters:

- RPM Meter With Proximity Sensor

DOL Starter

- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- AC Split Pole Motor 1HP, 230V, AC & 1440 RPM.

PM-E305C Single Phase AC Repulsion Induction Motor (Speed Control)

SCOPE OF LEARNING:

- Speed Control AC Repulsion Ind. Motor

TECHNICAL SPECIFICATIONS:

Power Supplies:

- AC Power Supply 0-230V AT 4A (Internal)

Digital/Analog Meters:

- RPM Meter With Proximity Sensor
- DOL Starter
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- AC Repulsion Motor 1HP,Operating Voltage:230V,Type: AC
- RPM: 1440 RPM, Wattage: 0.75KW,Terminations: 2 BTI 15 Terminals
- Shaft: Single ,Frame:132

PM-E342B Speed Control of Three Phase Induction Motor by PWM Based Frequency Drive Method

SCOPE OF LEARNING:

- Speed Control of 3Phase Induction Motor Using 1Phase Frequency Drive

TECHNICAL SPECIFICATIONS:

- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:

- Single to Three Phase AC Drive

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- Power Indication through 25mm Color Indicators.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- AC Induction Motor 1HP, 230V, AC & 1440 RPM.

PM-E378C Three Phase AC Squirrel Cage Induction Motor (Speed Control)

SCOPE OF LEARNING:

- Speed Control AC Squirrel Cage Ind. Motor

TECHNICAL SPECIFICATIONS:

- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters:

- RPM Meter With Proximity Sensor
- Star Delta Starter

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- AC Squirrel Cage Ind. Motor 1HP, 230V, AC & 1440 RPM.

PM-E378D 3 Phase Squirrel Cage Induction Motor (Load Test) in Delta (FWD and Reverse)

SCOPE OF LEARNING:

- Load Test AC 3Phase Ind. Motor

TECHNICAL SPECIFICATIONS:

- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters/Wattmeters

- Forward Reverse Pole Changer Switch
- DOL Starter
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- 3Phase AC Induction Motor 1HP, 230V, AC & 1440 RPM.

PM-E422D Three Phase AC Synchronous Machine Trainer (Load Test)

SCOPE OF LEARNING:

- Speed Control AC Slip Ring Ind. Motor/V curves /inverted V

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-415V AT 4A (External)
- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters/wattmeters

- RPM Meter With Proximity Sensor
- DOL Starter
- Emergency Stop Switch.

SALIENT EATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.
- Size of the trainer set 30"x24"

MOTOR SPECIFICATIONS:

- AC Slip Ring Motor 1HP, 230V, AC & 1440 RPM.

PM -E453D DC Series Motor Trainer (Load Test)

SCOPE OF LEARNING:

- Speed Torque Characteristics of DC SERIES Motor

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230VDC/4A (Internal)
- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:

Digital Tachometer

- DC Point Starter
- Rheostat (Field Control) As Accessories.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- DC SERIES Motor 1 HP, 230V, AC & 1440 RPM.
- With Belt Pulley Arrangement

PM -E405D DC Multiwinding Machine Trainer (Load Test)

SCOPE OF LEARNING:

- Speed Control of DC Shunt Motor
- Speed Control of DC Series Motor
- Speed Control of DC Compound Motor

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230V AT 4A (External)
- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:

- RPM Meter With Proximity Sensor
- DC Point Starter

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- DC Multiwinding Motor 1HP, 230V, AC & 1440 RPM.

PM-E452D DC Compound Motor Trainer (Load Test)

SCOPE OF LEARNING:

- Speed Torque Characteristics of DC Compound Motor

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230,4A VDC
- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:

- Digital Tachometer
- Rheostat (Field and Armature Control) As Accessories.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- DC Compound Motor 1HP, 230V, AC & 1440 RPM.
  With Belt Pulley Arrangement

PM-E376B DC Shunt Motor Coupled with DC Series Generator Trainer

SCOPE OF LEARNING:

- Study of DC Shunt Motor to DC Series Generator

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230V AT 2A (Field)
- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:q

- DC Starter (3 Point)
- Lamp Load (Switched Control)
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- DC Motor 2HP, 230V and DC Series Generator (1KW).

PM-E446B DC Shunt Motor Coupled with DC Compound Generator Trainer

SCOPE OF LEARNING:

- Study of DC Shunt Motor to DC Compound Generator

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230V AT 2A (Field)
- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:

- DC Starter (3 Point)
- Lamp Load (Switched Control)

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- DC Motor 2HP, 230V and DC Compound Generator (1KW).

PM-E550A DC Shunt Motor Coupled with DC Shunt Generator Trainer

SCOPE OF LEARNING:

- Study of DC Shunt Motor to DC Shunt Generator

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230V AT 2A (Field)
- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:

DC Starter (3 Point)

- Lamp Load (Switched Control)

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- DC Motor 2HP, 230V and DC Shunt Generator (1KW).

PM-E564B 3Phase Squirrel Cage Induction Motor Coupled with DC Series Generator Trainer

SCOPE OF LEARNING:

- Study of 3Phase SQ Induction Motor Coupled With DC Series Generator

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230V AT 2A (Field)
- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters:

- Star Delta Starter
- Lamp Load (Switched Control)
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- AC SQIM Motor 2HP, 230V and DC Series Generator (1KW).

PM-E566B DC Series Motor Coupled with AC Synchronous Alternator

SCOPE OF LEARNING:

- Study of DC Series Motor to AC Alternator

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230V AT 2A (Field)
- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters:

- DC Starter (2 Point)
- Lamp Load (Switched Control)
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- 3 Phase Power Indication With 25mm Colored Indicators
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- DC Motor 2HP, 230V and AC Alternator 415V (1KVA).

PM-E705B DC Shunt Motor Coupled with Three Phase Slip Ring Generator Trainer

SCOPE OF LEARNING:

- Study of DC Shunt Motor to AC Slip Ring Generator

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230V AT 2A (Field)
- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters:

- DC Starter (3 Point)
- Rotor Resistance Starter
- Lamp Load (Switched Control)
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- DC Motor 2HP, 230V and AC Slip Ring Generator 415V (1KVA).

SCOPE OF SUPPLY:

- DC Motor Coupled to AC Slip Ring Generator

PM-E608B 3Phase Slip-Ring Induction Motor Coupled with DC Shunt Generator Trainer

SCOPE OF LEARNING:

- Study of 3Phase Slip-Ring Induction Motor Coupled With DC Shunt Generator

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230V AT 2A (Field)
- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters:

- DOL Starter (3Phase)
- Rotor Resistance Starter
- Lamp Load (Switched Control)
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- AC S-R IM Motor 2HP, 230V and DC Shunt Generator (1KW).

PM-E705B DC Shunt Motor Coupled with Three Phase Slip Ring Generator Trainer

SCOPE OF LEARNING:

- Study of DC Shunt Motor to AC Slip Ring Generator

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230V AT 2A (Field)
- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters:

- DC Starter (3 Point)
- Rotor Resistance Starter
- Lamp Load (Switched Control)
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- DC Motor 2HP, 230V and AC Slip Ring Generator 415V (1KVA).

SCOPE OF SUPPLY:

- DC Motor Coupled to AC Slip Ring Generator

PM-E608B 3Phase Slip-Ring Induction Motor Coupled with DC Shunt Generator Trainer

SCOPE OF LEARNING:

- Study of 3Phase Slip-Ring Induction Motor Coupled With DC Shunt Generator

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230V AT 2A (Field)
- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters:

- DOL Starter (3Phase)
- Rotor Resistance Starter
- Lamp Load (Switched Control)
- Emergency Stop Switch.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- AC S-R IM Motor 2HP, 230V and DC Shunt Generator (1KW).

PM-E619A AC-DC MOSFET Based Electrical Drive Trainer Rack (Speed Control)

SCOPE OF LEARNING:

- Speed Control of 3Phase Induction Motor Using VSI FED Inverter
- Speed Control of DC Shunt Motor Using DC Drive (Mosfet Based)

TECHNICAL SPECIFICATIONS:

- AC Power Supply 230VAC
- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:

- Single Phase to Three Phase AC Drive
- Three Phase DC Drive

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- AC Induction Motor 1HP, 415V, AC & 1440 RPM.

PM-E538A Electrical Machine Trainer (ITI)

SCOPE OF LEARNING:

- DC Shunt Motor
- Three Phase Pole Changing Induction Motor
- Single Phase Induction Motor

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230V AT 2A (Field)
- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters:

- ol Starter (Single Phase & 3 phase)
- Dol Starter (Three Phase)

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well pri
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- The trainer is housed in Metal cabinet.
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS: (Coupled Mode)

- DC Shunt Motor
- Three Phase Pole Changing Induction Motor
- Single Phase Induction Motor

PM-E538B Advanced Electrical Machine Trainer

SCOPE OF LEARNING:

- To draw BH curve for two different type of sample iron core and compare the result.
- To perform turn ratio test, OC and SC test on two winding single phase transformer. Determine equivalent circuit, regulation, harmonic and efficiency at full load.
- Open circuit and load characteristics of DC shunt generator. Maximum voltage built up. Critical resistance and speed.
- Speed and load test on DC shunt motor. By armature and field control method.
- Three phase induction motor test to draw torque-speed characteristics and observe the effect of rotor resistance on that. Block rotor test
- To study No-load characteristics of a 3 phase synchronous generator.
- To study load characteristics of synchronous generator with

  (a) Resistive load

  (b) Inductive load

  (c) Capacitive load.
- To study the effect of excitation on performance of a synchronous motor and to plot V- curve.
- To study the effect of a capacitor on the starting and running of a single-phase induction motor.
- To study the operating characteristics of universal motors

TECHNICAL SPECIFICATIONS:

- Power Supply Module (Three Phase Input)
- Digital Power Analysis Meter Module
- AC Drive Module 1 Phase(10-220VAC)
- DC Drive Module (Thyristorized 0-230VDC)
- AC Drive Module 3 Phase(10-440VAC)
- Variable DC Voltage Module (10-250VDC)
- Variable Voltage Module Single Phase Output
- Resistive Load Module
- Rheostat 300ohm / 2Amps(Separately)
- Inductive Load Unit
- Capacitive Load Unit
- Three Point DC Starter Module
- DOL Starter Module
- Slip Ring Starter Module
- Single Phase Transformer Module (500VA)
- Tachometer

Power Supplies:

- DC Power Supply 0-230V AT 2A (Field)
- AC-DC Power Supply (0-230V,5A) External
- Operated on Mains power 415V, 50Hz +10%

Digital/Analog Meters:

- Digital AC Voltmeter Module (0-300V AC)
- Digital DC Voltmeter Module (0-300VDC)
- Digital AC Ammeter Module (0-10A AC)
- Digital DC Ammeter Module (0-10A DC)
- Digital AC Wattmeter Module
- Power Factor Meter Module

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- Instruction manual.
- Patch Cords 4mm (Heavy Duty)
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Metal cabinet.
- Protection with Emergency Stop.
- Short Circuit protection with the MCB.
- Size of the trainer set 66"x24"

MOTOR TECHNICAL SPECIFICATIONS:

DC Shunt Motor Capacity : 2HP

- Cage : Steel Body
- RPM : 1500 Approx
- Shaft : Double
- Current: 6 Amps Approx.
- Winding : Armature (A1, A2) , Field (F1, F2)
- Power Requirement: 220V DC

DC Shunt Generator

- Capacity : 0.5KW
- Cage : Steel Body
- RPM: 1500 Approx.
- Shaft : Single
- Current: 2 Amps Approx.
- Output Terminal : Armature (A1, A2) , Field (F1, F2)
- Output Voltage: 180 - 200V DC

Induction Motor (1 Phase)

- Capacity : 1HP
- Cage : Steel Body

- RPM: 1500 Approx.
- Shaft : Single
- Current: 4 Amps Approx.
- Winding : Stator winding,
- Input Terminal : 3
- Mounting : : Foot Mounted arrangement
- Power requirement : 200-220V AC , 50Hz, 1 Phase

Induction Motor (3 Phase)

- Capacity : 1HP
- Cage : Steel Body
- RPM: 1500 Approx.
- Shaft : Single
- Current: 4 Amps Approx.
- Winding : Stator winding,
- Input Terminal : 3
- Mounting : : Foot Mounted arrangement
- Power requirement : 415-440V AC , 50Hz, 3 Phase

AC Synchronous Motor Convertable AC Alternator

- Capacity : 500VA / 1HP
- Cage : Steel Body
- RPM: 1500 Approx.
- Shaft : Double
- Current: 2 Amps Approx.
- Input / Output : R, Y, B and neutral with F1 and F2 Terminal (field Terminal)
- Input Voltage : 415~440V AC, 50 Hz,
- Three Phase Output Voltage : 415~440V AC, 50 Hz, Three Phase

AC Slip-Ring Induction Motor

- Capacity : 1HP
- Cage : Steel Body
- RPM : 1500 Approx.
- Shaft : Single,
- Current : 2 Amp Approx.
- Input Terminal : R1, R2, R3 and S1, S2, S3
- Power requirement : 415~440V AC , 50Hz, 3 Phase

Universal Motor (1 Phase)

- Capacity : 1HP
- Cage : Steel Body
- RPM: 3000 Approx.
- Shaft : Single
- Current: 4 Amps Approx.

- Winding : Stator winding,
- Input Terminal : 2
- Mounting : Foot Mounted arrangement
- Power requirement : 200-220V AC/DC , 50Hz, 1 Phase

SCOPE OF SUPPLY:

1. MACHINE TRAINER CONTROL PANEL
2. AC-DC POWER SUPPLY (FOR EXTERNAL AC-DC OPERATION)
3. 3 PHASE AUTO TRANSFORMER (VOLTAGE CONTROL)
4. RESISTIVE LOAD 3KW
5. INDUCTIVE LOAD 3KW
6. CAPACITIVE LOAD 3KW
7. AC-DC MACHINES

- DC Shunt Motor Coupled With DC Shunt Generator
- DC Shunt Motor Coupled With AC Synchronous Alternator
- 3Phase Induction Motor With Loading Arrangement
- 3Phase Slip Ring Induction Motor With Loading Arrangement
- 1Phase Induction Motor With Loading Arrangement
- 1Phase Universal Motor With Loading Arrangementcia with mimic diagrams of components with all terminals brought outside for easy and shock free connections

PM-E544A Domestic House Wiring Control Trainer

SCOPE OF LEARNING:

- Study of Domestic House Wiring

TECHNICAL SPECIFICATIONS:

Power Supplies:

- Operated on Mains power 230V, 50Hz +10%
- Single Phase Energy Meter
- Single Phase Switch
- Cartridge Fuses (2Nos.)
- Stair Case Switch (2Way Switch)
- Distribution Line Through Single Phase Isolator
- Power Switch and Socket Pair
- Emergency Stop

2 Nos House Wiring Control Box: Each Includes-

- Electronics Blast 1Nos.
- 5Pin Socket 1Nos.

- Switches 3Nos
- Fan Regulator 1Nos.
- Ceiling Rose 1Nos.
- Indicator 1Nos.
- Lamp Holder 1Nos.

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- Short Circuit protection with the MCB.

PM-E546A Electrical Installation Trainer

SCOPE OF LEARNING:

- Allowing the realization of Practical Work in Electrical Engineering: Wiring, construction and protection of circuits, controls

TECHNICAL SPECIFICATIONS:

- Operated on Mains power 230V, 50Hz +10%
- Single Phase Energy Meter
- Circuit Breaker 30mA, 10A (2Nos.) and 16A
- Inter Twilight Circuit Using LDR
- Digital Timer
- Remote Control Switch
- Digital Clock
- Port lights With Lamp (3Nos.)
- Ignition Switches (2Nos.)
- Push Button
- Two Way Switches (2Nos.)
- Shutter Control (2Nos.)
- Terminal Block (2Nos.)
- Modular Contactor (2Nos.)
- Convector 500W
- Simulation Module of Shutter Control (2Nos.)
- Light Dimmer
- Presence Detector
- Emergency Stop

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.

PM-E553A Industrial Installation Trainer

SCOPE OF LEARNING:

- Electrical Engineering: Wiring, construction and protection of circuits, controls

TECHNICAL SPECIFICATIONS:

- 0-230V, 2A AC/DC Power Supply
- Operated on Mains power 415V, 50Hz +10%
- Single Phase Energy Meter
- Three and Single Phase Isolator
- One Way Switch Control Circuit
- Two Way Switch Control Circuit
- Fluorescent Tube and CFL Control Circuit
- Three Phase Over and Under Voltage Relay
- Three Phase Frequency Relay
- Single Phase Over Load Relay
- Single Phase Over and Under Voltage Relay
- Single Phase Contactor
- Three Phase Contactor
- 24V Auxiliary Relay
- Digital Meters (Voltmeter and Ammeter)
- Potential Transformer
- Current Transformer
- Three Phase Lamp Load

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Protection with Emergency Stop.
- Three Phase Indication Through 24mm Colored Indicators.
- Short Circuit protection with the MCB.

PM-E284A Power and Power Factor Measurement by Two Wattmeter Method

SCOPE OF LEARNING:

- Study of 3 Phase Energy Meter

TECHNICAL SPECIFICATIONS:

- AC Power Supply 0-415V AT 4A
- Operated on Mains power 415V, 50Hz +10%

Digital Meters:

- 3 Phase Capacitive Load (Inbuilt)
- 3Phase Resistive Load (External)
- 3Phase Inductive Load (External)
- Emergency Stop

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- Three Phase Indication through 25mm Indicators
- High Voltage Test Points are Provided with 4mm Safety Sockets
- The trainer is housed in Rack Type Channel Extruded Panel
- Short Circuit protection with the MCB.

PM-E289A Transformer Lab Trainer (Single and Three Phase)

SCOPE OF LEARNING:

- Study of 3 Phase Transformer
- Study of Single Phase Transformer

TECHNICAL SPECIFICATIONS:

- AC Power Supply 0-415V AT 4A
- AC Power Supply 0-230VAT4A
- Operated on Mains power 415V, 50Hz ±10%

Digital Meters:

- 3 Phase Lamp Load (Start Connected) Switched Control
- 3 Phase Transformer Unit (440V/220V) Copper Winding
- Single Phase Transformer Unit (230V/110V) Copper Winding
- Emergency Stop

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- Patch Cords 4mm (Heavy Duty) 1Meter Length.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Short Circuit protection with the MCB.

OPTIONAL ACCESSORIES:

- Resistive Load.

PM-E291A 3 Phase Power Distribution Transformer Trainer

SCOPE OF LEARNING:

- Study of 3 Phase Transformer Distribution System

TECHNICAL SPECIFICATIONS:

Power Supplies:

- AC Power Supply 0-415V AT 4A (Optional)
- Operated on Mains power 415V, 50Hz +10%

Digital Meters:

- 3 Phase Lamp Load (Start Connected) Switched Control
- 3 Phase Lamp Load Ring System
- 3 Phase Transformer Unit (440V/220V) Copper Winding
- Emergency Stop

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Short Circuit protection with the MCB.

OPTIONAL ACCESSORIES:

- Resistive Load.

PM-E296A Single Phase Transformer Trainer

SCOPE OF LEARNING:

- Study of 1 phase transformer connections
- Efficiency test on 1 phase transformer
- Ratio, voltage, power and current measurement in single phase
- Open and short circuit test.

TECHNICAL SPECIFICATIONS:

Power Supplies:

- AC Power Supply 0-230V AT 4A (Optional)
- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters/Digital Watt meter

- Single Phase Lamp Load Switched Control
- Single Phase Transformer Unit (220V/110V) Copper Winding

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- Short Circuit protection with the MCB.

PM-E309A Parallel Operations of Two Single Phase Transformer Trainer

SCOPE OF LEARNING:

- Parallel Operations on Two Single Phase Transformers

TECHNICAL SPECIFICATIONS:

- AC Power Supply 0-230V AT 4A (Optional)

Digital/Analog Meters:

- Digital Wattmeter 2Nos.
- Single Phase Lamp Load Switched Control
- Single Phase Transformer Unit (220V/110V) Copper Winding
- 4A Variac (Single Phase)

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- Short Circuit protection with the MCB.

SCOPE OF SUPPLY:

- Parallel Operations on Single Phase Transformer Trainer (1Nos.)
- Single Phase Transformer Unit 1KVA (2Nos.)

PM-E358A 3 Phase Transformer Trainer

SCOPE OF LEARNING:

- Study of 3 Phase Transformer

TECHNICAL SPECIFICATIONS:

- AC Power Supply 0-415V AT 4A (Optional)
- Operated on Mains power 415V, 50Hz +10%

Digital Meters:

- Wattmeter (Analog Type)

Components are mounted on the panels are:

- 3 Phase Lamp Load (Start Connected) Switched Control
- 3 Phase Transformer Unit (440V/220V) Copper Winding
- Emergency Stop

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Rack Type Channel Extruded Panel
- Short Circuit protection with the MCB.

OPTIONAL ACCESSORIES:

- Resistive Load.

PM-E374A Single Phase Energy Meter Control Trainer

SCOPE OF LEARNING:

- Study of 1 Phase Energy Meter

TECHNICAL SPECIFICATIONS:

Power Supplies:

- AC Power Supply 0-230V AT 4A
- Operated on Mains power 230V, 50Hz +10%

Meters:

- Wattmeter (Analog)
- Power Factor Meter (Analog)
- 1 Phase Lamp Load Switched Control
- Single Phase Digital Energy Meter (2Nos.)
- Power Indication
- Emergency Stop

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Rack Type Channel Extruded Panel
- Short Circuit protection with the MCB.

PM-E551A 3Phase Protection System Control Trainer

SCOPE OF LEARNING:

- Study of 3Phase Protection System Control Trainer

TECHNICAL SPECIFICATIONS:

- 0-230V, 2A AC/DC Power Supply
- Operated on Mains power 415V, 50Hz +10%
- Three Phase Over Load Relay
- Three Phase Over and Under Voltage Relay
- Three Phase Frequency Relay
- Single Phase Over Load Relay
- Single Phase Over and Under Voltage Relay
- Single Phase Contactor
- Three Phase Contactor
- 24V Auxiliary Relay
- Digital Meters (Voltmeter and Ammeter)
- Potential Transformer
- Current Transformer
- Three Phase Lamp Load
- Emergency Stop

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Metal cabinet.
- Three Phase Indication Through 24mm Colored Indicators.
- Short Circuit protection with the MCB.

PM-E332A Bucholz Relay Trainer

SCOPE OF LEARNING:

- Study of Dielectric Constant of Transformer Oil Using Bucholz Relay

TECHNICAL SPECIFICATIONS:

Power Supplies:

- Operated on Mains power 230V, 50Hz +10%

Components are mounted on the panels are:

- Bucholz Relay Mounted on Base
- Oil Conservation Tank
- Fault Indication Using 24mm Indicators
- Bulb For Trip Indication
- Oil Cum Vacuum Tank
- Vacuum Pump With 5A Power Supply

SALIENT FEATURES:

- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Metal cabinet.
- Short Circuit protection with the MCB.

PM-E579 Under and Over Voltage Relay Trainer (Static)

SCOPE OF LEARNING:

- Study of Static Over Voltage Relay Protection System
- Study of Static Under Voltage Relay Protection System

TECHNICAL SPECIFICATIONS:

- AC Power Supply 0-300V,2A (Isolated)
- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:

- Under and Over Voltage Relay (For Voltage Monitoring)
- Single Phase Lamp Load (6Bulbs With Switch Controls)
- Tripping With Indicators.

SALIENT FEATURES:

- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Metal cabinet.
- Short Circuit protection with the MCB.
- Protection with Emergency Stop

PM-E703AA Power and Power Factor Measurement by CT and PT in Three Phase Circuit

SCOPE OF LEARNING:

- Study of Power and Power Factor Using CT PT

TECHNICAL SPECIFICATIONS:

- AC Power Supply 0-415V AT 4A
- Operated on Mains power 415V, 50Hz +10%

Digital Meters:

- Wattmeter (Analog)/Power Factor Meter

Components are mounted on the panels are:

- 3 Phase Capacitive Load (Inbuilt)
- 3Phase Resistive Load (External)
- 3Phase Inductive Load (External)
- Emergency Stop
- Current Transformer
- Potential Transformer

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- Three Phase Indication through 25mm Indicators
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Rack Type Channel Extruded Panel
- Panel is modular based easy to place and remove the Module.
- Short Circuit protection with the MCB.

PM-E476A Parallel Operations of Space Two Alternators (RACK)

SCOPE OF LEARNING:

- Study of Parallel Operations of Two AC Alternator

TECHNICAL SPECIFICATIONS:

- DC Power Supply 0-230V AT 2A (Field Control)
- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:

- Synchroscope
- Three Phase Lamp Load Switched Control
- 3 Point Starter.
- Color Indication For Output
- DC Starter (3Point) For DC Shunt Motor

SALIENT FEATURES:

- Voltage regulation within limit as per ISS.
- Special guard also provided on the coupling to avoid any
- D.C. Motor Shunt 2HP coupled with A.C. Alternator 1KVA
- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Aluminum Extruded Metal cabinet.
- Short Circuit protection with the MCB.

SCOPE OF SUPPLY:

- DC Motor 2HP, 230V and AC Synchronous Alternator (1KW). (2Nos.)
- Parallel Operation Synchronization Control Panel (1Nos.)

PM-E343B Speed Control of DC Shunt Motor By SCR Based DC Drive Method

SCOPE OF LEARNING:

- Speed Control of DC Shunt Motor by SCR based DC Drive Method

TECHNICAL SPECIFICATIONS:

- Operated on Mains power 230V, 50Hz ±10%

Digital/Analog Meters:

Components are mounted on the panels are:

- SCR Based DC Drive

SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Metal cabinet.
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.

MOTOR SPECIFICATIONS:

- DC Motor 1HP, 230V, DC & 1440 RPM.

PM-E405C DC Multi Winding Machine Trainer

SCOPE OF LEARNING:

- Speed Control of DC Shunt Motor
- Speed Control of DC Series Motor
- Speed Control of DC Compound Motor

TECHNICAL SPECIFICATIONS:

Power Supplies:

- DC Power Supply 0-230V AT 4A (External)
- Operated on Mains power 230V, 50Hz +10%

Digital/Analog Meters:

- Voltmeter
- Ammeter
- RPM Meter With Proximity Sensor

Components are mounted on the panels are:

- Variac 4A
- DC Point Starter

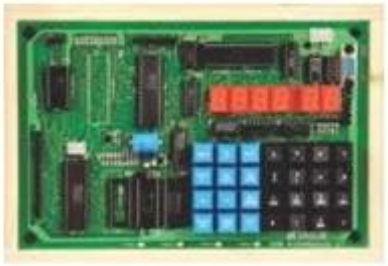
SALIENT FEATURES:

- Front panel built with high class insulated Bakelite sheet with Sticker well printed circuits and symbols.
- The trainer is housed in Modular Based Rack Type Aluminum Extruded Metal cabinet.
- Instruction manual.
- Patch Cords 4mm (Heavy Duty)
- High Voltage Test Points are Provided With 4mm Safety Sockets
- The trainer is housed in Metal cabinet.
- Protection With Emergency Stop.
- Short Circuit protection with the MCB.
- Size of the trainer set 30"x24"

MOTOR SPECIFICATIONS:

- DC Multiwinding Motor 1HP, 230V, AC & 1440 RPM

PM-E441 8085 Microprocessor Trainer (LED)



TECHNICAL SPECIFICATIONS:

- CPU : 8085 CPU operating at 6.144 Mhz
- ROM : 8K bytes of Powerful Monitor Program using 27512 EPROM
- RAM : 8K bytes of RAM using 6264 with Battery
- Memory Expansion :Backup using NICD Battery, up to 56KB
- Timer/Counter : Three Channel Timer/Counter using 8253 brought out at 10 Pins FRC Connector.
- I/O Lines : 24 I/O lines provided through 8255 brought out at 26 Pins FRC Connector.
- RS232C Interface : Through SID/SOD lines
- Modes of commands : Hex Key pad Mode, Serial Mode
- Display : Six Digit Seven Segment Display using 8279
- Keyboard Downloading/Uploading : 28Key's Hex Keypad using 8279 Keyboard Display Controller
- Bus : All address, data & control lines are available on KXT Bus 50 pin FRC Connector.

INTERFACING MODULES FOR 8085/8086/8051 TRAINERS

1. ADC MODULE
2. DAC MODULE
3. TRAFFIC LIGHT
4. 8255 MODULE
5. 8155 PPI INTERFACE MODULE
6. RELAY INTERFACE
7. DIGITAL INPUT AND OUTPUT MODULE
8. MULTIPLEXED DISPLAY AND KEYBOARD MODULE
9. LCD INTERFACING MODULE
10. STEPPER MOTOR INTERFACE
11. IR COMMUNICATION
12. TEMPERATURE SENSOR INTERFACE

PM-E442 8086 Microprocessor Trainer (LED)

TECHNICAL SPECIFICATIONS:

- Based on 8086/8088 CPU operating at 2.5/5MHz
- 16KB of RAM with Battery Backup, 16K Monitor EPROM
- Peripheral like 3x 8255, 8253, 8259, 8251 RS-232 interface
- 28 keys keyboard with six 7- segment display using 8279
- In-Built Power Supply of +5V/1.5A, ±12V/250mA
- RS232C Interface : Through SID/SOD lines
- Modes of commands : Hex Key pad Mode, Serial Mode
- Display : Six Digit Seven Segment Display using 8279
- Keyboard Downloading/Uploading : 28Key's Hex Keypad using 8279 Keyboard Display Controller
- Bus : All address, data & control lines are available on KXT Bus 50 pin FRC Connector.

PM-E097C 8051 Microcontroller Trainer (ASSEMBLY LANG.-LCD)

SCOPE OF LEARNING:

- 8051 Microcontroller Assembly Lang. Programming

TECHNICAL SPECIFICATIONS:

- On board 8K RAM & 64K bytes of EPROM with powerful monitor program.
- 48 I/O lines using 2 nos. of 8255.
- channel programmable timer/counter using 8253
- 20x2 LCD (Liquid Crystal Display) is provided for display
- IBM PC compatible keyboard for entering the program, editing and executing the programs
- RS-232C interface using 8251.One serial USART interface provided by 89C51/89C52
- All data, address and control signals (TTL compatible) available at FRC connector.
- Powerful software commands like INSERT, DELETE, BLOCK MOVE, SET/CLEAR BREAK POINT, SINGLE STEP, EXAMINE
- Uploading/Downloading facility from PC in Intel Hex format.

PM-E097A 8051 Microcontroller Trainer

- Study of 8051 Microcontroller

TECHNICAL SPECIFICATIONS:

- Programmer For 8051 (USB)
- 2 Bit Optically Coupled Relay Interface.
- Buzzer.
- 8 Bit Led Display.
- 4 Multiplexed Seven Segment Display.
- 4 Bit Push Switch
- 16x2 LCD.
- RS232 Interface (Serial Communication)

SALIENT FEATURES:

- Front panel built with high class insulated Printed Circuit Board sheet with well printed circuits and symbols.

PM-E069 AVR Microcontroller Trainer

SCOPE OF LEARNING:

- Study of AVR Microcontroller Development System

TECHNICAL SPECIFICATIONS:

- Programmer for AVR (USB)
- 2 Bit Optically Coupled Relay Interface, Buzzer.
- Stepper Motor With Driver, 8 Bit Led Display.
- 8 Bit Slide Switch4 Multiplexed Seven Segment Display, DS1307 RTC, 24C64 EEPROM, 4 Bit Push Switch
- 16x2 LCD, ADC 0808, DAC 0804
- RS232 Interface (Serial Communication)
- 8X5 Led Matrix Display, 4X4 Keyboard, DC motor
- Connection Cable 10 Pin FRC.

PM-E391 PIC Microcontroller Trainer

SCOPE OF LEARNING:

- Study of PIC 16F877 Microcontroller

TECHNICAL SPECIFICATIONS:

- C Power Supply IC Regulated +12V, +5V DC, 250mA.

Programmer (Separately):

- PIC Kit 2 For PIC Microcontroller (USB)
- 2 Bit Optically Coupled Relay Interface.
- Buzzer, Stepper Motor With Driver, 8 Bit Led Display.
- 8 Bit Slide Switch, 4 Multiplexed Seven Segment Display, DS1307 RTC, 24C64 EEPROM,4 Bit Push Switch
- 16x2 LCD, ADC 0808, DAC 0804
- RS232 Interface (Serial Communication)
- 8X8 Led Matrix Display, 4X4 Keyboard.

PM-E251 LPC2148 Micrcontroller Trainer

Scope Of Learning:

- Study Of Lpc2148 Amr7 Development System
- Dc Power Supply Ic Regulated +12v, +5v Dc, 250ma.
- Programmer For Lpc2148
- 2 Bit Optically Coupled Relay Interface.
- Buzzer, Stepper Motor With Driver.
- 8 Bit Led Display, 8 Bit Dip Switch.
- 6 Bit Tact Switch Interface
- Reset Boot Ladder Circuit
- 4 Multiplexed Seven Segment Display.
- Ds1307 Rtc, 24c64 Eeprom
- 4x4 Keyboard, 8x8 Led Matrix
- Serial To Serial Interface
- Sd Card Interface,4 Bit Push Switch
- 16x2 Lcd, Rs232 Interface (serial Communication), Audio Section
- 128x64 Graphical Lcd

PM-E252 RFID Trainer

SCOPE OF LEARNING:

- Study of RFID Development System

TECHNICAL SPECIFICATIONS:

Power Supplies:

- DC Power Supply IC Regulated +12V, +5V DC, 250mA.
- Programmer For 8051 (USB)
- RFID, 2 Bit Optically Coupled Relay Interface.
- Buzzer, Stepper Motor with Driver.
- 8 Bit Led Display, 8 Bit Slide Switch.
- 4 Multiplexed Seven Segment Display.
- DS1307 RTC, 24C64 EEPROM, 4 Bit Push Switch
- 16x2 LCD. RS232 Interface (Serial Communication)
- 4X4 Keyboard.

PM-E473 FPGA Microcontroller Trainer

SCOPE OF LEARNING:

- Study of FPGA Microcontroller Development System

TECHNICAL SPECIFICATIONS:

- DC Power Supply IC Regulated +12V, +5V DC, 250mA.
- Spartan3S500E with PROM XCF04 and 50MHz Oscillator.
- Based on Spartan3S500E with PROM XCF04 and 50MHz Oscillator, Four Seven Segment Display Interface, LCD Display Interface , 4×4 Matrix Keyboard Interface, Output LED's 8 Nos,
  8 Chanel ADC Interface, DAC Interface
- Four Data Switches, Relay Interface, Opto Interface, I.R. Interface, Traffic Light Interface,– Stepper Motor ,LED Matrix Interface (Optional)
- At24C16 Serial EEPROM, Real Time Clock
- RS-232 Interface using Rx/Tx of MCU for uploading/ downloading, USB/Parallel Port based Programming for downloading files.

PM-E484 Universal Microcontroller Trainer

SCOPE OF LEARNING:

1. 8051 Microcontroller
2. PIC 16F877 Microcontroller
3. AVR ATMEGA32 Microcontroller

TECHNICAL SPECIFICATIONS:

Power Supplies:

- DC Power Supply IC Regulated +12V, +5V DC, 250mA.
- Operated on Mains power 230V, 50Hz +10%

Programmer (Separately):

- PIC Kit 2 For PIC Microcontroller (USB)
- Programmer for AVR (USB)
- Programmer For 8051 (USB)

Application On Board same as model no. AL-E097B

PM-E589 Arduino Microcontroller Trainer

SCOPE OF LEARNING:

- Study of Arduino Microcontroller Development System

TECHNICAL SPECIFICATIONS:

Power Supplies:

- DC Power Supply IC Regulated ±12V, +5V DC, 250mA.
- Operated on Mains power 230V, 50Hz ±10%
- Programmer for Arduino
- Microcontroller Tmega328P
- Operating Voltage 5V
- Input Voltage (recommended) 7-12V
- Input Voltage (limit) 6-20V

- Digital I/O Pins 14 (of which 6 provide PWM output)
- PWM Digital I/O Pins 6
- Analog Input Pins 6
- Flash Memory 32 KB (ATmega328P)
- Clock Speed 16 MHZ
- On board Graphical display board
- Interfaces – Buffered I/O, standard
- 8 key keypad, 4 x 4 matrix keypad,
- RS232 port for uploading downloading
- 16 x 2 LCD,
- 7 segment display
- ADC APPLICATION AS TEMPERATURE SENSOR,
- DAC
- STEPPER MOTOR INTERFACING
- DC MOTOR INTERFACING
- Built in regulated power supply +/-12V, 5V
- On board RTC and SERIAL EEPROM
- ON BOARD 2 CHANNEL RELAY
- BUZZER ON BAORD

SEPARATE 10 PIN FRC CONNECTOR WITH BLOCK WISE

PM-E097B 8051 Embedded Microcontroller Trainer

SCOPE OF LEARNING:

- Study of 8051 Microcontroller

TECHNICAL SPECIFICATIONS:

Power Supplies:

- DC Power Supply IC Regulated +12V, +5V DC, 250mA.
- Operated on Mains power 230V, 50Hz +10%

Programmer (Separately):

- Programmer For 8051 (USB)
- Application On Board.
- 2 Bit Optically Coupled Relay Interface.
- Buzzer.
- Stepper Motor with Driver.
- 8 Bit Led Display.
- 8 Bit Slide Switch.
- 4 Multiplexed Seven Segment Display.
- DS1307 RTC
- 24C64 EEPROM
- 4 Bit Push Switch
- 16x2 LCD.
- ADC 0808
- DAC 0804
- RS232 Interface (Serial Communication)
- 8X5 Led Matrix Display.
- 4X4 Keyboard.

SALIENT FEATURES:

- Front panel built with high class insulated Printed Circuit Board sheet with well printed circuits and symbols.
- Fuse for Short Circuit protection
- Instruction manual, CD Software and Programs, RS232 Cable.
- Connections are brought out through 10 Pin FRC Male Connectors.
- Connection Cable 10 Pin FRC.
- The trainer is housed in ABS Plastic cabinet.
- Size of the trainer set 12"x10"

OPTIONAL ACCESSORIES:

- No

PM-E281E 0.2KW Electric Power Transmission Training System

SCOPE OF LEARNING:

- DC to DC Generation
- DC to AC Generation
- Study of 3Phase Transmission Line
- Study of 3Phase Transformer

TECHNICAL SPECIFICATIONS:

- MCB (Power Switch) : Three Phase 10A
- Interconnections : 4mm Safety Socket
- Digital AC Voltmeter : 0-500V AC Voltage Measurement
- Digital AC Ammeter : 0-30A AC Current Measurement
- Digital DC Voltmeter : 0-500V DC Voltage Measurement
- Digital DC Ammeter : 0-30A DC Current Measurement
- Wattmeter/ Var Meter
- 2Bit Transmission Line
- Power Factor Meter and Phase Sequence Indicator

Power supplies:

- Single Phase AC/DC Power Supply : 220V, 50/60Hz
- Three Phase AC Power Supply :230V Phase voltage, 415 Line voltage ± 10% 50 Hz
- Operated on Mains power 415V, 50Hz +10%

PM-E331 AC-DC Electrical Test Bench

SCOPE OF LEARNING:

- Study of AC-DC Calibration through Test Bench.

TECHNICAL SPECIFICATIONS:

Digital Meters:

- Voltmeter 300V AC / DC
- Ammeter 20A AC / DC
- Multi Function Meter (2Nos.)

Power supplies:

- Power Supply 0-230V,4A DC
- Power Supply 0-30V,2A DC
- Power Supply +15V,1A DC
- Power Supply +5V,1A DC
- Power Supply 0-415V,4A AC
- Operated on Mains power 415V, 50Hz +10%

Key Components mounted on the panel are:

- Digital Multimeter
- Buzzer for Continuity Tester
- Power Switch Sockets 1 Set
- Switch Socket 1Set
- Three Phase Lamp Load (6 Bulbs)

PM-E657A Power Electronics Test Bench

SCOPE OF LEARNING:

- Supply and Single Phase Low Voltage Power Supply
- Half Wave Uncontrolled Rectifier on Lamp Load & Motor Load
- Half Wave Uncontrolled Rectifier on Motor Load with Freewheeling Diode
- Full Wave Uncontrolled Rectifier on Lamp Load & Motor Load
- Full Wave Uncontrolled Rectifier on Motor Load with Freewheeling Diode
- Bridge Uncontrolled Rectifier on Lamp Load & Motor Load
- Bridge Uncontrolled Rectifier on Motor Load with Freewheeling Diode
- Ramp and Comparator Firing Circuit
- Half Wave Controlled Rectifier on Lamp Load & Motor Load
- Half Wave Controlled Rectifier on Motor Load with Freewheeling Diode
- Full Wave Controlled Rectifier on Lamp Load & Motor Load
- Full Wave Controlled Rectifier on Motor Load with Freewheeling Diode
- Bridge Controlled Rectifier on Lamp Load & Motor Load
- Bridge Controlled Rectifier on Motor Load with Freewheeling Diode
- Semiconverter common cathode configuration on Lamp Load
- Bridge inverter
- Step up chopper & step down chopper

TECHNICAL SPECIFICATIONS:

- MCB (Power Switch) : Single Phase 10A
- MCB (Power Switch) : Three Phase 10A
- Interconnections : 2mm & 4mm Safety Socket
- Diode Assembly : Diode 6A10 1000V/6A
- SCR Assembly : TYN 616 600V/16A
- IGBT Assembly : IGBT G4BC20S 600V/10A.
- Single Phase Firing Circuit : Ramp Comparator Firing Circuit 0 (Firing Angle Control 30-180)
- Three Phase Firing Circuit : Three Phase Firing Circuit (Firing Angle Control 30-150
- Cycloconverter Firing Circuit : Cycloconverter Firing Circuit (Firing Angle Control 30-180)
- PWM Circuit : Triangular Comparator Method Frequency Range 270Hz to 5KHz (approximately)
- PWM Variation 0-90% & 0-50%
- Oscilloscope with Power Scope:30MHz Oscilloscope with 1500V Isolated measurement
- Digital AC Voltmeter : 0-500V AC Voltage Measurement
- Digital AC Ammeter : 0-30A AC Current Measurement
- Digital DC Voltmeter : 0-500V DC Voltage Measurement
- Digital DC Ammeter : 0-30A DC Current Measurement
- Load Assembly : Four Load Assembly

PM-E657B Power Electronic Training System (Test Bench)

SCOPE OF LEARNING:

- Single, Three Phase Rectifier and Bridge Converter
- Step Up and Step Down Chopper
- Inveter Single Phase Half Bridge and Full Bridge
- Temperature PID Controller
- DC to DC Generation, DC to AC Generation
- Operation on Dynamometer
- Three Phase Induction Motor.

TECHNICAL SPECIFICATIONS:

- MCB (Power Switch) : Three Phase 10A
- Interconnections : 2mm & 4mm Safety Socket
- Diode Assembly : Diode 6A10 1000V/6A
- SCR Assembly : TYN 616 600V/16A
- IGBT Assembly: IGBT G4BC20S 600V/10A.
- Three/Single Phase Firing Circuit : Three Phase Firing Circuit (Firing Angle Control 30-150
- PWM Circuit : Triangular Comparator Method (For Inverter)
- PWM Circuit : (For Chopper)
- Digital AC Voltmeter : 0-500V AC Voltage Measurement, Digital AC Ammeter : 0-30A AC Current Measurement
- Digital DC Voltmeter : 0-500V DC Voltage Measurement, Digital DC Ammeter : 0-30A DC Current Measurement
- Frequency/VAR Meter, Load Assembly : Six Load Assembly (Single Phase, Three Phase in Star/Delta)
- PID Controller (For Temperature), Single to Three Phase Frequency VVFD Drive, Single Phase DC Drive

Power supplies:

- Single Phase AC/DC Power Supply : 220V, 50/60Hz
- Center Tapped Transformer : 115V - 0 - 115V ± 10%, 2A Supply
- Low Voltage AC Power Supply : 15V-0, +15V, +12V at 250mA
- Three Phase AC Power Supply :230V Phase voltage, 415 Line voltage ± 10% 50 Hz
- Three Phase Low Voltage Power Supply: 15V Each Phase ± 10%, 50Hz

PM-E704 Protective Relaying Training System (Generation)

SCOPE OF LEARNING:

- DC TO AC Generation
- Study of 3Phase Induction Motor
- Study of Parallel Operation of Alternator/3Phase Supply
- Study of DC Shunt Motor

TECHNICAL SPECIFICATIONS:

- MCB (Power Switch) : Three Phase 10A, Single Phase 10A,
- Interconnections : 4mm Safety Socket
- Digital AC Voltmeter : 0-500V AC Voltage Measurement
- Digital AC Ammeter : 0-30A AC Current Measurement
- Digital DC Voltmeter : 0-500V DC Voltage Measurement
- Digital DC Ammeter : 0-30A DC Current Measurement
- Frequency Meters (2Unit)
- Synchroscope
- DC Drive For Operating DC Motor
- VVVFD AC Drive For Operating Induction Motor

Power supplies:

- Single Phase AC/DC Power Supply : 220V, 50/60Hz

PM-E704A Protective Relaying Training System (Transmission)

SCOPE OF LEARNING:

- Study of RLC Impedence
- Study of 3Phase Transmission
- Study of 3Phase Disctribution
- Study of 3Phase Fault Simulation
- Study of 3Phase Transformer
- Study of 3Phase Half Wave, Full Wave Rectifier

TECHNICAL SPECIFICATIONS:

- MCB (Power Switch) : Three Phase 10A
- Interconnections : 4mm Safety Socket
- Digital AC Voltmeter : 0-500V AC Voltage Measurement
- Digital AC Ammeter : 0-30A AC Current Measurement
- Three Phase Lamp Load (Star Connection)
- 3Phase Fault Simulation
- 3Phase Disctribution
- 3Phase Transformer
- 3Phase Transmission
- RLC Impedence
- 3Phase Transmission
- Six Diode Assembly

Power supplies:

- Operated on Mains power 415V, 50Hz +10%
- Three Phase AC Power Supply :230V Phase voltage, 415 Line voltage ± 10% 50 Hz

PM-E704B Protective Relaying Training System (Protection)

SCOPE OF LEARNING:

- Study about different protection techniques
- Current Transformer and Potential Transformer
- Voltage Monitoring Relay (Single and Three Phase)
- Over Current Relay (Single and Three Phase)
- Reverse Power Relay
- Phase Sequence Relay
- Three Phase Power Factor Relay
- Synchro Check Relay
- Frequency Monitoring Relay (Three Phase)

TECHNICAL SPECIFICATIONS:

- MCB (Power Switch) : Three Phase 10A
- Interconnections : 4mm Safety Socket
- Current Transformer and Potential Transformer
- Voltage Monitoring Relay (Single and Three Phase)
- Over Current Relay (Single and Three Phase)
- Reverse Power Relay, Phase Sequence Relay
- Three Phase Power Factor Relay
- Synchro Check Relay, Frequency Monitoring Relay (Three Phase)
- Wattmeter/Var Meter, Power Factor Meter

OPTICAL FIBER LAB

PM-E120A Frequency Response of Microphone And Speaker

SCOPE OF LEARNING:

- Voice transmission Microphone.
- Sound receiving to Speaker
- Frequency Response of Speaker

TECHNICAL SPECIFICATIONS:

- In built IC based Fixed DC Regulated Power Supply +12VDC/100mA.
- On board 1KHz sine wave oscillator provided.

PM-E159 Numerical Aperture Kit

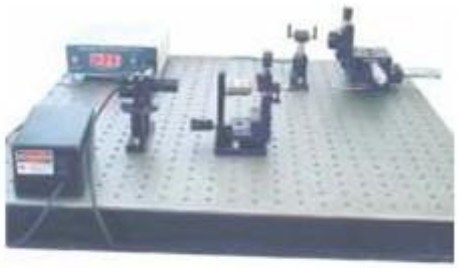
SCOPE OF LEARNING:

- To determine the numerical aperture of laser diode

TECHNICAL SPECIFICATIONS:

- Complete With Laser Diode 2mW
- Half Meter Optical Bench
- Optical Fiber Cable One Meter Long With Connector

PM-E159A Numerical Aperture with Optical Bread Board Kit



SCOPE OF LEARNING:

- To determine the numerical aperture of optical fiber.

WHAT WE NEED:

- Optical Bread Board
- Diode Laser With Power Supply
- PMMA Rod With Mount

SALIENT FEATURES:

- In-Built DC Regulated Power Supply in Diode Laser
- Power Supply 230V, 50Hz for Diode Laser.
- Instruction Manual.

PM-E160A Analog Fiber Optic Trainer

SCOPE OF LEARNING:

- Voice transmission through optical fiber cable.
- To study transmitter circuit & calculate its output power
- To study receiver circuit & calculate its input power
- To study the attenuation of signal between transmitter & receiver end.
- Measurement of numerical aperture

TECHNICAL SPECIFICATIONS:

- In built IC based Fixed DC Regulated Power Supply ±12VDC/100mA.
- On board 1KHz sine wave oscillator provided.
- 660nm Transmitter & receiver

SALIENT FEATURES:

- Front Panel Built With High Class Insulated Printed Circuit Board Sheet With Well Printed Circuits and Symbols.

PM-E160C Analog-digital Fiber Optic Trainer

SCOPE OF LEARNING:

- Setting up Fiber Optic Analog Link Setting up Fiber Optic Digital Link
- Study of Intensity Modulation Technique using Analog Input Signal
- Study of Intensity Modulation Technique using Digital Input Signal
- Setting up of Propagation Loss in Fiber Optic Study of Bending Loss.
- Measurement of Numerical Aperture
- Characteristics of Fiber Optic communication Link
- Setting up of Fiber Voice Link using Intensity Mode
- Study of PC to PC Communication using Fiber Optics Digital Link
- Frequency Modulation and Demodulation
- PWM Modulation and Demodulation

TECHNICAL SPECIFICATIONS:

- Two Transmitter Fiber Optics LED having peak wavelength of emission 660nm & 950nm
- Two Receiver Fiber Optic photo detector
- On-board Analog & Digital Drivers. On-board AC Amplifiers.
- Analog Band Width 350 KHz Digital Band Width 2.5 KHz
- 4 order Butter worth 3.4KHz Low Pass Filter
- On-board 10Hz. To 10 KHz sine wave (amplitude adjustable), square wave Selectable.
- FO voice link using microphone & speaker
- RS-232C PC to PC Serial Link using 9 pin D-Connector.
- Fiber Optics Cable Connector type Standard SMA.
- Duly polished fiber at both end for Numerical Aperture Measurement.
- Step indexed multimode PMMA plastic cable.
- In-Built Power Supply +5V/1.5A, ±12V/250mA.

PM-E477 Fiber Optic Trainer (Numerical Aperture, Attenuation Loss and Bending Loss)

SCOPE OF LEARNING:

- Study of Optical Sources Characteristics & Transmission
- Study Of DC Power Characteristics Of LASER And Optical Sources
- Study Of Losses In Optical Transmission Attenuation Losses
- Study Of Losses In Optical Transmission Bending Loss
- Study Of Losses In Optical Transmission Air Gap Loss
- STUDY OF NUMERICAL APERTURE

TECHNICAL SPECIFICATIONS:

- In built IC based Fixed DC Regulated Power Supply
- Optical transmitter & reciever 660nM and 850nM.
  PMMA Fiber Cables Length 1m and 3m
- Digital Power Measurement Module
- Numerical Zig for Aperture.

SALIENT FEATURES:

- Front Panel Built With High Class Insulated Printed Circuit Board Sheet With Well Printed Circuits And Symbols.

PM-E160G Fiber Optic Trainer (Optical Source Characteristics and Power Measurement)

Specifications Same as above

PM-E477A Fiber Optic Trainer (Numerical Aperture, Attenuation Loss, Bending Loss And Speed of Light)

SCOPE OF LEARNING:

- Study of Optical Sources Characteristics & Transmission
- Study Of DC Power Characteristics Of LASER And Optical Sources
- Study Of Losses In Optical Transmission Attenuation Losses
- Study Of Losses In Optical Transmission Bending Loss
- Study Of Losses In Optical Transmission Air Gap Loss
- STUDY OF NUMERICAL APERTURE
- Study of Speed Measurement of Light

TECHNICAL SPECIFICATIONS:

- In built IC based Fixed DC Regulated Power
- Optical transmitter & Receiver 660nM and 850nM.
- PMMA Fiber Cables Length 1m and 3m
- Digital Power Measurement Module
- Numerical Zig for Aperture.

SALIENT FEATURES:

- Front Panel Built With High Class Insulated Printed Circuit Board Sheet With Well Printed Circuits And Symbols.

PM-E312A Fiber Optic Characterization Kit

SCOPE OF LEARNING:

- Study of Optical Sources Characteristics & Transmission
- Study Of DC Power Characteristics Of LASER And Optical Sources
- Study Of Losses In Optical Transmission Attenuation Losses
- Study Of Losses In Optical Transmission Bending Loss
- Study Of Losses In Optical Transmission Air Gap Loss
- STUDY OF NUMERICAL APERTURE

TECHNICAL SPECIFICATIONS:

- In built IC based Fixed DC Regulated Power Optical transmitter & receiver 660nM and 850nM.
- PMMA Fiber Cables Length 1m and 3m
- Digital Power Measurement Module
- Numerical Zig for Aperture.
- Optical Bench Rail Type
- Diode Laser With Power Supply

SALIENT FEATURES:

- Front Panel Built With High Class Insulated Printed Circuit Board Sheet With Well Printed Circuits And Symbols.

PM-E449 Frequency Response of Optical Receiver at Different Bandwidth

SCOPE OF LEARNING:

- Study of Optical Sources Characteristics & Transmission
- Study Of DC Power Characteristics Of LASER And Optical Sources
- Study Of Losses In Optical Transmission Attenuation Losses
- Study Of Losses In Optical Transmission Bending Loss
- Study Of Frequency Response at Different Bandwidth
- STUDY OF NUMERICAL APERTURE

TECHNICAL SPECIFICATIONS:

- In built IC based Fixed DC Regulated Power Supply 0-6VDC/150mA.
- Optical transmitter & receiver 660nM
- PMMA Fiber Cables Length 1m and 3m
- Digital Meter for Power Measurement.
- Numerical Zig for Aperture.

SALIENT FEATURES:

- Front Panel Built With High Class Insulated Printed Circuit Board Sheet With Well Printed Circuits And Symbols.

PM-E160B Digital Fiber Optic Trainer

SCOPE OF LEARNING:

- Setting up Fiber Optic Digital Link
- Study of Intensity Modulation Technique using Digital Input Signal
- Setting up of Propagation Loss in Fiber Optic Study of Bending Loss.
- Measurement of Optical Power using Optical Power Meter
- Measurement of Propagation loss using Optical Power Meter
- Measurement of Numerical Aperture Characteristics of F-O Converter using OPM
- Characteristics of Fiber Optic communication Link
- Setting up of Fiber Voice Link using Intensity Mode
- Study of PC to PC Communication using Fiber Optics Digital Link
- Frequency Modulation and Demodulation
- PWM Modulation and Demodulation

TECHNICAL SPECIFICATIONS:

- Transmitter Fiber Optics LED having peak wavelength of emission 950nm
- Receiver Fiber Optic photo detector
- On-board Digital Drivers.
- On-board AC Amplifiers.
- Digital Band Width 2.5 KHz
- 4 order Butter worth 3.4KHz Low Pass Filter
- On-board 10Hz. To 10 KHz sine wave (amplitude adjustable), square wave Selectable.
- FO voice link using microphone & speaker
- RS-232C PC to PC Serial Link using 9 pin D-Connector.
- Fiber Optics Cable Connector type Standard SMA.
- Duly polished fiber at both end for Numerical Aperture Measurement.
- Step indexed multimode PMMA plastic cable.
- Numerical aperture Better than 0.5.
- Acceptance Angle Better than 60
- Fiber Diameter 1000 microns.
- Outer Diameter 2.2mm.
- Fiber Length 1m and 3m
- In-Built Power Supply +5V/1.5A, ±12V/250mA.

ROBOTICS & AUTOMATION

PM-E852 Six Axis Smart Robot Arm

Product Parameters:

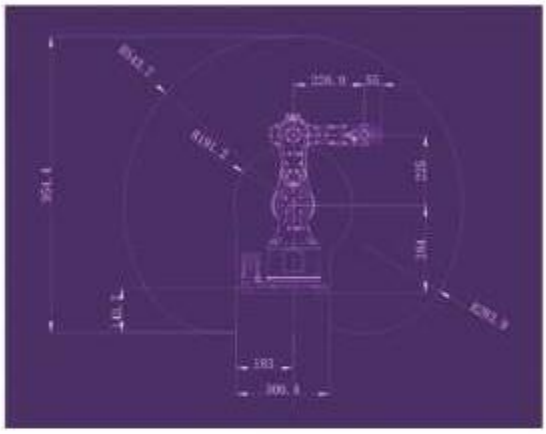
- Net Weight: 15KG
- Vertical Stroke: 830mm
- Horizontal Stroke: 880mm
- Voltage: 220V
- Power: 360W
- Max Working Radius: 480mm
- Specified Load: .910KG
- Repeat Positioning Accuracy: ±0.5mm
- Application: Welding, Polishing, assembly, picking

Axis'Working Range:

Axis	Working Range	Max Speed
Axis 1	±180°	200°/s
Axis 2	±115°	200°/s
Axis 3	±130°	200°/s
Axis 4	±180°	200°/s
Axis 5	±165°	200°/s
Axis 6	±180°	200°/s

Overall Composition:

- Structure Type: Series Connection
- No. of aixs: 6 Axis
- Controller: Single Chip
- Body Shell Material: Plastic
- Install To: Desktop
- Speed Reducer: Synchronous Belt Deceleration
- Motor: Stepping Motor



Features:

- **Fully Assembled & Ready for Use**: 6-Axis robot arm comes with controller and speed reducer
- **Light weight**: Engineering plastic is the outer shell material which makes it weight only 15kg, much lighter than the others of the same level
- **Various Intelligent Interactive Control Methods**: It supports PC, mobile phone, teaching devices, voice and APP control
- **Highly Precise**: 6 DOF is for active joint bearing connection and high precision.
- **Multiple Operation Interfaces**: Graphical programming, PC control and teach pendant.
- **Small Size**: Compact size and high speed make it easy to finish jobs sorting, assembling etc.
- **Smart Robot Arm**: Perfect for projects ranging from hobby use to higher level education, robotics research, light industry and industrial sector

PM -E860 Precise and Intelligent Industrial Grade Training Robot

VPL-RAT-22 is a multifunctional desktop robotic arm for practical training education. Installed with different end-tools, VPL-RAT-22 can realize interesting functions. It supports secondary development by 13 extensible interfaces and over 20 programming languages, which really makes your creativity and imagination increase without any limitation.

Specifications :

- Number of Axis: 4
- Payload: 500g
- Max. Reach: 320mm
- Position Repeatability(Control): 0.2 mm
- Communication: USB / WIFI / Bluetooth
- Power Supply: 100 V - 240 V , 50/60 HZ
- Power In: 12 V / 7A DC
- Consumption: 60W Max
- Working Temperature: -10℃ - 60℃

Axis Movement:

Axis	Range	Max Speed (250g workload)
Joint 1	base -90°to + 90°	320°/ s
Joint 2	rear arm 0°to +85°	320°/ s
Joint 3	forearm -10°to +95°	320°/ s
Joint 4	rotation servo +90°to -90°	480°/ s

Pneumatic Gripper

- Range: 27.5mm
- Gripper Force: >5 N

PM -E 875 Robotic Arm (Payload 1kg.) Overall Composition

- Structure Type: Series Connection
- No. of axis: 6 Axis
- Controller: Single Chip
- Body Shell material: Plastic
- Install to: Desktop
- Speed Reducer: Synchronous Belt Deceleration
- Motor: Stepping Motor

Product Parameters:

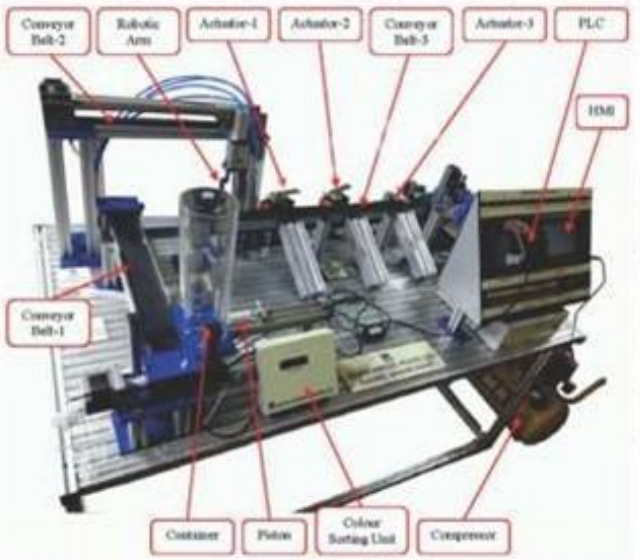
- N.W. : 15KG
- Vertical Stroke : 834.7mm
- Horizontal Stoke: 886.7mm
- Voltage: 220V
- Power : 360W
- Max Working Radius : 482.3mm
- Specified Load : 1KG
- Repeat Positioning Accuracy : ±0.5mm
- Application : Welding, Polishing, assembly, picking
- Axis Working Range:
- Axis 1: ±180°
- Axis 2: ±115°
- Axis 3: ±130°
- Axis 4: ±180°
- Axis 5: ±165°
- Axis 6: ±180°
- Max Speed: 200°/s on all axes

PM-E893 Flexible Manufacturing Training Sysem (FMS)

Flexible Manufacturing Training System is to simulate the process of industrial field environments, different types of workpieces detect and identify handling and automatic sorting of the training system, in which a large number of applications, a variety of sensors to achieve the workpiece detection and identification, and then through the mechanical arm and moving the workpiece transfer mechanism, and ultimately by sorting mechanism in place for the handling of the workpiece finish sorting.

The system consists of:

- Aluminum training platform,
- Material feeding and testing mechanism,
- Handling manipulator,
- Material transport and sorting mechanism and
- Other components.
- The control system uses a combination of pull form module, which composed of:
- PLC (Programmable Logic Controller),
- Frequency converter,
- HMI (Human-Machine-Interface),
- Power supply,
- Variety of sensors, actuators and other components.
- Robotic Arm



Two axis movement:

- Up-Down – Z axis
- Linear motion – X axis
- Z axis can travel 25 mm
- X axis can travel max up to 300 mm
- Gripper, when open 50 mm
- User has an option to use large size gripper
- Pickup weight more than 250gm
- Transport and sorting, grading and storage mechanism: it is used to sort different agri products according to colour.

The system consists of the following:

- Display Unit: This module use touch screen with vivid animation configuration, real-time monitoring system for training and operations. Display: 7"TFT, Resolution: 800x480, Color: 65536, Backlight: LED, Processor: 32 bit 800MHz RISC, Program download: USB, COM Port: Rs232.
- Power Module: With leakage protection circuit breaker, switching power supply (24V/3A) and tin sockets for external devices to provide DC power and AC single-phase power, and has a leakage, short circuit, overload protection, improve the safety of the equipment.
- Controlling Unit: It is composed of Digital input: 15, Digital output: 10, Analog input: 1, Analog output: 2, Communication Port: USB, RS232, Rs485.
- Button Indicator Module: Perform various operations on the device, which has three LEDs, three buttons, an emergency stop, a switch a buzzer.
- Stepper drive module: Enable position control to Gantry conveyor.
- Switching module: This module consists of input & output terminals, each module wiring with trainer through this module.
- Relay: PLC is Transistor output Need relay convert to control load.
- Feeding unit: It consists of feeding cylinder,, silos, industrial profiles, push plate, throttle, mounting plates and other components.
- Belt conveyor detection unit: Timing belts, couplings, colour sensors, mounting brackets, profiles. Conveyor Belt of dimensions: 860mm x 40mm
- Gantry manipulator unit: Stepper motor, belt, gantry unit, tanks chain, vertical cylinder, pneumatic finger, throttle valve etc. Conveyor Belt of dimensions: 500mm x 20mm
- Sorting unit: Stepper motors, couplings, conveyor belts, trough I, trough II, trough III, waste trough, inlet photoelectric sensors, industrial profiles etc. Selection Conveyor Belt of dimensions: 1200mm x 40mm.

PM-E745 Multipurpose Endurance Drone Diy Kit Pixhawk FSI6 1kg

This high performance low cost DIY kit includes all the parts required to make drone ready to fly within few hours. This kit includes Custom designed light weight and strong Aluminum frame, Pixhawk flight controller with GPS and telemetry, FS-i6 6 Channel radio, 6S compatible motors and ESCs, 15" Carbon fiber properllers, 6S Li-Po battery, Charger etc.
It can take a payload of 1 Kg with 2200mAh battery and 500 grams with a 5200mah battery. It can carry multiple payloads like camera and gimbal, flower dropping box and other payloads like onboard computers, sensors or experimental things.

Powerful
Specially designed for high endurance or high payload applications. It can carry various payloads like camera with gimbals, scientific equipments, flower dropping boxes and R&D equipments. It can take payloads upto 1Kg with 2200mAh battery.

High Endurance
When you need more flight time this is a perfect drone to start with. It can hover for 20 minutes with a 2200mAh Li-Po battery. It will give flight time of 14 minutes with payload and without payload it can provide upto 20 minutes. Battery can be upgraded to 6S 5200mAh and it will give flight time of about 30 minutes.

Pixhawk Flight Controller
Its equipped with Pixhawk flight controller with all accessories - which is a proven and versatile platform for most kind of aircrafts. Its open source and has a great community support. With full featured ground station software for PC and an app for Android it provides a system for standard and custom control and operation of drone.
Return to Home and other failsafe
As a standard feature if battery goes lower than programmed level or the drone goes out of range it returns back to launch point and lands. This operation can be cancelled at any point by the user.

Full autonomous operations and waypoint navigation
The drone can be operated in manual, semi autonomous or fully autonomous modes. It can be programmed via ground control software or mobile application to make a full autonomous flight from take off to landing without any user input.

Package Includes:

- Pixhawk Flight controller
- External RGB LED
- Canopy (PLA Material)
- 5010 360kv Motor
- Counter Rotating Carbon Fiber Propellers 1555 (CW+CCW)
- 433MHz Telemetry module pair for Pixhawk and APM 100mw 2Km range
- Flysky FS-i6 6ch 2.4ghz Transmitter with FS-iA6B PPM Receiver
- GPS Module NEO-7M uBLOX with Micro Usb Interface
- IMAX B6-AC Charger/Discharger 1-6 Cells
- Lithium Polymer (LiPo) Rechargeable Battery 22.2V 2200mAH 30C

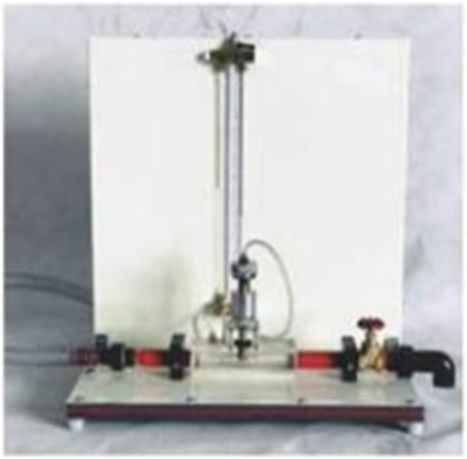
PM.HB-220- Hydraulic Bench-Base Module

PM HB-221- Cavitation Demonstrator

PM.HB-222- Energy Losses in Piping Elements

PM.HB-223- Fluid Friction Apparatus

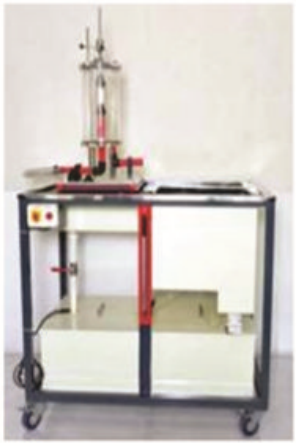
PMHB-224- Horizontal Flow From A Tank



PMHB-229- Pitot Static Tube Module

PM HB-225- Flow Measurement Mounted on Hydraulic Bench

PMHB-225B- Methods of Flow Measurement



PMHB-226- Jet Forces Mounted on Hydraulic Bench

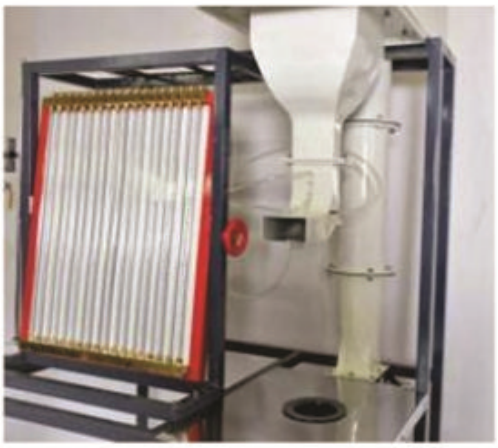
PMHB-226B- Measurement Of Jet Forces

PM HB-227- Osborne Reynolds Exp. Mounted on Hydraulic Bench

PMHB-227-B- Osborne Reynold's Experiment

PMHB-228- Pelton Turbine Mounted on Hydraulic Bench

PMHB-228B-Operating Principles of Pelton Turbine



PM-M-100A- Aerodynamic Trainer

PM-M101-Bench Top Rapid Extractor

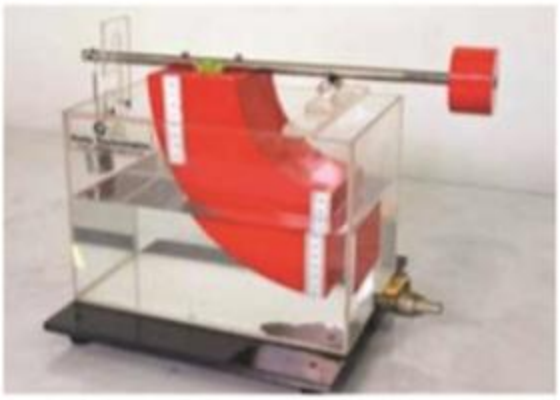
PM-M102-Change of State of Gases

PM-M103-Crystalization Unit

PM-M-104-Evaporator Service Unit

PM-M105- Experimental-Flume

PM-M106- Hydrostatic Bench



PM-M107- Hydrostatic Pressure in Liquids

PM-M108- Pipe-Surge-and-Water-Hammer-Apparatus

PM-M109- Stability of Floating Bodies

PM-M110- Vapour Pressure of Water—Marcet Boiler

CHEMICAL ENGINEERING

Mechanical Opterations

Size Reduction Equipment

- Jaw Crusher
- Roll Crusher
- Ball Mill (Variable Speed)
- Ball Mill(With Three Prefixed Speeds)
- Rod Mill
- Hammer Mill

Screening Equipment

- Vibrating Screen
- Trommel (Variable Speed)
- Trommel (With Three Prefixed Speeds)
- Rotap Sieve Shaker
- Gyratory Sieve Shaker
- Test Sieves (Dia.200mm With Different Mesh Sizes)

Separation Equipment

- Cyclone Separator
- Cyclone Scrubber
- Elutriator
- Magnetic Separator
- Froth Floatation Cell
- Cone Classifier
- Thickner
- Wilfley Table
- Mineral Jig

Filteration Equipment

- Plate & Frame Filter Press
- Rotary Vacuum Filter
- Leaf Filter

Conveyors Equipment

- Bucket Conveyor
- Belt Conveyor
- Screw Conveyor (Variable Speed)
- Screw Conveyor(With Three Prefixed Speeds)

Mixing Equipment

- Ribbon Mixer
- Sigma Mixer

- Liquid-Liquid Extraction in A Packed Tower
- York Schreiber's Extraction Unit
- Spray Tower
- Solid-Liquid Extraction (Bonnet Type)
- Solid-Liquid Extraction (Packed Bed Type)

Distillation

- Bubble Cap Distillation Column
- Sieve Plate Distillation Column
- Packed Bed Distillation Column
- Steam Distillation Set-up
- Simple Batch Distillation

Absorption

- Absorption in Sieve Plate Column
- Absorption in Packed Bed
- Absorption in Wetted Wall Column

Diffusion

- Vapor in Air Diffusion Apparatus
- Solid in Air Diffusion Apparatus

Drying

- Natural Draft Tray Dryer
- Forced Draft Tray Dryer
- Rotary Dryer
- Fluidized Bed Dryer

Crystallization

- Batch Crystallizer
- Swenson Walker Crystallizer
- Wetted Wall Column
- Vapor Liquid Equilibrium Set-up
- Mass Transfer With & Without Chemical Reaction (Solid-Liquid)
- Experimental Water Cooling Tower
- Adsorption in Packed Bed
- Ion Exchanger
- Humidification & Dehumidification Setup

Chemical Reaction Engineering Lab

- Continuous Stirred Tank Reactor (C.S.T.R)
- Isothermal Continuous Stirred Tank Reactor (isothermal C.S.T.R)
- Cascade Continuous Stirred Tank Reactor (cascade C.S.T.R)
- Plug Flow Tubular Reactor (Straight Tube Type)
- Plug Flow Tubular Reactor (Coiled Tube Type)
- Isothermal Plug Flow Reactor (Coiled Tube Type)
- Isothermal Batch Reactor
- Isothermal Semi-batch Reactor
- Adiabatic Batch Reactor
- Packed Bed Reactor
- Combined Flow Reactor
- R.T.D. Studies In Continuous Stirred Tank Reactor
- Rtd Studies in Plug Flow Reactor (Straight Tube Type)
- Rtd Studies in Plug Flow Reactor (Coiled Tube Type)
- R.t.d Studies in Packed Bed Reactor
- Chemical Reactor Teaching Equipment
- Accessories for Chemical Reactor Teaching Equipment
- Continuous Stirred Tank Reactor (C.S.T.R) (Accessory)
- Plug Flow Reactor (Coiled Tube Type) (Accessory)
- Batch Reactor (Accessory)
- Liquid Phase Chemical Reactor
- Kinetics of Dissolution of Benzoic Acid
- Hydrodynamic of Trickle Bed Reactor
- Up Photo Reactor
- Recycled Bed Reactor
- Spinning Basket Reactor
- Emulsion Polymerization Set Up
- Condensation Polymerization Set-up

Process Control And Instrumentation Lab

- Control Valve Characteristics
- Study of P-I & I-P Convertor
- Characteristics of P.I.D Controller
- Measurement of Level by Air Purge Method
- Measurement of Level by Capacitance Method
- Force Measurement Apparatus
- Calibration of Thermocouples & Thermometer
- Dead Weight Pressure Gauge Tester
- Pressure Control Trainer (Computer Controlled System)
- Level Control Trainer (Computer Controlled System)
- Temperature Control Trainer (Computer Controlled System)
- Flow Control Trainer (Computer Controlled System)
- Time Constant of Manometer
- Time Constant of Thermocouples & Thermometer
- Single Tank System
- Two Tank Interaction System
- Two Tank Non – Interaction System
- Interaction & Non Interaction System

Momentum Transfer Lab

- Pressure Drop Through Packed Bed
- Hydrodynamics of Packed Bed
- Fluidized Bed Characteristics
- Fixed & Fluidized Bed Characteristics
- Flow Through Helical Coil
- Drag Co-efficient Apparatus
- Pressure Drop in Two Phase Flow
- Sedimentation Studies Apparatus

GEAR MECHANISM MODELS

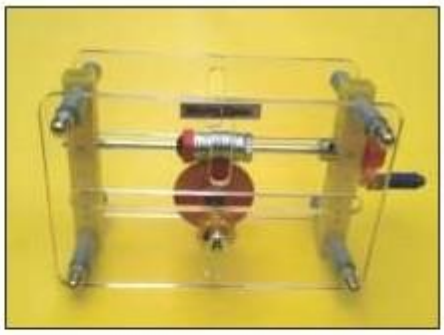
1. Single Stage -Spur Gear

2. Single Stage -Spur Gear with Intermediate Gear

3. Two Stage-Spur Gear

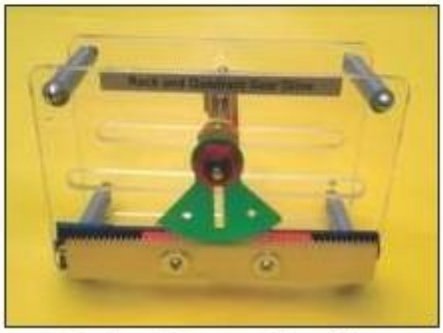
4. Three Stage - Spur Gear

5. Three Speed and Reverse Gear



6. Worm Gear

7. Bevel Gear

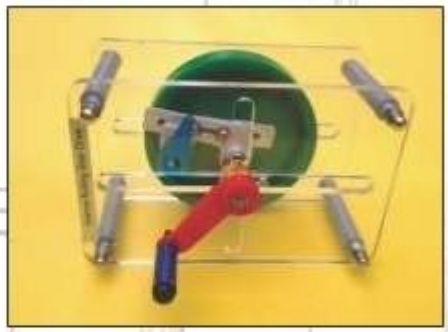


8. Rack and Quarant Gear Drive

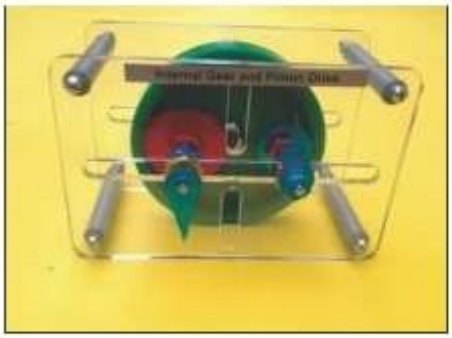
9. Reversing Gear (Tumbler Type)

10. Epicyclic Gear (Sun and Planet)

11. Cycloidal Motion



12. Internal Rolling Gear Drive

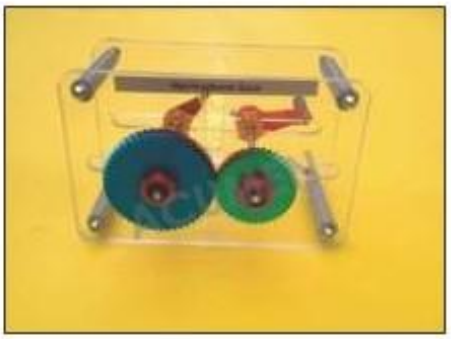


13. Internal Gear and Pinion Drive

14. Helical gear

15. Spiral Gear 90 Degree

16. Spiral Gear Single Stage with Intermediate Gear



17.Herring Bone Gear

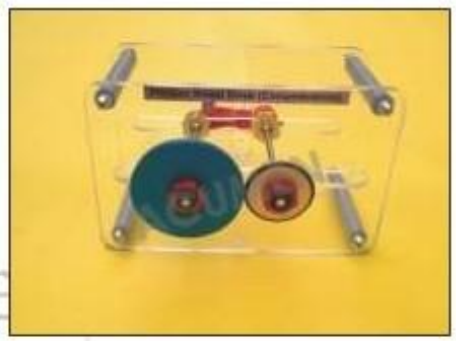
18. Crank Drive to Oscillating Link

19. Crankshaft and Slider Mechansims

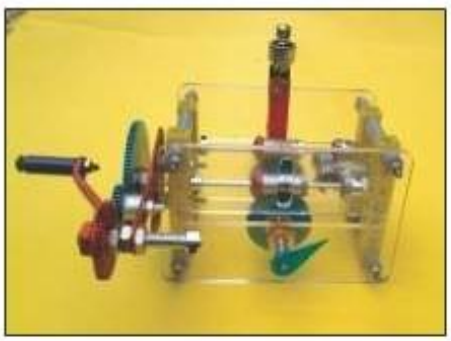
20. Two Crank and Linkage Drive (Variable Velocity)

21. Crank and Slotted Link Drive - (Oscillator)

22. Crank and Slotted Link Drive -(Variable Velocity)



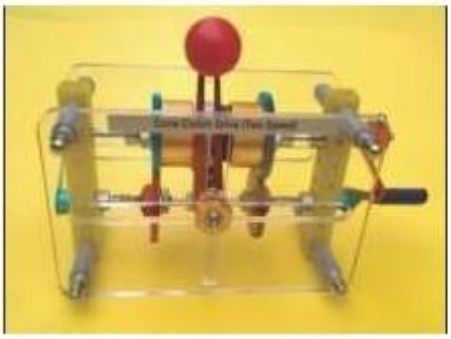
23. Friction Wheel Drive (Circumference)



24. Centrifugal Mechanism and Clutch Drive

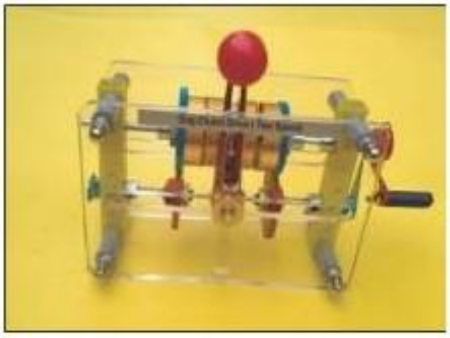
25. Friction Wheel Drive - (Variable Speed)

26. Cone Clutch Drive -Single Sided



27. Cone Clutch Drive Two Speed

28. Dog Clutch Drive - Single Sided



29. Dog Clutch Drive TwoSpeed

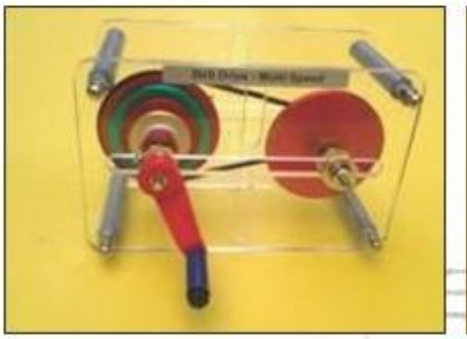
30. Flat Belt Drive with Tensioner

31.Belt drive Tothed

32. Belt Drive - Single Speed

33. Belt Drive Two Stage

34. Belt Drive - Contra Rotation



35. Belt Drive - Multispeed

36. Chain Drive - with Tensioner

37. Geneva Drive (Maltese Cross)

38. Sliding Wedge Gear with Straight line and Arcuate output

39. Cam with Straight line and lever follwers

40. Face Cam Drive (Free Follwer)

41. Face Cam Drive (Double Sided) Trapped Followers

42. Oidhans Coupling

43. Differential Gear

46. Crank and Connecting Rod

47. Four Bar Link Machanism

48. Bevel Gear Type Reversing Machansim

49. Scotch Yoke Mechanism

50. Elipse Tracer